CRITERIA 1

CIRRCULAR ASPECTS KEY INDICATOR – 1.2.1.1

Number of Programmes in which CBCS/ Elective course system implemented

Master of Business Administration (MBA) – Revised Syllabus 2019

2 year, 4 Semester Full time Programme
Choice Based Credit System (CBCS) and Grading System
Outcome Based Education Pattern

MBA I effective from AY 2019-20
MBA II effective from AY 2020-21

1.0 Preamble: The revised MBA Curriculum 2019 builds on the implementation of the Choice Based Credit System (CBCS) and Grading System initiated in the AY 2013. The curriculum takes the MBA programme to the next level in terms of implementing Outcome Based Education along with the Choice Based Credit System (CBCS) and Grading System.

2.0 Definitions:
2.1 Outcome Based Education:
2.1.1 Outcome Based Education (OBE) Approach: Outcomes are about performance, and this implies:
  a) There must be a performer – the student (learner), not only the teacher
  b) There must be something performable (thus demonstrable or assessable) to perform
  c) The focus is on the performance, not the activity or task to be performed
2.1.2 Programme Educational Objectives (PEOs): Programme Educational Objectives are a set of **broad future-focused student performance outcomes** that explicitly identify what students will be **able to do with what they have learned**, and **what they will be like** after they leave school and are **living full and productive lives**. Thus PEOs are what the programme is preparing graduates for in their **career and professional life** (to attain within a **few years** after graduation[1]).
2.1.3 Graduate Attributes (GAs): Graduate Attributes (GAs) are the **qualities, knowledge and capabilities** that students are encouraged to take responsibility for developing throughout their studies and are the **defining characteristics** of the students passing out of the MBA program**.** These attributes include, but go **beyond, the disciplinary expertise or technical knowledge**.
2.1.4 Programme Outcomes (POs): Programme Outcomes are a set of **narrow statements** that describes what students (learners) **of the programme** are expected to know and be able to perform or attain **by the time of graduation**.
2.1.5 Programme Specific Outcomes (PSOs): Programme Outcomes are a set of **narrow statements** that describes what students (learners) **of a particular specialization of the programme** are expected to know and be able to perform or attain **by the time of graduation**. PSOs are also a function of the various course combinations offered by the Institute.
2.1.6 Learning Outcomes: A learning outcome is what a student CAN DO as a result of a learning experience. It describes a **specific task** that he/she is able to perform at a **given level of competence under a certain situation**. The three broad types of learning outcomes are:
  a) Disciplinary knowledge and skills
  b) Generic skills
  c) Attitudes and values
2.1.7 Course Outcomes (COs): A set of specific statements that describes the **complex performances** a student should be capable of as a result of **learning experiences within a course.**
2.1.8 Teaching and Learning Activities (TLAs): The set of **pedagogical tools and techniques** or the teaching and learning activities that aim to **help students to attain** the intended learning outcomes and engage them in these learning activities through the teaching process.
2.1.9 Outcome Based Assessment (OBA): An assessment system that asks course teachers to first identify what it is that we expect students to be able to do once they have completed a course or program. It then asks course teachers to provide evidence that they are able to do so. In other words, how will each learning outcome be assessed? What **evidence of student learning** is most **relevant for each learning outcome** and **what standard or criteria** will be used to evaluate that evidence? Assessment is therefore a key part of outcome-based education and used to determine whether or not a qualification has been achieved.

2.2 Credit: *In terms of credits, for a period of one semester of 15 weeks:*

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[1] Graduation refers to passing out of the MBA programme. Graduation does NOT refer to 10+2+3/4 degree e.g. BA, BE, etc.

a) *every ONE hour session per week of L amounts to 1 credit per semester*
b) *a minimum of TWO hours per week of T amounts to 1 credit per semester,*
c) *a minimum of TWO hours per week of P amounts to 1 credit per semester,*

Each credit is a combination of 3 components viz. Lecture (L) + Tutorials (T) + Practice (Practical / Project Work / Self Study) (P) i.e. LTP Pattern. Indicative LTP, for each course, is documented in the syllabus.

The course teacher may modify the LTP of the course in view of the course requirements, nature of the course, the level of learners and the type of pedagogy and assessment tools proposed. The modified LTP shall have to be approved by the Director / Head of the Department / Designated academic authority of the Institute.

2.3 **Session:** Each teaching-learning, evaluation session shall be of 60 minutes. However, institutes shall have the flexibility to define their time slots in a manner as to use their faculty and infrastructure resources in the best possible way and ensure effective learning.

2.4 **Course Announcement:** The institute shall announce the elective courses and specializations it proposes to offer the students out of the wider course basket. It is not mandatory to offer all the specializations and all the electives. The decision of the Director shall be final in this case. However, in the spirit of Choice Based Credit System, institutes should offer choices to the students for the elective courses and not offer only the minimum number of electives.

2.5 **Course Registration:** It is mandatory for every student, to register every semester, for the courses opted for that semester. Each student, on admission shall be assigned to a Faculty Advisor who shall advise her/him about the academic programs and counsel on the choice of courses considering the student's profile, career goals and courses taken in the earlier semesters. With the advice and consent of the Faculty Advisor, the student shall register for a set of courses he/she plans to take up for the Semester. Students shall have to register for the courses for the semester within first week of Semester I and immediately after conclusion of the preceding term for subsequent Semesters II, III and IV.

3.0 MBA Programme Focus:

3.1 Programme Educational Objectives (PEOs):
1. **PEO1:** Graduates of the MBA program will *successfully integrate core, cross-functional and inter-disciplinary* aspects of management *theories, models and frameworks* with the *real world practices* and the *sector specific nuances* to *provide solutions to real world business, policy and social issues* in a *dynamic and complex world.*
2. **PEO2:** Graduates of the MBA program will possess excellent *communication skills,* excel in *cross-functional, multi-disciplinary, multi-cultural teams,* and have an appreciation for *local, domestic and global contexts* so as to manage *continuity, change, risk, ambiguity and complexity.*
3. **PEO3:** Graduates of the MBA program will be appreciative of the significance of *Indian ethos and values in managerial decision making* and *exhibit value centered leadership.*
4. **PEO4:** Graduates of the MBA program will be ready to *engage in successful career pursuits* covering a broad spectrum of areas in *corporate, non-profit organizations, public policy, entrepreneurial ventures* and engage in *life-long learning.*
5. **PEO5:** Graduates of the MBA program will be recognized in their chosen fields for their *managerial competence, creativity & innovation, integrity & sensitivity* to local and global issues of social relevance and earn the *trust & respect* of others as *inspiring, effective and ethical leaders, managers, entrepreneurs, intrapreneurs* and change agents.

3.2 Programme Outcomes (POs): At the end of the MBA programme the learner will possess the
1. **Generic and Domain Knowledge -** Ability to articulate, illustrate, analyze, synthesize and apply the knowledge of principles and frameworks of management and allied domains to the solutions of real-world complex business issues
2. **Problem Solving & Innovation** - Ability to Identify, formulate and provide innovative solution frameworks to real world complex business and social problems by systematically applying modern quantitative and qualitative problem solving tools and techniques.

3. **Critical Thinking** - Ability to conduct investigation of multidimensional business problems using research based knowledge and research methods to arrive at data driven decisions

4. **Effective Communication** - Ability to effectively communicate in cross-cultural settings, in technology mediated environments, especially in the business context and with society at large

5. **Leadership and Team Work** - Ability to collaborate in an organizational context and across organizational boundaries and lead themselves and others in the achievement of organizational goals and optimize outcomes for all stakeholders.

6. **Global Orientation and Cross-Cultural Appreciation:** Ability to approach any relevant business issues from a global perspective and exhibit an appreciation of Cross Cultural aspects of business and management.

7. **Entrepreneurship** - Ability to identify entrepreneurial opportunities and leverage managerial & leadership skills for founding, leading & managing startups as well as professionalizing and growing family businesses.

8. **Environment and Sustainability** - Ability to demonstrate knowledge of and need for sustainable development and assess the impact of managerial decisions and business priorities on the societal, economic and environmental aspects.

9. **Social Responsiveness and Ethics** - Ability to exhibit a broad appreciation of the ethical and value underpinnings of managerial choices in a political, cross-cultural, globalized, digitized, socio-economic environment and distinguish between ethical and unethical behaviors & act with integrity.

10. **LifeLong Learning** – Ability to operate independently in new environment, acquire new knowledge and skills and assimilate them into the internalized knowledge and skills.

3.3 Programme Specific Outcomes (PSOs): It is expected that **Institutes define the PSOs** for **each specialization / major-minor combination**. PSOs shall also vary based upon the **customized combination** of Generic Core, Generic Elective, Subject Core, Subject Elective, Foundation, Enrichment & Alternative Study Credit Courses that they offer.

3.4 Graduate Attributes (GAs): At the end of the MBA programme the learner shall exhibit:
GA1: Managerial competence
GA2: Proficiency in Communication, Collaboration, Teamwork and Leadership
GA3: Competence in Creativity & Innovation
GA4: Research Aptitude, Scholarship & Enquiry
GA5: Global Orientation
GA6: Proficiency in ICT & Digital Literacy
GA7: Entrepreneurship & Intrapreneurship Orientation
GA8: Cross-functional & Inter-disciplinary Orientation
GA9: Results Orientation
GA10: Professionalism, Ethical, Values Oriented & Socially Responsible behaviour
GA11: Life-Long Learning Orientation

4.0 MBA Programme Course Types & Evaluation Pattern:

Sr.No.	Course Type	Credits	Nature	Comprehensive Concurrent Evaluation (CCE)	End Semester Evaluation (ESE) Marks	Total Marks
			BASIC COURSE TYPES			
1	Generic Core (GC)	3	Compulsory	50	50	100
2	Subject Core (SC)	3	Compulsory (Specialization specific)	50	50	100
3	Generic Elective (GE - UL)	2	Elective	0	50	50
4	Generic Elective (GE - IL)	2	Elective	50	0	50
5	Subject Elective (SE - IL)	2	Elective (Specialization specific)	50	0	50
6	Summer Internship Project (SIP)	6	Project (Compulsory)	50	50	100
			ADDITIONAL COURSE TYPES			
1	Enrichment Courses (ENR)	1	Elective	25	0	25
2	Foundation Courses	1	Elective	25	0	25

	(FOU)					
3	Alternative Study Credit Courses (ASCC)	2	Elective	50	0	50
4	Open Electives (OE)	3 or 2	Subject Core / Subject Elective	As per Subject Core / Subject Elective Pattern		

4.1 Course Types

4.1.1 **Foundation Course:** These courses focus on developing the basic abilities that support the understanding of other courses.

4.1.2 **Core courses** are the compulsory courses for all the students. Core courses are of two types: Generic Core & Subject Core.

4.1.3 **Generic Core:** This is the course which should compulsorily be studied by a candidate as a core requirement to complete the requirement of a degree in a said discipline of study. Therefore, Generic Core courses are mandatory and fundamental in nature. These courses cannot be substituted by any other courses. Such courses are also known as Hard Core Courses.

4.1.4 **Subject Core:** A Core course may be a Subject Core if there is a choice or an option for the candidate to choose from a broad category (grouping) of subjects (specializations / electives). These are also known as Soft Core Courses.

4.1.5 **Elective Course:** Elective course is a course which can be chosen from a pool of courses. It may be:
   a) Very Specialized or advanced course focusing on a specific aspect
   b) Supportive to the discipline of study
   c) Providing an extended scope
   d) Enabling an exposure to some other discipline/domain
   e) Nurturing candidate's proficiency/skills.

4.1.6 **Generic Elective:** An elective course which is common across disciplines / subjects is called a generic elective. 'Generic Elective' courses develop generic proficiencies amongst the students.

4.1.7 **Generic Elective – University Level**: These elective courses are supportive to the discipline of study and focus on the knowledge aspect of competence building. The course outcomes for such courses can be better assessed through traditional End Semester Evaluation.

4.1.8 **Generic Elective – Institute Level:** These elective courses are aimed to develop inter-personal, technical and other skills aspect of competence building. The course outcomes for such courses can be better assessed through Comprehensive Concurrent Evaluation.

4.1.9 **Subject Elective:** A 'Discipline (specialization) centric' elective is called 'Subject Elective.' Subject Elective courses, in the Semester II, III and IV are focused on a specialization.

4.1.10 **Open Elective:** A subject elective course chosen generally from another Discipline / specialization / subject, with an intention to seek cross-functional exposure is called an Open Elective. A Subject Elective offered in one specialization area may be treated as an Open Elective by another specialization area and vice-a-versa.

4.1.11 **Enrichment Course:** This is a course generally offered to bright learners / fast learners for advanced inputs beyond the curriculum. Enrichment / Add-on Course shall be a 1 Credit Course. The course is of the nature of Course of Independent Study (CIS) and is designed for learners who have the ability and inclination to work independently with limited guidance, supervision and interaction with the faculty member(s).

4.1.12 **Alternative Study Credit Courses:** These courses prepare the learners for a VUCA (Volatile Uncertain, Complex and Ambiguous) world by going beyond the boundaries of their campus. Apart from core and elective courses, these courses engage students in discussion, debate and solution of real world challenges.

4.1.13 **Massive Open Online Courses (MOOCs)[2]**: Massive Open Online Courses (MOOCs) are such online courses which are developed as per the pedagogy stated in the AICTE regulation (2016) or equiavelent; following the four quadrant approach and made available on the SWAYAM platform of Government of India.

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[2] AICTE (Credit Framework for online learning course through SWAYAM) Regulations, 2016

4.2 MBA Programme Structure: The Basic Programme Structure shall be as depicted below

	Course#	Semester I		Semester II		Semester III		Semester IV	Credits	CIE Marks	ESE Marks
	...	COMPULSORY CORE COURSES (GENERIC (GC) + SUBJECT (SC) + Summer Internship Project SIP)									
A	1	GC - 1	1	GC - 7	1	GC - 11	1	GC - 14			
	2	GC - 2	2	GC - 8	2	GC - 12	2	GC - 15			
	3	GC - 3	3	GC - 9	3	GC -13 (SIP)	3	SC - 5	66 Credits		
	4	GC - 4	4	GC - 10	4	SC - 3	4	SC - 6			
	5	GC - 5	5	SC - 1	5	SC - 4				1050	1050
	6	GC- 6	6	SC - 2						2100	
		GENERIC ELECTIVE COURSES (UNIVERSITY LEVEL) – GE - UL									
B	7	GE UL - 1	7	GE UL - 4	6	GE UL - 7	5	GE UL - 10			
	8	GE UL - 2	8	GE UL - 5	7	GE UL – 8	6	GE UL - 11	22 Credits	0	550
	9	GE UL - 3	9	GE UL - 6	8	GE UL – 9				550	
		GENERIC / SUBJECT ELECTIVE COURSES (INSTITUTE LEVEL) - GE - IL / SE - IL									
C	10	GE IL - 1	10	GE IL - 4	9	SE IL -3	7	SE IL -6			
	11	GE IL - 2	11	SE IL -1	10	SE IL -4	8	SE IL -7	22 Credits	550	0
	12	GE IL - 3	12	SE IL -2	11	SE IL -5				550	
	12		**12**		**11**		**8**		43	110 Credits	1600 CIE	1600 ESE
		FOUNDATION COURSES (OPTIONAL)									
D		FOUNDATION 1		FOUNDATION 7							
		FOUNDATION 2		FOUNDATION 8					0 to 10 Credits		
		FOUNDATION 3		FOUNDATION 9							
		FOUNDATION 4		FOUNDATION 10							
		FOUNDATION 5									
		FOUNDATION 6									
		ENRICHMENT COURSES (OPTIONAL)									
E		ENRICHMENT 1		ENRICHMENT 7		ENRICHMENT 11		ENRICHMENT 13			
		ENRICHMENT 2		ENRICHMENT 8		ENRICHMENT 12		ENRICHMENT 14	0 to 14 Credits		
		ENRICHMENT 3		ENRICHMENT 9							
		ENRICHMENT 4		ENRICHMENT 10							
		ENRICHMENT 5									
		ENRICHMENT 6									
		ALTERNATIVE STUDY CREDIT COURSES (OPTIONAL)									
F		ASCC 1		ASCC 4		ASCC 7		ASCC 10			
		ASCC 2		ASCC 5		ASCC 8		ASCC 11	0 to 22 Credits		
		ASCC 3		ASCC 6		ASCC 9					

Note:

1. The basic programme structure comprises of Block A, B & C above.
2. Variations to the basic programme structure shall be defined at the institute level using any permissible combination of A,B,C,D,E and F blocks depicted above, taking into consideration institutional vision-mission-focus areas, industry demand, student learning capabilities, faculty competencies, availability of learning resources, etc. PSOs shall be appropriately defined by the institute.

LEGEND:

#	Block	CIE - ESE (Credits per course)	Course Type	Credits	Courses	Nature
1.1	A1	50-50 (3 Credits)	GENERIC CORE (GC)	42	14	COMPULSORY
1.2	A2	50-50 (3 Credits)	SUBJECT CORE (SC)	18	6	COMPULSORY
1.3	A3	50-50 (3 Credits)	PROJECT	6	1	COMPULSORY
2	B	0 - 50 (2 Credits)	GENERIC ELECTIVE (UNIVERSITY LEVEL) GE – UL	22	11	ELECTIVES
3.1	C1	50-0 (2 Credits)	GENERIC ELECTIVE (INSTITUTE LEVEL) GE – IL	8	4	ELECTIVES
3.4	C2	50-0 (2 Credits)	SUBJECT ELECTIVE (INSTITUTE LEVEL) SE - IL	14	7	ELECTIVES
			TOTAL	**110**	**43**	
			OPTIONAL COURSES (In Lieu of C1 / C2 ONLY)			
4.1	D	25 - 0 (1 Credit)	FOUNDATION COURSES	0 -10	0 - 10	ELECTIVES
4.2	E	25 - 0 (1 Credit)	ENRICHMENT COURSES	0- 14	0 - 14	ELECTIVES
4.3	F	50 - 0 (2 Credits)	ALTERNATIVE STUDY CREDIT COURSES	0 -22	0 -11	ELECTIVES

5.0 Specializations offered: The following specializations shall be offered as MAJOR / MINOR:
1. Marketing Management (MKT)
2. Financial Management (FIN)
3. Human Resources Management (HRM)
4. Operations & Supply Chain Management (OSCM)
5. Business Analytics (BA)

The following specializations shall be offered ONLY as MINOR Specializations:
1. Rural & Agribusiness Management (RABM)
2. Pharma & Healthcare Management (PHM)
3. Tourism & Hospitality Management (THM)

Note:
1. Institutes may offer ONLY SELECT specializations based on industry needs, faculty strength & competencies, student demands, employability potential, etc.
2. Institutes MAY NOT offer a specialization if a **minimum of 20% of students** are not registered for that specialization.
3. The Institute MAY NOT offer an elective course if a **minimum of 20% of students** are not registered for that elective course.

5.1 Open Elective(s):
1. Learners who intend to learn specific courses from other specialization(s) can opt for Subject Elective (SE - IL) courses from other specializations in lieu of the Subject Elective (SE - IL) courses from their native specialization.
2. These open electives MAY BE from two different specializations.
3. Open Electives can be opted for only in Sem III and Sem IV.
4. Students can opt for maximum 1 Subject Elective (SE - IL) course in Sem III and Sem IV each. i.e. Students can opt for maximum 2 Open Electives (total 4 credits).

5.2 Major Specialization + Minor Specialization Combination:
1. For a **Major + Minor Specialization combination** the learner shall **complete**
   a) Major Specialization – Courses: Total 9 (4 Subject Core courses and 5 Subject Elective courses)
   b) Minor Specialization – Courses: Total 4 (2 Subject Core courses and 2 Subject Elective courses)
2. For a **Major + Minor Specialization combination** the learner shall **earn**
   a) Major Specialization – Credits: Total 22 (12 Credits from Subject Core + Minimum 10 Credits from Subject Electives)

b) Minor Specialization – Credits: Total 10 (6 Credits from Subject Core + Minimum 4 Credits from Subject Electives)

3. The 10 credits of the MINOR specialization shall be from a single specialization, out of which 6 credits shall be mandatorily earned through the Subject Core Courses.
4. The Major + Minor specialization combination is OPTIONAL.
5. Students shall be permitted to opt for **ANY Major + ANY Minor** specialization combination, subject to institutional norms and guidelines, issued from time to time.
6. A student opting for Major + Minor specialization combination shall opt for Foundation Courses / Enrichment Courses / Alternative Study Credit Courses **ONLY in lieu of Generic Elective (GE - IL) Courses**.
7. Institutes may stipulate additional criteria of minimum SGPA / CGPA, number of backlogs, expectations about specific graduation discipline for students who wish to take up a specific specialization / specific major minor combination. Such criteria may also involve the potential employability criteria for a particular specialization / Major + Minor specialization combination.

5.3 Options & Guidelines for Choice of Specialization:
1. Students can opt for a single specialization (i.e. Major Only – 5 choices)
2. Students can opt for a two specializations (i.e. Major + Minor Combination – 1(Major) + 7(Minor) choices)
3. Specializations which are offered ONLY as MINOR shall be offered in SECOND YEAR ONLY. (3 choices)
4. Courses for the Minor specialization shall be taken up in the second year ONLY (in either Sem III or Sem IV or in a combination of Sem III and IV).
5. The Major specialization of a student shall be determined by the Subject Core (SC) courses and the Subject Elective (SE - IL) courses chosen in Sem II.
6. All courses (Subject Core (SC) courses and the Subject Elective (SE - IL) courses) chosen in Sem II shall belong to the same specialization.
7. The learners shall generally complete 6 Subject Core courses (2 each in semester II, III, IV) and 7 Subject Elective courses (2, 3, 2 each in semester II, III, IV respectively). In this case he /she shall be awarded MBA (Functional Area Specialization) degree, e.g. MBA (Marketing), MBA (Finance), etc.
8. The learners shall complete 4 Subject Core courses and 5 Subject Elective courses of Major specialization and 2 Subject Core courses and 2 Subject Elective courses of Minor specialization. In this case he /she shall be awarded MBA (Functional Area Specialization Major + Functional Area Specialization Minor) degree, e.g. MBA (Marketing + Finance), etc.

5.4 Foundation Courses:
1. All the Foundation Courses shall be of 1 credit each.
2. Maximum credits for Foundation Courses **shall not exceed 10 (Ten) Credits**.
3. Foundation Courses can be opted for ONLY IN LIEU of Generic Elective (GE - IL) and / or Subject Elective (SE - IL) courses.[3]
4. This choice can be exercised in Semester I (minimum zero Credits – maximum six credits) or Semester II (minimum zero Credits – maximum four credits) ONLY.
5. Foundation Courses CANNOT be opted for in Sem III and in Sem IV.
6. It is NOT MANDATORY for a learner to opt for Foundation Courses. However, Faculty members may advise a student to enroll for Foundation Course(s) after a methodical assessment of the relevant competencies of the student.
7. Foundation Courses shall be offered ONLY to those students who lack the basic competencies in the specific course. The institute shall conduct after a methodical assessment of the relevant competencies of the student. to identify the learners who need to take up foundation courses. Records of the evaluation shall be preserved.
8. Institutes may stipulate additional criteria for students desirous to take up Foundation Courses.
9. Foundation Courses shall be taught by the course teacher in workshop mode / project mode.
10. The course teacher shall oversee the progress of the learner as well as evaluate the learner for 25 marks / 1 credit.
11. Pre- and post-test: A test or other assessment activity shall be administered to the students both at the beginning of the foundation course and at the end of the foundation course, with the intention of demonstrating improved skills upon completion. The tests shall be essentially SKILL based.

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[3] Except for a learner who opts for Major + Minor Specialization combination

12. Best of the two assessments shall be treated as the final evaluation.
13. The list of Foundation Courses is mentioned in Annexure I.

5.5 Enrichment Courses:

1. All the Enrichment Courses shall be of 1 credit each.
2. Maximum credits for Enrichment Courses **shall not exceed 14 (Fourteen) Credits**.
3. Enrichment Courses can be opted for, ONLY IN LIEU of Generic Elective (GE - IL) and / or Subject Elective (SE - IL) courses[4].
4. This choice can be exercised in Semester I (minimum zero Credits – maximum six credits) or Semester II (minimum zero Credits – maximum four credits) or Semester III (minimum zero Credits – maximum two credits) or Semester IV (minimum zero Credits – maximum two credits).
5. It is NOT MANDATORY for a learner to opt for Enrichment Courses. However, Faculty members may advise a student to enroll for Enrichment Course(s) after a methodical assessment of the relevant competencies of the student.
6. Institutes may stipulate additional criteria for students desirous to take up Enrichment Courses.
7. Enrichment Courses shall be executed as **Course of Independent Study** (CIS) in guided self study mode.
8. A faculty guide shall be assigned for such courses. The learner shall select the Enrichment Course that he/she desires to opt for and submit an outline of the proposed study relevant to the course. The faculty guide shall approve the proposal after considering the nature of the work, learning effort required, desired outcomes and comprehensive coverage of the topic.
9. Since enrichment course is a guided self study course, 40 - 45 hours of work shall be equivalent to one credit. The faculty shall oversee the progress of the learner as well as evaluate the learner for 25 marks / 1 credit.
10. The learners shall document and submit details such as questionnaires, interview schedules, interview transcripts, observation sheets, photographs, testimonials from the organizations / persons interacted with, permission letters, acceptance letters, field work sampling plans, etc.
11. Enrichment Courses can be carried out in the campus library / in the campus IT lab / in a local community setting / in a start-up / in a government undertaking / in a NGO / in a cooperative / in a corporate entity.
12. The Enrichment Courses are organized in different Proficiency Tracks. Learners shall normally opt for enrichment courses from **NOT MORE THAN 3 Proficiency Tracks**.
13. **Enrichment Courses are of the following types:**
a) **Seminar** - Involves Desk Research of distributed learning material and information resources and submission and presentation of an analytical report. Maximum credits for Enrichment Courses of Seminar type shall not exceed 10 (Ten) Credits.
b) **Review** – Involves Desk Research of a small set of specific published reports/ databases and submission and presentation of an analytical report. Maximum credits for **Enrichment Courses of Seminar type** shall not exceed 10 (Ten) Credits.
c) **Case Study Development and Presentation** – Involves desk research and field work leading to the development, presenting and publishing of a case study. Maximum credits for **Enrichment Courses of Case Study Development and Presentation type** shall not exceed 10 (Ten) Credits.
d) **Project** – Involves field work leading to presentation of a comprehensive report based on the experiential learning. Maximum credits for **Enrichment Courses of Project type** shall not exceed 10 (Ten) Credits.
e) **Lab / Workshop -** Involves experiential learning through focused skill building activity. Maximum credits for **Enrichment Courses of Lab / Workshop type** shall not exceed 10 (Ten) Credits.
f) **Clinic / Fest** – Involves experiential learning through organizing an event / campaign. Maximum credits for **Enrichment Courses of Clinic / Fest type** shall not exceed 4 (Four) Credits.
g) **Personal Interest Course** - Involves experiential learning through club activities at the Institute Level. Maximum credits for **Enrichment Courses of Personal Interest Course type** shall not exceed 4 (Four) Credits.
14. A well documented and comprehensive spiral bound report / publication, with appropriate referencing, is essential for all the enrichment courses. Relevant Audio, Video Material, should be included as a part of the report.
15. The Evaluation for the Enrichment Courses shall be as follows –
    a) Proposal and Scope of Work – 5 Marks
    b) Report – 10 Marks

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[4] Except for a learner who opts for Major + Minor Specialization combination

     c)   Presentation – 5 Marks
     d)   Viva Voce – 5 Marks

16. The presentation shall be similar to an open defence. The Viva Voce shall be carried out by minimum two faculty members including the guide.
17. The sum total of the number of Foundation Courses and the number of Enrichment Courses opted by a student in a particular semester should generally be an even number.
18. The list of Enrichment Courses is provided in Annexure I.

5.6 Alternative Study Credit Courses:
1. All the ASCC shall be of 2 credits each.
2. Maximum credits for ASCC **shall not exceed 22 (Twenty two) Credits**.
3. Alternative Study Credit Courses (ASCC) can be opted for, ONLY IN LIEU of Generic Elective (GE - IL) and / or Subject Elective (SE - IL) courses[5].
4. This choice can be exercised in Semester I (minimum zero Credits – maximum six credits) or Semester II (minimum zero Credits – maximum six credits) or Semester III (minimum zero Credits – maximum six credits) or Semester IV (minimum zero Credits – maximum four credits). i.e. a learner may skip Generic Elective (GE - IL) courses all together and earn the required 22 credits entirely through ASCC.
5. It is NOT MANDATORY for a learner to opt for Alternative Study Credit Courses. However, Faculty members may advise a student to enroll for Alternative Study Credit Course(s) after a methodical assessment of the relevant competencies of the student.
6. Institutes may stipulate additional criteria for students desirous to take up Alternative Study Credit Courses.
7. **A MINIMUM of 60% of the total credits earned by a learner through ASCC shall either be from MOOCs or from Professional Certification Programmes**.
8. Thus a learner may skip all Generic Elective (GE - IL) courses and skip all Subject Elective (SE - IL) courses and earn the required 22 credits entirely through ASCC.
9. The same TYPE of ASCC can be opted for multiple number of times. Norms for the same are prescribed in the relevant section later in this syllabus document. For e.g. A student may undertake 11 "Professional Certification Programs" and earn 22 credits or complete 11 MOOCS and earn 22 Credits.
10. ASCC shall be executed in online study mode / field work or project mode / certification mode.
11. A faculty guide shall be assigned for such courses. The faculty shall oversee the progress of the learner as well as evaluate the learner for 50 marks / 2 credits.
12. The learner shall select the ASCC that he/she desires to opt for and submit an outline of the proposed study relevant to the course. The faculty guide shall approve the proposal after considering the nature of the work, learning effort required, desired outcomes and comprehensive coverage of the topic.
13. There is no defined syllabus for the ASCC courses. Institutes shall define the syllabus and announce the same on the website.
14. Since ASCC is a guided self study course 40 - 45 hours of work shall be equivalent to one credit. The faculty shall oversee the progress of the learner as well as evaluate the learner for 50 marks / 2 credits.
15. The start date of the ASCC such as Professional Certifications shall be after the admission date for the MBA programme and the end date of the ASCC shall be within 6 months of the start date of the ASCC, but before the completion of Sem IV.
16. The list of ASCC is provided in Annexure I.

5.7 Combination of Options: A learner may opt for any combination of earning the 22 credits assigned to Generic Elective (GE - IL) courses and Subject Elective (SE - IL) courses through
     e)   Generic Elective (GE - IL) courses
     f)   Subject Elective (SE - IL) courses
     g)   Open Elective Courses
     h)   Major + Minor specialization combination
     i)   Foundation Courses
     j)   Enrichment Courses
     k)   Alternative Study Credit Courses

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[5] Except for a learner who opts for Major + Minor Specialization combination

SUBJECT TO THE minimum and maximum limits of credits prescribed and, subject to institutional norms and guidelines, issued from time to time.

6.0 Summer Internship Project: At the end of Second Semester each student shall undertake a Summer Internship Project (SIP) for a **minimum of 8 weeks**. For SIP, 1 credit is equivalent to minimum 40-45 hours of effective work. SIP shall have 6 credits. It is mandatory for the student to seek advance written approval from the faculty guide and the Director of the Institute about the topic and organization before commencing the SIP.

The SIP may or may not have a Functional Focus, i.e. the student may take up a SIP in his/her intended area of specialization or in any other functional area of management. **Ideally the SIP should exhibit a cross-functional orientation.** SIP can be carried out in a Corporate Entity / NGO / SME / Government Undertaking / Cooperative Sector. SIP may be a research project – based on primary / secondary data or may be an operational assignment involving working by the student on a given task/assignment/project/ etc. in an organization / industry. It is expected that the SIP shall sensitize the students to the demands of the workplace.

Each student shall maintain a SIP Progress Diary detailing the work carried out and the progress achieved on a daily basis. The student shall submit a written structured SIP report based on work done during this period. The student shall submit the SIP Progress Diary along with the SIP Report.

Students shall also seek a formal evaluation of their SIP from the company guide. **The** formal evaluation by the company guide shall comment on the nature and quantum of work undertaken by the student, the effectiveness and overall professionalism. The learning outcomes of the SIP and utility of the SIP to the host organization must be specifically highlighted in the formal evaluation by the company guide. The SIP evaluation sheet duly signed and stamped by the industry guide shall be included in the final SIP report.

The SIP report must reflect 8 weeks of work and justify the same. The SIP report should be well documented and supported by –
1. Institute's Certificate
2. Certificate by the Company
3. Formal feedback from the company guide
4. Executive Summary
5. Organization profile
6. Outline of the problem/task undertaken
7. Research methodology & data analysis (in case of research projects only)
8. Relevant activity charts, tables, graphs, diagrams, AV material, etc.
9. Learning of the student through the project
10. Contribution to the host organization
11. References in appropriate referencing styles. (APA, MLA, Harvard, Chicago Style etc.)

The completion of the SIP shall be certified by the respective Faculty Guide & approved by the Director of the Institute. The external organization (Corporate / NGO/ SME/ Government Entity/ Cooperative/ etc.) shall also certify the SIP work.

The students shall submit a spiral bound copy of the SIP report by 15th September. The Institute shall conduct an internal viva-voce for evaluation of the SIP for 50 marks between 15th September to 30th September. The Panel shall comprise of two evaluators appointed by the Director of the Institute / Head of Department (for MBA departments in engineering colleges). Institutes are encouraged to involve senior alumni, industry experts, recruiters to conduct the internal viva-voce. The internal viva-voce panel shall provide a detailed assessment of the SIP report and suggest changes required, if any.

After the internal viva-voce, the student shall finalize the SIP report by incorporating all the suggestions and recommendations of the internal viva-voce panel. The internal guide shall then issue the Institute's Certificate to the student.

The student shall submit TWO hard copies & one soft copy (CD) of the project report before 30th October in Sem III. One hard copy of the SIP report is to be returned to the student by the Institute after the External Viva-Voce. In the interest

of environmental considerations, students are encouraged to print their project reports on both faces of the paper. Spiral bound copies may be accepted.

There shall be an external viva-voce for the SIP for 50 marks. The external viva-voce shall be conducted after the theory exam of Semester III.

The Internal & the External viva-voce shall evaluate the SIP based on:
1. Adequacy of work undertaken by the student
2. Application of concepts learned in Sem I and II
3. Understanding of the organization and business environment
4. Analytical capabilities
5. Technical Writing & Documentation Skills
6. Outcome of the project – sense of purpose
7. Utility of the project to the organization
8. Variety and relevance of learning experience

Copies of SIP report and records of evaluation shall be maintained by the Institute for a period of 3 academic years.

7.0 Comprehensive Concurrent Evaluation (CCE) / Concurrent Internal Evaluation (CIE):
1. The course teacher shall prepare the scheme of Comprehensive Concurrent Evaluation (Formative Assessment) before commencement of the term. The scheme of Comprehensive Concurrent Evaluation shall explicitly state the linkages of each CCE with the Course Outcomes and define the targeted attainment levels for each CO.
2. The Director / Head of the Department / designated academic authority shall approve the scheme of Comprehensive Concurrent Evaluation with or without modifications.
3. The course teacher shall display, on the notice board, the approved CCE scheme of the course and the same shall also be hosted on the website, not later than the first week of the term.
4. Each CCE item shall be of minimum 25 marks.
5. For a 3 Credit Course there shall be a MINIMUM of three CCE items. The final scores shall be converted to 50, using an average or best two out of three formula.
6. For 2 Credit Course there shall be a MINIMUM of two CCE items. The final scores shall be converted to 50.
7. For a 1 Credit Course there shall be a MINIMUM of one CCE item.
8. CCE shall be spread through the duration of course and shall be conceptualized, executed, assessed and documented by the course teacher along with student-wise and class-wise attainment levels of the COs and the attainment levels of the course.
9. The assessment outcome of each CCE shall be duly signed by the course teacher, programme coordinator / academic head and the Director / Head of the Department / designated academic authority of the Institute.
10. A copy of the duly signed CCE *outcome* shall be displayed on the notice boards, within a week of the assessment and guide the students for betterment.
11. Institute may conduct additional make up / remedial CCE items at its discretion.
12. At the end of the term aggregate CCE scores / grades shall be calculated and the CO attainment levels shall be calculated by the course teacher. The same shall be displayed on the notice board

7.1 Comprehensive Concurrent Evaluation Methods: Course teachers shall opt for a combination of one of more CCE methods listed below.

Group A (Individual Assessment) – Not more than 1 per course
1. Class Test
2. Open Book Test
3. Written Home Assignment
4. In-depth Viva-Voce

Group B (Individual Assessment) – Atleast 1 per course
5. Case Study
6. Caselet
7. Situation Analysis

Group C (Group Assessment) – Not more than 1 per course
8. Field Visit / Study tour and report of the same
9. Small Group Project & Internal Viva-Voce
10. Model Development
11. Role Play
12. Story Telling
13. Fish Bowls

Group D (Creative - Individual Assessment) – Not more than 1 per course
14. Learning Diary
15. Scrap Book / Story of the week / Story of the month
16. Creating a Quiz
17. Designing comic strips
18. Creating Brochures / Bumper Stickers / Fliers
19. Creating Crossword Puzzles
20. Creating and Presenting Posters
21. Writing an Advice Column
22. Library Magazines based assessment
23. Peer assessment
24. Autobiography/Biography
25. Writing a Memo
26. Work Portfolio

Group F (Use of Literature / Research Publications- Individual Assessment) – Not more than 1 per course
27. Book Review
28. Drafting a Policy Brief
29. Drafting an Executive Summary
30. Literature Review
31. Term Paper
32. Thematic Presentation
33. Publishing a Research Paper
34. Annotated Bibliography
35. Creating Taxanomy
36. Creating Concept maps

Group E (Use of Technology - Individual Assessment) – Not more than 1 per course
37. Online Exam
38. Simulation Exercises
39. Gamification Exercises
40. Presentation based on Google Alerts
41. Webinar based assessment
42. Creating Webpage / Website / Blog
43. Creating infographics / infomercial
44. Creating podcasts / Newscast
45. Discussion Boards

Rubrics: The course teacher shall design Rubrics for each CCE. Rubrics are scoring tools that define performance expectations for learners. The course teacher shall seek approval for the rubrics from the Director / Head of the Department / other designated competent academic authority of the institute. The course teacher shall share the approved Rubrics with the students at the start of the course. The rubric shall detail the following:
1. Linkages of the CCE to COs.
2. A description of the assessment - brief concept note
3. Criteria that will be assessed - the expected learning outcomes.
4. Descriptions of what is expected for each assessment component - the expectations from the student.

5. Substantive description of the expected performance levels indicating mastering of various components - the assessment criteria.
6. The team composition, if applicable.
7. The format and mode of submission, submission timelines
8. Any other relevant details.

7.3 Safeguards for Credibility of CCE: The following practices are encouraged to enhance transparency and authenticity of concurrent evaluation:
1. Involving faculty members from other management institutes.
2. Setting multiple question paper sets and choosing the final question paper in a random manner.
3. One of the internal faculty members (other than the course teacher) acting as jury during activity based evaluations.
4. Involvement of Industry personnel in evaluating projects / field based assignments.
5. Involvement of alumni in evaluating presentations, role plays, etc.
6. 100% moderation of answer sheets, in exceptional cases.

7.4 Retention of CCE Documents: Records of CCE shall be retained for 3 years from the completion of the Academic Year. i.e. **Current Academic Year (CAY) + 3 years.** Likewise records of assessments to decide the learning needs of students for opting for **Foundation Courses / capabilities for Enrichment Courses/ ASCC/ start-up option** etc. shall be retained for 3 years from the completion of the Academic Year.

8.0 End Semester Evaluation (ESE):
1. The End Semester Evaluation (Summative Evaluation) for the Generic Core (GC), Subject Core (SC) and the Generic Elective (GE - UL) course shall be conducted by the Savitribai Phule Pune University.
2. The ESE shall have 5 questions each of 10 marks.
3. All questions shall be compulsory with internal choice within the questions.
4. The broad structure of the ESE question paper shall be as follows:

Question Number	COGNITIVE ABILITIES EVALUATED	Nature
Q.1	REMEMBERING	Answer any 5 out of 8 (2 marks each)
Q.2	UNDERSTANDING	Answer any 2 out of 3 (5 marks each)
Q.3	APPLYING	Answer 3 (a) or 3 (b) (10 marks)
Q.4	ANALYSING	Answer 4 (a) or 4 (b) (10 marks)
Q.5	EVALUATING	Answer 5 (a) or 5 (b) (10 marks)
	CREATING	

9.0 Programme Flexibility:

9.1 Average Credits per semester, Fast & Slow Learners:
1. It is expected that a student registers for 30 credits in Semester I, II, III each and balance 20 credits in Semester IV.
2. **Fast learners** (under accelerated plan), may be permitted to register for upto 6 additional credits per semester, subject to fulfilling the pre-requisites defined for a course, if any. However the degree shall be awarded not earlier than the end of the 2 academic years since the first admission to the MBA programme.
3. **Slow learners,** may be permitted to register for less than the normal credits defined for a semester but shall have to complete the programme within the stipulated maximum duration of 4 academic years since the first admission to the MBA programme.

9.2 Dropping an Elective Course:
1. Students who opt for an elective course and fail to earn the credits for the elective course (generic / subject / open) are permitted to opt for another elective course (generic / subject / open) in case they feel to do so.
2. In such a case they shall be said to have dropped the original course and opted for a new one.
3. Generic Core (GC), Subject Core (SC) CANNOT be dropped.

4. Generic Elective (GE - UL), Generic Elective (GE - IL) & Subject Elective (SE - IL) can be dropped and replaced with equivalent alternative courses
5. Not more than four courses can be dropped and replaced with equivalent alternative courses during the entire MBA programme.

9.3 Horizontal or Lateral Credit Transfer:
1. When a learner successfully completes the courses included in an academic program at a certain level, he/she is allowed to transfer his/her credits in some of these courses to another same-level academic program having these courses in common. This is referred to as 'Horizontal or Lateral Credit Transfer'.
2. Horizontal or Lateral Credit Transfer shall be permitted **between the MBA and the MCA programme of SPPU** for the equivalent number of credits provided the courses are related to the MBA programme's PEOs and POs and are opted by the students during the period of his enrolment for the MBA programme.
3. The list of such courses eligible for Horizontal or Lateral Credit Transfer **between the MBA and the MCA programme of SPPU** shall be announced by the BOS/Faculty.
4. The upper limit for Horizontal or Lateral Credit Transfer shall be 6 credits.
5. Such transfer shall be permitted for Generic Elective (GE - IL) & Subject Elective (SE - IL) only.

9.4 Block Credit Transfer:
1. Block credit transfer refers to a group of courses, such as a completed certificate or diploma program that are accepted for transfer of credit into a degree program.
2. Block credit transfer shall be permitted for all **national and international professional certifications** achieved by the learner provided the **courses learning outcomes (CLOs)** are related to the **MBA programme's PEOs and POs** and are opted by the students **during the period of his enrolment for the MBA programme**. The institute shall verify the linkages between the CLOs and the MBA PEOs and POs.
3. Such transfer shall be permitted for Generic Elective (GE - IL) & Subject Elective (SE - IL) courses ONLY.

9.5 Credit Transfer for MOOCs:
1. Learners are encouraged to opt for MOOCs (Massive Online Open Courses) through **SWAYAM, EdX, Coursera, Udemy** as a part of ASCC.
2. Priority shall be given to the SWAYAM platform. If a course is not available of SWAYAM, other online platforms may be used.
3. Not more than 20% of the total credits (22 Credits) shall be earned through the MOOCs.
4. Not more than 20% of the credits per semester (6 credits) per semester shall be earned through the MOOCs.
5. Since MOOC is a guided self study course 40 - 45 hours of work shall be equivalent to one credit. The faculty shall oversee the progress of the learner as well as evaluate the learner for 50 marks / 2 credits.
6. Students shall apply to the Director / Head of the Department / other designated competent academic authority of the institute in advance and seek permission for seeking credit transfer for the proposed MOOCs, he/she wishes to pursue.
7. Online courses of SWAYAM or equivalent platform shall be allowed if:
   a) There is non-availability of suitable teaching staff for running a course in the Institution or
   b) The facilities for offering the elective papers (courses), sought for by the students are not on offer in the Institution, but are available on the SWAYAM or equivalent platform.
8. Evaluation of MOOCS through SWAYAM:
8.1 In case of SWAYAM, the students shall be evaluated as a part of the MOOC itself by the host institution (i.e. institution who has launched the MOOC through SWAYAM).
8.2 The evaluation should be based on predefined norms and parameter and shall be based on a concurrent comprehensive evaluation throughout the length and breadth of course based on specified instruments like discussions, forms, quizzes, assignments, sessional examinations and final examination.
8.3 After conduct of the examination and completion of the evaluation, the host institution shall award marks/grade as per the evaluation scheme announced and communicate the marks/grade to the students as well the parent institution of the student, within 4 weeks from the date of completion of the final examination.
8.4 The parent institution shall, incorporate the marks/grade obtained by the student, as communicated by the Host Institution of the SWAYAM course in the marks sheet of the student that counts for final award of the degree/diploma by the University with the proviso that the programs in which Lab/Practical Component is

involved, the parent institution will evaluate the students for the practical/Lab component and accordingly incorporate these marks/grade in the overall marks/grade.

8.5 A certificate regarding successful completion of the MOOCs course shall be signed by the PI and issued through the Host Institution and sent to the Parent Institution.

9. Evaluation of MOOCS through EdX, Coursera, Udemy:

9.1 The concurrent comprehensive evaluation conducted by EdX, Coursera, Udemy may be adopted by the institute and the institute may accordingly incorporate these marks/grade in the overall marks/grade for the course.

9.2 Alternatively, the institute may carry out a concurrent comprehensive evaluation of such students who undertake MOOCs through the EdX, Coursera, Udemy platform.

9.6 Professional Certification Programmes:

1. Learners may opt for Professional Certification Programmes as a part of ASCC. These Professional Certification Programmes shall be offered by National, International organizations, Apex bodies, Chambers of Commerce, Professional certifying bodies, E-learning companies of repute.

2. Not more than 20% of the total credits (22 Credits) shall be earned through the Professional Certification Programmes.

3. Not more than 20% of the credits per semester (6 credits) per semester shall be earned through the Professional Certification Programmes.

4. Students shall apply to the Director / Head of the Department / other designated competent academic authority of the institute in advance and seek permission for seeking credit transfer for the proposed Professional Certification Programmes, he/she wishes to pursue.

5. For Professional Certification Programmes, 40 - 45 hours of work shall be equivalent to one credit. The faculty shall oversee the progress of the learner as well as evaluate the learner for 50 marks / 2 credits.

6. A valid certificate regarding successful completion of the Professional Certification Programmes shall be submitted by the learner to the institute for claiming the 2 credits.

7. Indicative list is provided below -
    i.   Business English Certificate (Cambridge) / IELTS / TOEFL Certification
    ii.   Foreign Language Certification Equivalent to A1/A2 or above
    iii. Google / MicroSoft / Oracle / Sun Certification
    iv.   NSE / BSE / NISM Certification
    v.   SAP Financial Accounting (FI) / Controlling (CO) / Sales and Distribution (SD) / Production Planning (PP) / Materials Management (MM) / Quality Management (QM) / Human Capital Management (HCM) / CRM Certification
    vi.   Six Sigma Certification
    vii. ISO Certification (as an auditor)
    viii. Tally ERP Certification
    ix.   NLP Certification

9.7 Start-up: Launching and Sustaining' program[6]: AICTE has launched the 'Start-up: Launching and Sustaining' program to promote entrepreneurship.

Learners opting for the 'Start-up: Launching and Sustaining' program shall earn the credits for the Generic Core (GC), Subject Core (SC) & Generic Elective (GE - UL); with the minimum desired CGPA.

However, these learners shall skip the Generic Elective (GE - IL) & Subject Elective (SE - IL) courses and instead opt for the Milestone based concurrent comprehensive evaluation for 'Start-up: Launching and Sustaining' Programme as per the AICTE Policy laid down in this regard.

Such students shall have to fulfill two out of the five measurable outcomes as below:
a) **Funding:** Student Start-up should acquire at least 1-5 Lakhs INR of start-up funding as capital/convertible equity or other similar equity instruments used in start-up investments.

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[6] As per AICTE Policy approved by the Executive Committee in its 100th meeting held on June 28, 2016

b) **Employment Created:** At least 5 additional jobs, (other than student founders) with a minimum of 15,000 CTC/employee paid for one full year, should be created by the student start-up.

c) **Revenues Generated:** At least 5 Lakhs INR of Cumulative revenues should be generated by the student start-up as per Audited Profit and Loss Statements.

d) **Surplus Generated:** At least 5 Lakhs INR of Cumulative surpluses should be generated by the student start-up as per Audited Profit and Loss Statements.

e) **Patent Application or Granted:** The student start-up should have applied for registration of One Indian or International Patent OR such patent should be granted to the start-up

Other modalities and guidelines as per the AICTE policy shall be adhered to.

Students opting for the 'Start-up: Launching and Sustaining' program have the flexibility to create 'graduation outcomes' within 4 years of registering under the 'Start-up: Launching and Sustaining' program.

It would be mentioned in the Academic Transcript that the student has graduated through the 'Start-up: Launching and Sustaining' Graduation Programme.

Students who join only the 'Start-up: Launching and Sustaining' stream and are either unable to meet the requisite graduation outcomes or unable to continue for any reason can opt to fall back into the academic stream through the regular registration of the University Semesters.

SPPU may suitably verify the details of fulfilment of the two out of the five measurable outcomes listed above.

9.8 Additional Specialization:
1. A student who has earned the MBA with a MAJOR Specialization may enroll for additional specialization after passing out the regular MBA programme.
2. Such students will be exempted from appearing for all the generic core and generic elective courses.
3. Such students shall have to appear for the subject core and subject elective courses of the additional specialization that they have opted for.
4. Students opting for MAJOR + MINOR specialization combination are NOT eligible to enroll for additional specialization.

10.0 Passing Standards:
1. A student shall be said to have earned the credits for a course if he/she earns minimum 40% marks.
2. Formative Evaluation and Summative Evaluation shall be separate heads of passing.

10.1 Grading System: The Indirect and Absolute Grading System shall be used, i.e. the assessment of individual Courses in the concerned examinations will be on the basis of marks. However the marks shall later be converted into Grades by a defined mechanism wherein the overall performance of the learners can be reflected after considering the Credit Points for any given course. The overall evaluation shall be designated in terms of Grade. The 10 point standard scale mandated by UGC shall be used.

The performance of a student will be evaluated in terms of two indices, viz.
(a) Semester Grade Point Average (SGPA) which is the Grade Point Average for a semester
(b) Cumulative Grade Point Average (CGPA) which is the Grade Point Average for all the completed semesters at any point in time

10.2 Scaling Down of CCE Scores: The marks obtained by the student for the CCE shall be scaled down, to the required extent, if percentage of the marks of CCE exceeds the percentage of marks scored in the ESE (End Semester University Examination) by 25% for the respective course.

10.3 Degree Requirements: The degree requirements for the MBA programme are completion of minimum 110 credits.

10.4 Maximum Attempts per Course:
1. A student shall earn the credits for a given course in maximum FOUR attempts.

2. Dropping a course and opting for another equivalent course can be done ONLY in the case of Generic Elective (GE - UL) , Generic Elective (GE - IL) and Subject Elective (SE - IL).
3. If a student drops a course and opts for another course in lieu of the dropped course the attempts utilized for the dropped course shall be included in the maximum 4 attempts available to earn the credits for a course.
4. The facility of dropping a course and opting for a new course in lieu of the dropped course shall be availed by the student only once per course during these four attempts available to him.
5. A student may drop at the most 4 courses (GE – UL / GE – IL / SE – IL).

10.5 Maximum Duration for completion of the Programme: The candidates shall complete the MBA Programme **within 4 years** from the date of admission.

10.6 Grade Improvement:
1. A Candidate who has secured any grade other than F (i.e. passed the MBA programme) and desires to avail the Grade Improvement option, may apply under Grade Improvement Scheme within five years from passing that Examination.
2. He/she can avail not more than three attempts, according to the syllabus in existence, for grade improvement.
3. He /she shall appear for University Evaluation of **at least 1/3rd** of the Generic Core / Subject Core Courses (except SIP) for the purpose of Grade Improvement.
4. Generic Elective (GE - UL), Generic Elective (GE - IL) & Subject Elective (SE - IL) cannot be selected for Grade Improvement.

11. Miscellaneous
11.1 Attendance: The student must meet the requirement of **75% attendance per semester per course** for grant of the term. The institute may condone the shortage in attendance in exceptional circumstances, up to a maximum of 10%. The institute shall have the right to withhold the student from appearing for examination of a specific course if the above requirement is not fulfilled.

11.2 Medium of Instruction: The medium of Instruction & Evaluation shall be English.

12. Detailed Course List for each category of courses is provided in Annexure I.

13. Detailed syllabus of each course is provided in Annexure II.

ANNEXURE I

GENERIC CORE (GC) COURSES – 3 Credits Each

50 Marks CCE, 50 Marks ESE

Course No.	Course Code	Course	Semester
101	GC – 01	Accounting for Business Decisions	I
102	GC – 02	Organizational Behaviour	I
103	GC – 03	Economic Analysis for Business Decisions	I
104	GC – 04	Business Research Methods	I
105	GC – 05	Basics of Marketing	I
106	GC – 06	Digital Business	I
201	GC – 07	Marketing Management	II
202	GC – 08	Financial Management	II
203	GC – 09	Human Resources Management	II
204	GC – 10	Operations & Supply Chain Management	II
301	GC – 11	Strategic Management	III
302	GC – 12	Decision Science	III
303	GC – 13	SIP*	III
401	GC – 14	Enterprise Performance Management	IV
402	GC – 15	Indian Ethos & Business Ethics	IV

* Six Credits

GENERIC ELECTIVES UNIVERSITY LEVEL (GE – UL) COURSES – 2 Credits Each			
00 Marks CCE , 50 Marks ESE			
Course #	**Course Code**	**Course**	**Semester**
Any 3 courses to be selected from the following list in Semester I			
107	GE - UL - 01	Management Fundamentals	I
108	GE - UL - 02	Indian Economy	I
109	GE - UL - 03	Entrepreneurship Development	I
110	GE - UL - 04	Essentials of Psychology for Managers	I
111	GE - UL - 05	Legal Aspects of Business	I
112	GE - UL - 06	Demand Analysis & Forecasting	I
Any 3 courses to be selected from the following list in Semester II			
207	GE - UL - 07	Contemporary Frameworks in Management	II
208	GE - UL - 08	Geopolitics & World Economic Systems	II
209	GE - UL - 09	Start Up and New Venture Management	II
210	GE - UL - 10	Qualitative Research Methods	II
211	GE - UL - 11	Business, Government & Society	II
212	GE - UL - 12	Business Process Re-engineering	II
Any 3 courses to be selected from the following list in Semester III			
306	GE - UL - 13	International Business Economics	III
307	GE - UL - 14	International Business Environment	III
308	GE - UL - 15	Project Management	III
309	GE - UL - 16	Quality Management	III
310	GE - UL - 17	Corporate Governance	III
311	GE - UL - 18	Management of Non-profit organizations	III
Any 2 courses to be selected from the following list in Semester IV			
405	GE - UL - 19	Global Strategic Management	IV
406	GE - UL - 20	Competing in Global Markets	IV
407	GE - UL - 21	Cyber Laws	IV
408	GE - UL - 22	CSR & Sustainability	IV

GENERIC ELECTIVES INSTITUTE LEVEL (GE – IL) COURSES – 2 Credits Each			
50 Marks CCE , 00 Marks ESE			
Course No.	Course Code	Course	Semester
Maximum 3 courses to be selected from the following list in Semester I			
113	GE - IL - 01	Verbal Communication Lab	I
114	GE - IL - 02	Enterprise Analysis & Desk Research	I
115	GE - IL - 03	Selling & Negotiation Skills Lab	I
116	GE - IL - 04	MS Excel	I
117	GE - IL - 05	Business Systems & Procedures	I
118	GE – IL- 06	Managing Innovation	I
119	GE – IL- 07	Foreign Language – I	I
Maximum 1 course to be selected from the following list in Semester II			
213	GE – IL - 07	Written Analysis and Communication Lab	II
214	GE – IL - 08	Industry Analysis & Desk Research	II
215	GE – IL - 09	Entrepreneurship Lab	II
216	GE – IL - 10	SPSS	II
216	GE – IL - 11	Foreign Language – II	II

SUBJECT CORE (SC) COURSES: Specialization – Marketing Management (MKT)			
3 Credits Each, 50 Marks CCE, 50 Marks ESE			
Course No.	Course Code	Course	Semester
205 MKT	SC – MKT- 01	Marketing Research	II
206 MKT	SC – MKT- 02	Consumer Behaviour	II
304 MKT	SC – MKT- 03	Services Marketing	III
305 MKT	SC – MKT- 04	Sales & Distribution Management	III
403 MKT	SC – MKT- 05	Marketing 4.0	IV
404 MKT	SC – MKT- 06	Marketing Strategy	IV

SUBJECT ELECTIVE (SE - IL) COURSES: Specialization – Marketing Management (MKT)			
2 Credits Each, 50 Marks CCE, 00 Marks ESE			
Course No.	Course Code	Course	Semester
Maximum 2 courses to be selected from the following list in Semester II			
217 MKT	SE – IL - MKT- 01	Integrated Marketing Communications	II
218 MKT	SE – IL - MKT- 02	Product & Brand Management	II
219 MKT	SE – IL - MKT- 03	Personal Selling Lab	II
220 MKT	SE – IL - MKT- 04	Digital Marketing - I	II
221 MKT	SE – IL - MKT- 05	Marketing of Financial Services - I	II
222 MKT	SE – IL - MKT- 06	Marketing of Luxury Products	II
Maximum 3 courses to be selected from the following list in Semester III			
312 MKT	SE – IL - MKT- 07	Business to Business Marketing	III
313 MKT	SE – IL - MKT- 08	International Marketing	III
314 MKT	SE – IL - MKT- 09	Digital Marketing - II	III
315 MKT	SE – IL - MKT- 10	Marketing of Financial Services - II	III
316 MKT	SE – IL - MKT- 11	Marketing Analytics	III
317 MKT	SE – IL - MKT- 12	Marketing of High Technology Products	III
Maximum 2 courses to be selected from the following list in Semester IV			
409 MKT	SE – IL - MKT- 13	Customer Relationship Management	IV
410 MKT	SE – IL - MKT- 14	Rural & Agriculture Marketing	IV
411 MKT	SE – IL - MKT- 15	Tourism & Hospitality Marketing	IV
412 MKT	SE – IL - MKT- 16	Retail Marketing	IV
413 MKT	SE – IL - MKT- 17	Retailing Analytics	IV
414 MKT	SE – IL - MKT- 18	Marketing to Emerging Markets & Bottom of the Pyramid	

SUBJECT CORE (SC) COURSES: Specialization – Financial Management (FIN)			
3 Credits Each, 50 Marks CCE, 50 Marks ESE			
Course No.	Course Code	Course	Semester
205 FIN	SC – FIN - 01	Financial Markets and Banking Operations	II
206 FIN	SC – FIN - 02	Personal Financial Planning	II
304 FIN	SC – FIN - 03	Advanced Financial Management	III
305 FIN	SC – FIN - 04	International Finance	III
403 FIN	SC – FIN - 05	Financial Laws	IV
404 FIN	SC – FIN - 06	Current Trends & Cases in Finance	IV

SUBJECT ELECTIVE (SE - IL) COURSES: Specialization – Financial Management (FIN)			
2 Credits Each, 50 Marks CCE, 00 Marks ESE			
Course No.	Course Code	Course	Semester
Maximum 2 courses to be selected from the following list in Semester II			
217 FIN	SE – IL - FIN - 01	Securities Analysis & Portfolio Management	II
218 FIN	SE – IL - FIN - 02	Futures and Options	II
219 FIN	SE – IL - FIN - 03	Direct Taxation	II
220 FIN	SE – IL - FIN - 04	Financial Reporting	II
221 FIN	SE – IL - FIN - 05	Retail Credit Management- Lending & Recovery	II
222 FIN	SE – IL - FIN - 06	Banking Laws & Regulations	II
223 FIN	SE – IL - FIN - 07	Fundamentals of Life Insurance – Products and Underwriting	II
224 FIN	SE – IL - FIN - 08	General Insurance - Health and Vehicle	II
Maximum 3 courses to be selected from the following list in Semester III			
312 FIN	SE – IL - FIN - 09	Behavioural Finance	III
313 FIN	SE – IL - FIN - 10	Technical Analysis of Financial Markets	III
314 FIN	SE – IL - FIN - 11	Commodities Markets	III
315 FIN	SE – IL - FIN – 12	Indirect Taxation	III
316 FIN	SE – IL - FIN – 13	Corporate Financial Restructuring	III
317 FIN	SE – IL - FIN - 14	Financial Modeling	III
318 FIN	SE – IL - FIN – 15	Digital Banking	III
319 FIN	SE – IL - FIN – 16	Treasury Management	III
320 FIN	SE – IL - FIN – 17	Project Finance and Trade Finance	III
321 FIN	SE – IL - FIN – 18	Insurance Laws & Regulations	III
322 FIN	SE – IL - FIN – 19	Marine Insurance	III
323 FIN	SE – IL - FIN – 20	Fire Insurance	III
Maximum 2 courses to be selected from the following list in Semester IV			
409 FIN	SE – IL - FIN – 21	Fixed Income Securities	IV
410 FIN	SE – IL - FIN – 22	Business Valuation	IV
411 FIN	SE – IL - FIN – 23	Risk Management	IV
412 FIN	SE – IL - FIN – 24	Strategic Cost Management	IV
413 FIN	SE – IL - FIN – 25	Rural and Micro Finance	IV
414 FIN	SE – IL - FIN – 26	Reinsurance	IV
415 FIN	SE – IL - FIN – 27	Agricultural Insurance	IV

SUBJECT CORE (SC) COURSES: Specialization – Human Resource Management (HRM)			
3 Credits Each, 50 Marks CCE, 50 Marks ESE			
Course No.	Course Code	Course	Semester
205 HR	SC – HRM – 01	Competency Based Human Resource Management	II
206 HR	SC – HRM – 02	Employee Relations & Labour Legislation	II
304 HR	SC – HRM - 03	Strategic Human Resource Management	III
305 HR	SC – HRM - 04	HR Operations	III
403 HR	SC – HRM - 05	Organizational Diagnosis & Development	IV
404 HR	SC – HRM - 06	Current Trends & Cases in Human Resource Management	IV

SUBJECT ELECTIVE (SE - IL) COURSES: Specialization – Human Resource Management (HRM)			
2 Credits Each, 50 Marks CCE, 00 Marks ESE			
Course No.	Course Code	Course	Semester
Maximum 2 courses to be selected from the following list in Semester II			
217 HRM	SE – IL - HRM - 01	Labour Welfare	II
218 HRM	SE – IL - HRM - 02	Lab in Recruitment and Selection	II
219 HRM	SE – IL - HRM - 03	Learning and Development	II
220 HRM	SE – IL - HRM - 04	Public Relations & Corporate Communications	II
221 HRM	SE – IL - HRM - 05	HR Analytics	II
222 HRM	SE – IL - HRM - 06	Conflict and Negotiation Management	II
Maximum 3 courses to be selected from the following list in Semester III			
312 HRM	SE – IL - HRM - 07	Talent Management	III
313 HRM	SE – IL - HRM - 08	Psychometric Testing and Assessment	III
314 HRM	SE – IL - HRM - 09	HR Perspectives in Mergers and Acquisition	III
315 HRM	SE – IL - HRM - 10	International HR	III
316 HRM	SE – IL - HRM - 11	Mentoring and Coaching	III
317 HRM	SE – IL - HRM - 12	Compensation and Reward Management	III
Maximum 2 courses to be selected from the following list in Semester IV			
409 HRM	SE – IL - HRM - 13	Labour Legislations	IV
410 HRM	SE – IL - HRM - 14	Designing HR Policies	IV
411 HRM	SE – IL - HRM – 15	Labour Costing	IV
412 HRM	SE – IL - HRM - 16	Best Practices in HRM	IV

SUBJECT CORE (SC) COURSES: Specialization – Operations & Supply Chain Management (OSCM)			
3 Credits Each, 50 Marks CCE, 50 Marks ESE			
Course No.	Course Code	Course	Semester
205 OSCM	SC – OSCM - 01	Services Operations Management - I	II
206 OSCM	SC – OSCM - 02	Supply Chain Management	II
304 OSCM	SC – OSCM - 03	Services Operations Management - II	III
305 OSCM	SC – OSCM - 04	Logistics Management	III
403 OSCM	SC – OSCM - 05	Operations Strategy	IV
404 OSCM	SC – OSCM - 06	Industry 4.0	IV

SUBJECT ELECTIVE (SE - IL) COURSES : Specialization – Operations & Supply Chain Management (OSCM)			
2 Credits Each, 50 Marks CCE, 00 Marks ESE			
Course No.	Course Code	Course	Semester
Maximum 2 courses to be selected from the following list in Semester II			
217 OSCM	SE – IL - OSCM - 01	Planning & Control of Operations	II
218 OSCM	SE – IL - OSCM - 02	Productivity Management	II
219 OSCM	SE – IL - OSCM - 03	Inventory Management	II
220 OSCM	SE – IL - OSCM - 04	Theory of Constraints	II
221 OSCM	SE – IL - OSCM - 05	Quality Management Standards	II
222 OSCM	SE – IL - OSCM - 06	Service Value Chain Management	II
223 OSCM	SE – IL - OSCM - 07	Industry 4.0	II
Maximum 3 courses to be selected from the following list in Semester III			
312 OSCM	SE – IL - OSCM - 08	Manufacturing Resource Planning	III
313 OSCM	SE – IL - OSCM - 09	Total Quality Management	III
314 OSCM	SE – IL - OSCM - 10	Business Excellence	III
315 OSCM	SE – IL - OSCM - 11	Toyota Production System	III
316 OSCM	SE – IL - OSCM - 12	Operations Strategy	III
317 OSCM	SE – IL - OSCM - 13	Services Strategy	III
318 OSCM	SE – IL - OSCM - 14	Operations Analytics	III
Maximum 2 courses to be selected from the following list in Semester IV			
409 OSCM	SE – IL - OSCM – 15	Enterprise Resource Planning	IV
410 OSCM	SE – IL - OSCM – 16	World Class Manufacturing	IV
411 OSCM	SE – IL - OSCM – 17	Six Sigma for Operations	IV
412 OSCM	SE – IL – OSCM - 18	Financial Perspectives in Operations Management	IV
413 OSCM	SE – IL - OSCM – 19	Services Management in Key Sectors	IV
414 OSCM	SE – IL - OSCM – 20	Purchasing & Supplier Relationship Management	IV
415 OSCM	SE – IL - OSCM - 21	Strategic Supply Chain Management	IV

SUBJECT CORE (SC) COURSES: Specialization – Business Analytics (BA)			
3 Credits Each, 50 Marks CCE, 50 Marks ESE			
Course No.	Course Code	Course	Semester
205 BA	SC – BA - 01	Basic Business Analytics using R	II
206 BA	SC – BA - 02	Data Mining	II
304 BA	SC – BA - 03	Advanced Statistical Methods using R	III
305 BA	SC – BA - 04	Machine Learning & Cognitive intelligence using Python	III
403 BA	SC – BA - 05	Networks, Innovation and Value Creation	IV
404 BA	SC – BA - 06	Artificial Intelligence in Business Applications	IV

SUBJECT ELECTIVE (SE - IL) COURSES: Specialization – Business Analytics (BA)			
2 Credits Each, 50 Marks CCE, 00 Marks ESE			
Course No.	Course Code	Course	Semester
Maximum 2 courses to be selected from the following list in Semester II			
217 BA	SE – IL - BA - 01	Marketing Analytics	II
218 BA	SE – IL - BA - 02	Retailing Analytics	II
219 BA	SE – IL - BA - 03	Workforce Analytics	II
220 BA	SE – IL - BA - 04	Tableau	II
221 BA	SE – IL - BA - 05	Data Warehousing Project Life Cycle Management	Ì
Maximum 3 courses to be selected from the following list in Semester III			
312 BA	SE – IL - BA – 06	Social Media, Web & Text Analytics	III
313 BA	SE – IL - BA – 07	Operations Analytics	III
314 BA	SE – IL - BA – 08	Supply Chain Analytics	III
315 BA	SE – IL - BA – 09	Financial Analytics	III
316 BA	SE – IL - BA – 10	Cognos Analytics	III
317 BA	SE – IL - BA – 11	Predictive Modelling using SPSS Modeler	III
318 BA	SE – IL - BA - 12	Foundations in Spark & Scala	III
Maximum 2 courses to be selected from the following list in Semester IV			
409 BA	SE – IL - BA - 13	E tailing Analytics	IV
410 BA	SE – IL - BA - 14	Insurance & Healthcare Analytics	IV
411 BA	SE – IL - BA – 15	Banking Analytics	IV
412 BA	SE – IL - BA – 16	Telecom Analytics	IV
413 BA	SE – IL - BA – 17	ETL, Data Profiling and Data Modeling	IV
414 BA	SE – IL - BA – 18	Cognitive Analytics Using Watson	IV
415 BA	SE – IL - BA – 19	Data Science using Spark and Scala	IV
416 BA	SE – IL - BA – 20	Unstructured Data Analytics with Hadoop / Big Data / NoSQL	IV

[D] FOUNDATION (FOU) COURSES (ELECTIVES) – 1 Credit Each			
25 Marks CCE, 00 Marks ESE			
Between ZERO to SIX courses to be selected from the following list in Semester I and / or Between ZERO to FOUR courses to be selected from the following list in Semester II			
Course No.	Course Code	Course	Semester
1	FOU - 001	Elementary English	I
2	FOU - 002	Elementary Mathematics & Statistics	I
3	FOU - 003	Elementary Economics	I
4	FOU - 004	Elementary Accounting	I
5	FOU - 005	Elementary Information Technology	I
6	FOU - 006	Elementary Business Etiquette	I
7	FOU - 007	Elementary MS WORD	II
8	FOU - 008	Elementary MS POWERPOINT	II
9	FOU - 009	Elementary Data Interpretation & Logical Reasoning	II
10	FOU - 010	Elementary Verbal and Reading Comprehension	II
11	FOU - 011	Elementary Quantitative Ability	II

[E] ENRICHMENT (ENR) COURSES (ELECTIVES) – 1 Credit Each				
25 Marks CCE, 00 Marks ESE				
Between ZERO to SIX courses to be selected from the following list in Semester I and / or Between ZERO to FOUR courses to be selected from the following list in Semester II and / or Between ZERO to TWO courses to be selected from the following list in Semester III and / or Between ZERO to FOUR courses to be selected from the following list in Semester IV				
Course No	**Course Code**	**Proficiency Track**	**Course**	**Semester**
1	ENR - 1	Entrepreneurship	Entrepreneurship in The Online Economy – Seminar	Any
2	ENR - 2	Entrepreneurship	Management Skills for MSMEs – Seminar	Any
3	ENR - 3	Entrepreneurship	Business Plan for Small Business - Case Study Development and Presentation	Any
4	ENR - 4	Entrepreneurship	The Elevator Pitch - Case Study Development and Presentation	Any
5	ENR - 5	Entrepreneurship	Private Equity – Seminar	Any
6	ENR - 6	Entrepreneurship	Launching & Sustaining Start-Ups- Case Study Development and Presentation	Any
7	ENR - 7	Entrepreneurship	Start-Up Fest	Any
8	ENR - 8	Entrepreneurship	Marketing on a shoe string budget for Small Business - Case Study Development and Presentation	Any
9	ENR - 9	Entrepreneurship	Growing business through Franchising - Case Study Development and Presentation	Any
10	ENR - 10	Entrepreneurship	Finance and Accounting aspects of Small Businesses - Case Study Development and Presentation	Any
11	ENR - 11	Entrepreneurship	Planning, Structuring, and Financing Small Businesses - Case Study Development and Presentation	Any
12	ENR - 12	Entrepreneurship	Digital Marketing for MSMEs- Case Study Development and Presentation	Any
13	ENR - 13	Entrepreneurship	Legal Compliances for MSMEs – Seminar	Any
14	ENR - 14	Entrepreneurship	Contemporary Indian Models in Entrepreneurship - Case Study Development and Presentation	Any
15	ENR - 15	Entrepreneurship	Women Entrepreneurs in Contemporary India - Case Study Development and Presentation	Any
16	ENR - 16	Desk Research	Review of National Databases & Reports	Any
17	ENR - 17	Desk Research	Review of Industry Databases	Any
18	ENR - 18	Desk Research	Review of Industry Best Practice Surveys	Any
19	ENR - 19	Desk Research	Review of Global Best Practice Surveys	Any
20	ENR - 20	Desk Research	Review of TED Talks	Any
21	ENR - 21	Desk Research	Book Reviews	Any
22	ENR - 22	Desk Research	Emerging Trends in Business - Seminar	Any
23	ENR - 23	Desk Research	Best Business Practices - Case Study	Any

			Development and Presentation	
24	ENR - 24	Desk Research	Disruptive Business Practices - Case Study Development and Presentation	Any
25	ENR - 25	Desk Research	Business Houses & Business Families in India - Case Study Development and Presentation	Any
26	ENR - 26	Desk Research	Industry Specific Governance & Compliances - Seminar	Any
27	ENR - 27	Desk Research	Business Excellence Awards & Awardees - Case Study Development and Presentation	Any
28	ENR - 28	Managerial Effectiveness	Design Thinking Workshop	Any
29	ENR - 29	Managerial Effectiveness	Problem Solving Tools & Techniques Workshop	Any
30	ENR - 30	Managerial Effectiveness	Theory of Constraints Workshop	Any
31	ENR - 31	Managerial Effectiveness	Six Sigma Applications in Business Workshop	Any
32	ENR - 32	Managerial Effectiveness	Budgeting Workshop	Any
33	ENR - 33	Managerial Effectiveness	i-Lab Design Thinking Projects Workshop	Any
34	ENR - 34	Managerial Effectiveness	Public Relations Workshop	Any
35	ENR - 35	Managerial Effectiveness	Cross Cultural Relationship Marketing Workshop	Any
36	ENR - 36	Managerial Effectiveness	Digital Productivity Tools Workshop	Any
37	ENR - 37	Managerial Effectiveness	Effective Meetings Management Workshop	Any
38	ENR - 38	Managerial Effectiveness	Balanced Score Card - Case Study Development and Presentation	Any
39	ENR - 39	Perspectives on Management	Management Thinkers & Contributions - Seminar	Any
40	ENR – 40	Perspectives on Management	Enduring Management Principles & Thoughts - Seminar	Any
41	ENR - 41	Perspectives on Management	Mysteries in Management - Seminar	Any
42	ENR - 42	Perspectives on Management	Management - The Future Frontiers - Seminar	Any
43	ENR - 43	Perspectives on Management	Leaderships Lessons from Non-business leaders – Seminar	Any
44	ENR - 44	Perspectives on Management	Leadership Lessons from Antiquity - Seminar	Any
45	ENR - 45	Perspectives on Management	Leading in the 21st Century - Case Study Development and Presentation	Any
46	ENR - 46	Perspectives on Management	Strategy in a VUCA world - Case Study Development and Presentation	Any
47	ENR - 47	Economy & Polity	The Economics & Politics of NGOs - Case Study Development and Presentation	Any
48	ENR - 48	Economy & Polity	Politics & Governance - Seminar	Any
49	ENR - 49	Economy & Polity	Climate Change Politics & Policy - Seminar	Any
50	ENR - 50	Economy & Polity	Energy Economics - Seminar	Any
51	ENR - 51	Economy & Polity	Civil Society, New Social Movements & Public Policy - Case Study Development and Presentation	Any
52	ENR - 52	Economy & Polity	Corporations, NGOs & Civil societies - Seminar	Any
53	ENR - 53	Economy & Polity	Environment & Development - Seminar	Any
54	ENR - 54	Economy & Polity	Globalization & Localization - Seminar	Any
55	ENR - 55	Economy & Polity	Strategic Transformation and Change in the	Any

			Indian Economy - Case Study Development and Presentation	
56	ENR - 56	Communication	Verbal Communication & Presentation Skills Workshop	Any
57	ENR - 57	Communication	Visual Communication Workshop	Any
58	ENR - 58	Communication	Communication Through Theatre Techniques Workshop	Any
59	ENR - 59	Communication	Technical Writing Workshop	Any
60	ENR - 60	Communication	Walk the Talk - Leader / Entrepreneur Interviews Lab	Any
61	ENR - 61	Communication	Creative Writing Workshop	Any
62	ENR - 62	Communication	Blog Writing Workshop	Any
63	ENR - 63	Behavioural & Interpersonal Skills	Transactional Analysis Lab	Any
64	ENR - 64	Behavioural & Interpersonal Skills	Emotional Intelligence & Managerial Effectiveness Lab	Any
65	ENR - 65	Behavioural & Interpersonal Skills	Influence & Persuasion Lab	Any
66	ENR - 66	Behavioural & Interpersonal Skills	Negotiation Skills Lab	Any
67	ENR - 67	Behavioural & Interpersonal Skills	Team Selling Lab	Any
68	ENR - 68	Technology	Technology Clinic	Any
69	ENR - 69	Technology	Digital Innovation and Transformation – Seminar	Any
70	ENR - 70	Technology	Social Impact of Technology - Case Study Development and Presentation	Any
71	ENR - 71	Technology	Technology Commercialization – Seminar	Any
72	ENR - 72	Technology	Intellectual Property Rights – Seminar	Any
73	ENR - 73	Technology	Strategy and Technology – Seminar	Any
74	ENR - 74	Technology	Internet of Things – Seminar	Any
75	ENR - 75	Technology	Cyber Security – Seminar	Any
76	ENR - 76	Technology	Gamification Workshop	Any
77	ENR - 77	Understanding India	Skill-India - Case Study Development and Presentation	Any
78	ENR - 78	Understanding India	Smart-Cities - Case Study Development and Presentation	Any
79	ENR - 79	Understanding India	Swacch Bharat - Case Study Development and Presentation	Any
80	ENR - 80	Understanding India	Make-in-India - Case Study Development and Presentation	Any
81	ENR - 81	Understanding India	Constitution of India – Seminar	Any
82	ENR - 82	Understanding India	Indian Social Structure - Case Study Development and Presentation	Any
83	ENR - 83	Understanding India	Methodological Foundations of Indian Scientific Tradition – Seminar	Any
84	ENR - 84	Understanding India	Some Scientific Concepts from Sanskrit Texts – Seminar	Any
85	ENR - 85	Understanding India	Film Appreciation - Case Study Development and Presentation	Any
86	ENR - 86	Understanding India	Culture, Diversity & Society – Seminar	Any
87	ENR - 87	Understanding India	Contemporary Debates in Business & Society – Seminar	Any
88	ENR - 88	Understanding India	Consumerism and Sociology of the Family –	Any

			Seminar	
89	ENR - 89	Understanding India	Culture and Media – Seminar	Any
90	ENR - 90	Understanding India	Business History – Seminar	Any
91	ENR - 91	Unconventional Sectors	Educational Institutions Management - Case Study Development and Presentation	Any
92	ENR - 92	Unconventional Sectors	The Business of Bollywood - Case Study Development and Presentation	Any
93	ENR - 93	Unconventional Sectors	Contemporary Sports: A Business Perspective - Case Study Development and Presentation	Any
94	ENR - 94	Unconventional Sectors	Managing Public Festivals , Exhibitions & Fairs - Case Study Development and Presentation	Any
95	ENR - 95	Unconventional Sectors	Agro Tourism- Case Study Development and Presentation	Any
96	ENR - 96	Ethics & Social Responsibility	Rural Immersion Project	Any
97	ENR - 97	Ethics & Social Responsibility	Managing for bottom of the Pyramid Business – Seminar	Any
98	ENR - 98	Ethics & Social Responsibility	Digital Technologies For Social Inclusion - Case Study Development and Presentation	Any
99	ENR - 99	Ethics & Social Responsibility	Social Impact Analysis for Local Community Projects - Case Study Development and Presentation	Any
100	ENR - 100	Ethics & Social Responsibility	Social & Ethical Aspects of Healthcare – Seminar	Any
101	ENR - 101	Ethics & Social Responsibility	Spirituality for Managers – Seminar	Any
102	ENR – 102	Personal Interest Course	Yoga	Any
103	ENR – 103	Personal Interest Course	Vedic Maths	Any
104	ENR – 104	Personal Interest Course	Graphology	Any
105	ENR – 105	Personal Interest Course	Caligraphy	Any
106	ENR – 106	Personal Interest Course	Music	Any
107	ENR – 107	Personal Interest Course	Dance	Any
108	ENR – 108	Personal Interest Course	Adventure Sports	Any
109	ENR – 109	Personal Interest Course	Hackathon	Any
110	ENR - 110	Personal Interest Course	Local Community Development Project	Any
111	ENR - 111	Personal Interest Course	Videography	Any
112	ENR - 112	Personal Interest Course	Fine Arts	Any

[F] ALTERNATIVE STUDY CREDIT COURSES (ASCC) (ELECTIVES) – 2 Credit Each			
50 Marks CCE, 00 Marks ESE			
Between ZERO to THREE courses to be selected from the following list in Semester I# and / or Between ZERO to THREE courses to be selected from the following list in Semester II# and / or Between ZERO to THREE courses to be selected from the following list in Semester III# and / or Between ZERO to TWO courses to be selected from the following list in Semester IV#			
Course No.	**Course Code**	**Course**	**Semester**
1	ASCC - 001	MOOCs	Any
2	ASCC - 002	Professional Certification Programs	Any
3	ASCC - 003	CSR Project	Any
4	ASCC - 004	Innovation Projects	Any
5	ASCC - 005	Industry or Academic Internships	Any
6	ASCC - 006	Field/Live Projects	Any

 # Same type of course can be selected multiple number of times.

MINOR ONLY SPECIALIZATIONS			
Specialization – Rural & Agri -Business Management (RABM)			
Course No.	Course Code	Course	Semester
2 CORE courses as per the following list – either in Semester III or Semester IV			
1	SC – RABM – 01	Agriculture and Indian Economy	III
2	SC – RABM – 02	Rural Marketing	IV
Any 2 ELECTIVE courses to be selected from the following list – either in Semester III or Semester IV			
1	SE – RABM – 03	Rural Credit and Finance	III
2	SE – RABM – 04	Rural Marketing II	III
3	SE– RABM – 05	ICT for Agriculture Management	IV
4	SE – RABM – 06	Agri – Entrepreneurship	IV
Specialization – Pharma & Health Care Management (PHCM)			
Course No.	Course Code	Course	Semester
2 CORE courses as per the following list – either in Semester III or Semester IV			
1	SC – PHCM- 01	Fundamentals of Pharma and Healthcare Management	III
2	SC – PHCM- 02	Pharma and healthcare regulatory environment in India	IV
Any 2 ELECTIVE courses to be selected from the following list – either in Semester III or Semester IV			
1	SE – PHCM- 03	Strategic Planning & Healthcare Management	III
2	SE – PHCM- 04	Information Technology in Pharma and Healthcare	III
3	SE – PHCM-05	Pharmaceutical Import and Export	IV
4	SE – PHCM- 06	Entrepreneurship in Pharma and Healthcare	IV
Specialization – Tourism & Hospitality Management (THM)			
Course No.	Course Code	Course	Semester
2 CORE courses as per the following list – either in Semester III or Semester IV			
1	SC – THM – 01	Fundamental of Hospitality Management	III
2	SC – THM - 02	Tourism & Travel Management	IV
Any 2 ELECTIVE courses to be selected from the following list – either in Semester III or Semester IV			
1	SE – THM - 03	Event Management	III
2	SE – THM - 04	Tourism Planning & Development	III
3	SE – THM - 05	Strategic Hospitality Management	IV
4	SE – THM - 06	Revenue Management	IV

ANNEXURE II – COURSE WISE DETAILED SYLLABUS	
Generic Core Courses (Compulsory) – Semester I & II	
Semester I	101 – Managerial Accounting
3 Credits LTP: 2:1:1	Compulsory Generic Core Course

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO101.1	REMEMBERING	DESCRIBE the basic concepts related to Accounting, Financial Statements, Cost Accounting, Marginal Costing, Budgetary Control and Standard Costing
CO101.2	UNDERSTANDING	EXPLAIN in detail, all the theoretical concepts taught through the syllabus.
CO101.3	APPLYING	PERFORM all the necessary calculations through the relevant numerical problems.
CO101.4	ANALYSING	ANALYSE the situation and decide the key financial as well as non-financial elements involved in the situation.
CO101.5	EVALUATING	EVALUATE the financial impact of the decision.

1. Basic Concepts: Forms of Business Organization. Meaning and Importance of Accounting in Business Organization, Basic concepts and terms used in accounting, Capital & Revenue Expenditure, Capital & Revenue Receipts, Users of Accounting Information. Accounting Concepts and Conventions, Fundamental Accounting Equation, Journal, Ledger and Trial Balance. **(4+2)**

2. Financial Statements: Meaning of Financial Statements, Importance and Objectives of Financial Statements. Preparation of Final Accounts of sole proprietary firm. **(7 + 2)**

3. Cost Accounting: Basic Concepts of Cost Accounting, Objectives,Importance and Advantages of Cost Accounting, Cost Centre, Cost Unit, Elements of Cost, Classification and Analysis of Costs, Relevant and Irrelevant Costs, Differential Costs, Sunk Cost, Opportunity Cost, Preparation of Cost Sheet. **(8 + 2)**

4. Short Term Business Decision Techniques – Marginal Costing: Meaning, Principles, Advantages and Limitations, Contribution, P/V Ratio, Break-Even Point (BEP), Cost Volume Profit (CVP) Analysis, Short Term Business Decisions–Product Mix Decisions, Make or Buy (Outsourcing) Decisions, Accept or Reject Special Order Decisions, Shutting Down Decisions. **(8 + 2)**

5. Exercising Control – Budgetary Control & Standard Costing: *Budgetary Control*: Meaning of Budget and Budgeting, Importance, Advantages and Disadvantages, Functional Budgets–Raw Material Purchase & Procurement Budget, Cash Budget and Flexible Budget. *Standard Costing:* Meaning, Importance, Advantages and Disadvantages, Cost Variance Analysis. Material Variances– Material Cost Variance, Material Rate Variance, Material Usage Variance, Material Mix Variance and Material Yield Variance. Labour Variances –Labour Cost Variance, Labour Rate Variance, Labour Efficiency Variance, Labour Mix Variance, Labour Idle Time Variance and Labour Yield Variance. **(8 + 2)**

Note: Numerical Problems will be asked on the following –
1. Final Accounts of Sole Proprietary Firm
2. Preparation of Cost Sheet
3. Marginal Costing and Short-Term Business Decisions
4. Raw Material Purchase & Procurement Budget, Cash Budget, Flexible Budget
5. Material Variances and Labour Variances

Suggested Text Books:
1. Management Accounting, Khan and Jain, Tata McGraw Hill
2. Fundamentals of Management Accounting, H. V.Jhamb
3. Managerial Accounting, Dr. Mahesh Abale and Dr. Shriprakash Soni
4. Management Accounting, Dr. Mahesh Kulkarni

Suggested Reference Books:
1. Financial Cost and Management Accounting, P.Periasamy
2. Financial Accounting for Management, Shankarnarayanan Ramanath, CENGAGE Learning
3. Accounting For Management, S. N. Maheshwari
4. Management Accounting, MadhuVij

5. Fundamentals of Management Accounting, H. V.Jhamb
6. Cost and Management Accounting, M. N. Arora
7. Financial Accounting for Managers, Sanjay Dhmija, Pearson Publications
8. Management Accounting, Mr. Anthony Atkinson, Robert Kaplan, Pearson
9. Accounting For Management, Jawarhar Lal
10. Accounting, Shukla Grewal
11. Management Accounting, Ravi Kishore
12. Accounting for Managers, Dearden and Bhattacharya

Semester I			102 - Organizational Behaviour
3 Credits	LTP: 2:1:1		Compulsory Generic Core Course

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO102.1	REMEMBERING	DESCRIBE the key concepts of organizational behavior.
CO102.2	UNDERSTANDING	UNDERSTAND theories about how managers should behave to motivate and control employees.
CO102.3	UNDERSTANDING	ARTICULATE aspects of organizational culture and interpret cultural diversity.
CO102.4	APPLYING	BUILD people and leadership skills essential for managerial success.
CO102.5	ANALYSING	ANALYSE causes of conflict and OUTLINE conflict management strategies that managers can use to resolve organizational conflict effectively.
CO102.6	EVALUATING	EXPLAIN group and teams dynamics leading to organizational effectiveness.

1.   Fundamentals of OB: Evolution of management thought , five functions of management, Definition, scope and importance of OB, Relationship between OB and the individual, Evolution of OB, Models of OB (Autocratic, Custodial, Supportive, Collegial & SOBC), Limitations of OB. **Values, Attitudes and Emotions**: Introduction, Values, Attitudes, Definition and Concept of Emotions, Emotional Intelligence - Fundamentals of Emotional Intelligence, The Emotional Competence Framework, Benefits of Emotional Intelligence , difference between EQ and IQ. **Personality & Attitude**: Definition Personality, importance of personality in Performance, The Myers-Briggs Type Indicator and The Big Five personality model, Johari Window , Transaction Analysis , Definition Attitude Importance of attitude in an organization, Right Attitude, Components of attitude, Relationship between behavior and attitude. **(7+2)**

2.   Perception: Meaning and concept of perception, Factors influencing perception, Selective perception, Attribution theory, Perceptual process, Social perception (stereotyping and halo effect). **Motivation:** Definition & Concept of Motive & Motivation, The Content Theories of Motivation (Maslow's Need Hierarchy & Herzberg's Two Factor model Theory), The Process Theories (Vroom's expectancy Theory & Porter Lawler model), Contemporary Theories- Equity Theory of Work Motivation. **(8+2)**

3.   Group and Team Dynamics : The Meaning of Group & Group behavior & Group Dynamics, Types of Groups, The Five -Stage Model of Group Development Team Effectiveness & Team Building. **Leadership:** Introduction, Managers V/s Leaders. Overview of Leadership- Traits and Types, Theories of Leadership.- Trait and Behavioral Theories. **(8+2)**

4.   Conflict Management – Definition and Meaning, Sources of Conflict, Types of Conflict, Conflict Management Approaches. **Organizational Culture:** Meaning and Nature of Organization Culture - Origin of Organization Culture, Functions of Organization Culture, Types of Culture, Creating and Maintaining Organization Culture, Managing Cultural Diversity. **(7+2)**

5.   Stress at workplace: Work Stressors – Prevention and Management of stress – Balancing work and Life, workplace spirituality. **Organizational Change:** Meaning, definition & Nature of Organizational Change, Types of Organizational change, Forces that acts as stimulants to change. Kurt Lewin's- Three step model, How to overcome the Resistance to Change, Methods of Implementing Organizational Change, Developing a Learning Organization. **(5+2)**

Note: Evolution of Management thought to OB and functions of management to be covered in brief as a background interface to the subject only

Suggested Text Books:
1.   Organizational Behaviour, Robins

2.   Organizational Behaviour, Nelson & Quick
3.   Organizational Behaviour, Fred Luthans
4.   Organizational Behaviour, Stephen Robins, Timothy Judge, Neharika Vohra
5.   Organizational Behaviour, M N Mishra
6.   Organizational Behaviour, K Ashwathappa

Suggested Reference Books
1.   Understanding OB, Uday Pareek
2.   Change & Knowledge Management, Janakiram, Ravindra and Shubha Murlidhar
3.   Human Resource Management, Nkomo, CENGAGE Learning

Semester I		103 – Economic Analysis for Business Decisions
3 Credits	LTP: 2:1:1	Compulsory Generic Core Course

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO103.1	REMEMBERING	DEFINE the key terms in economics.
CO103.2	UNDERSTANDING	EXPLAIN the reasons for existence of firms and their decision making goals.
CO103.3	APPLYING	MAKE USE OF the basic concepts of Demand, Supply, Demand Forecasting, Equilibrium and their determinants.
CO103.4	ANALYSING	ANALYSE cost function and the difference between short-run and long-run cost function and establish the REATIONSHIP between production function and cost function.
CO103.5	ANALYSING	EXAMINE the effect of non-price factors on products and services of monopolistic and oligopoly firms.
CO103.6	EVALUATING	DESIGN competition strategies, including costing, pricing, product differentiation, and market environment according to the natures of products, the market structures and Business Cycles.

1.   **Managerial Economics:** Concept of Economy, Economics, Microeconomics, Macroeconomics. Nature and Scope of Managerial Economics, Managerial Economics and decision-making. Concept of Firm, Market, Objectives of Firm: Profit Maximization Model, Economist Theory of the Firm, Cyert and March's Behavior Theory, Marris' Growth Maximisation Model, Baumol's Static and Dynamic Models, Williamson's Managerial Discretionary Theory. **(6+1)**
2.   **Utility & Demand Analysis:** Utility – Meaning, Utility analysis, Measurement of utility, Law of diminishing marginal utility, Indifference curve, Consumer's equilibrium - Budget line and Consumer surplus. Demand - Concept of Demand, Types of Demand, Determinants of Demand, Law of Demand, Elasticity of Demand, Exceptions to Law of Demand. Uses of the concept of elasticity. Forecasting: Introduction, Meaning and Forecasting, Level of Demand Forecasting, Criteria for Good Demand Forecasting, Methods of Demand Forecasting, Survey Methods, Statistical Methods, Qualitative Methods, Demand Forecasting for a New Products. (Demand Forecasting methods - Conceptual treatment only numericals not expected) **(8+1)**
3.   **Supply & Market Equilibrium:** Introduction, Meaning of Supply and Law of Supply, Exceptions to the Law of Supply, Changes or Shifts in Supply. Elasticity of supply, Factors Determining Elasticity of Supply, Practical Importance, Market Equilibrium and Changes in Market Equilibrium. Production Analysis: Introduction, Meaning of Production and Production Function, Cost of Production. Cost Analysis: Private costs and Social Costs, Accounting Costs and Economic costs, Short run and Long Run costs, Economies of scale, Cost-Output Relationship - Cost Function, Cost-Output Relationships in the Short Run, and Cost-Output Relationships in the Long Run. **(8+1)**
4.   **Revenue Analysis and Pricing Policies:** Introduction, Revenue: Meaning and Types, Relationship between Revenues and Price Elasticity of Demand, Pricing Policies, Objectives of Pricing Policies, Cost plus pricing. Marginal cost pricing. Cyclical pricing. Penetration Pricing. Price Leadership, Price Skimming. Transfer pricing. Price Determination under Perfect Competition- Introduction, Market and Market Structure, Perfect Competition, Price-Output Determination under Perfect Competition, Short-run Industry Equilibrium under Perfect Competition, Short-run Firm Equilibrium under Perfect Competition, Long-run Industry Equilibrium under Perfect Competition, Long-run Firm Equilibrium under Perfect Competition. Pricing Under Imperfect Competition- Introduction, Monopoly, Price Discrimination under Monopoly, Bilateral Monopoly, Monopolistic Competition, Oligopoly, Collusive Oligopoly and Price

Leadership, Pricing Power, Duopoly, Industry Analysis. Profit Policy: Break Even analysis. Profit Forecasting. Need for Government Intervention in Markets. Price Controls. Support Price. Preventions and Control of Monopolies. System of Dual Price. **(11+1)**

5. **Consumption Function and Investment Function:** Introduction, Consumption Function, Investment Function, Marginal efficiency of capital and business expectations, Multiplier, Accelerator. Business Cycle: Introduction, Meaning and Features, Theories of Business Cycles, Measures to Control Business Cycles, Business Cycles and Business Decisions. **(7+1)**

Suggested Text Books:
1. Managerial Economics, Peterson, Lewis, Sudhir Jain, Pearson, Prentice Hall
2. Managerial Economics, D. Salvatore, McGraw Hill, New Delhi.
3. Managerial Economics, Pearson and Lewis, Prentice Hall, New Delhi
4. Managerial Economics, G.S. Gupta, T M H, New Delhi.
5. Managerial Economics, Mote, Paul and Gupta, T M H, New Delhi.

Suggested Reference Books:
1. Managerial Economics, Homas and Maurice, Tata McGraw Hill
2. Managerial Economics - Analysis, Problems and Cases, P.L. Mehta, Sultan Chand Sons, New Delhi.
3. Managerial Economics, Varshney and Maheshwari, Sultan Chand and Sons, New Delhi.
4. Managerial Economics, D.M.Mithani
5. Managerial Economics, Joel Dean, Prentice Hall, USA.
6. Managerial Economics by H L Ahuja, S Chand & Co. New Delhi.

Semester I			104 - Business Research Methods
3 Credits	LTP: 2:1:1		Compulsory Generic Core Course

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO104.1	REMEMBERING	Enumerate and define various concepts & terms associated with scientific business research.
CO104.2	UNDERSTANDING	Explain the various types of measurement scales & attitude scaling techniques and their application in the context of business research.
CO104.3	APPLYING	Design a variety of data collection instruments for contemporary business research issues and apply the principles of sampling and sample size determination to contemporary business research problems.
CO104.4	ANALYSING	Analyse and graphically present quantitative data and derive actionable inferences from the same from a decision making perspctive.
CO104.5	EVALUATING	Construct different types of testable hypotheses and interpret the statistical test outcomes.
CO104.6	CREATING	Formulate alternative research designs for a real-life business research problem and discuss the pros and cons of each design.

1. Foundations of Research: Definition of Research, Need of business research, Characteristics of scientific research method, Typical Research applications in business and management. **Questions in Research**: Formulation of Research Problem – Management Question – Research Question – Investigation Question. **The process of business research**: Literature review - Concepts and theories - Research questions - Sampling - Data collection - Data analysis - Writing up - The iterative nature of business research process, Elements of a Research Proposal. **Practical considerations:** Values – researcher & organization. Ethical principles - Harm to participants, Lack of informed consent, Invasion of privacy, Deception, Reciprocity and trust, Affiliation and conflicts of interest. Legal considerations - Data management, Copyright. **(6+1)**

2. Research Design: Concept, Features of a robust research design. Exploratory, Descriptive, Quasi Experimental, Experimental research designs, Concept of Cause and Effect, Difference between Correlation and causation. Types of Variables – Independent, Dependent, concomitant, mediating, moderating, extraneous variables, Basic knowledge of

Treatment & Control group, Case study design. Cross-sectional and Longitudinal designs, Qualitative and Quantitative research approaches, Pros and Cons of various designs, choice of a research design. **Hypothesis:** Definition, research Hypothesis, Statistical hypothesis, Null hypothesis, Alternative Hypothesis, Directional Hypothesis, Non-directional hypothesis. Qualities of a good Hypothesis, Framing Null Hypothesis & Alternative Hypothesis. Concept of Hypothesis Testing - Logic & Importance. **(7+1)**

3. Data & Measurement: Meaning of data, Need for data. **Secondary Data:** Definition, Sources, Characteristics, Advantages and disadvantages over primary data, Quality of secondary data - Sufficiency, adequacy, reliability and consistency. **Primary Data:** Definition, Advantages and disadvantages over secondary data. **Measurement:** Concept of measurement, What is measured? Problems in measurement in management research - Validity and Reliability, Levels of measurement - Nominal, Ordinal, Interval, Ratio. **Attitude Scaling Techniques:** Concept of Scale – Rating Scales viz. Likert Scales, Semantic Differential Scales, Constant Sum Scales, Graphic Rating Scales – Ranking Scales – Paired Comparison & Forced Ranking - Concept and Application. **Questionnaire:** Questionnaire Construction - Personal Interviews, Telephonic survey Interviewing, Online questionnaire tools. **(8+1)**

4. Sampling: Basic Concepts: Defining the Universe, Concepts of Statistical Population, Sample, Characteristics of a good sample. Sampling Frame, determining the sample frame, Sampling errors, Non Sampling errors, Methods to reduce the errors, Sample Size constraints, Non Response. **Probability Sample**: Simple Random Sample, Systematic Sample, Stratified Random Sample, Area Sampling & Cluster Sampling. **Non Probability Sample:** Judgment Sampling, Convenience Sampling, Purposive Sampling, Quota Sampling & Snowballing Sampling methods. **Determining size of the sample**: Practical considerations in sampling and sample size, (sample size determination formulae and numericals not expected) **(9+1)**

5. Data Analysis & Report Writing: Data Analysis: Cleaning of Data, Editing, Coding, Tabular representation of data, frequency tables, Univariate analysis - Interpretation of Mean, Median Mode; Standard deviation, Coefficient of Variation. **Graphical Representation of Data:** Appropriate Usage of Bar charts, Pie charts, Line charts, Histograms. **Bivariate Analysis:** Cross tabulations, Bivariate Correlation Analysis - meaning & types of correlation, Karl Person's coefficient of correlation and spearman's rank correlation. Chi-square test including testing hypothesis of association, association of attributes. **Linear Regression Analysis:** Meaning of regression, Purpose and use, Linear regression; Interpretation of regression co-efficient, Applications in business scenarios. **Test of Significance:** Small sample tests: t (Mean, proportion) and F tests, Z test. Non-parametric tests: Binomial test of proportion, Randomness test. Analysis of Variance: One way and two-way Classifications. **Research Reports:** Structure of Research report, Report writing and Presentation. **(10+1)**

Note:
1. It is desirable to use MS Excel / SPSS / Systat for delivery of unit 5.
2. For unit 5, Formulae and calculations are not expected. Interpretation of the given data/test outcomes is expected for appropriate managerial decisions / inferences.

Suggested Text Books:
1. Business Research Methods, Donald Cooper & Pamela Schindler, TMGH.
2. Business Research Methods, Alan Bryman & Emma Bell, Oxford University Press
3. Research Methods for Social Work, Allen, Earl R. Babbie, Cengage
4. Research Methods in Business Studies: A Practical Guide, Pervez Ghauri, Dr Kjell Gronhaug, FT Prentice Hall

Suggested Reference Books:
1. Business Research Methods, William G. Zikmund, Barry J. Babin, Jon C. Carr, Mitch Griffin, Cengage Learning
2. Approaches to social research, Royce Singleton, Bruce C. Straits, Margaret Miller Straits, Oxford University Press
3. Research Methods: The Basics, Nicholas S. R. Walliman, Nicholas Walliman, Routledge,
4. Research Methodology In Management, Dr.V.P.Michael

Semester I		105 – Basics of Marketing
3 Credits	LTP: 2:1:1	Compulsory Generic Core Course

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO105.1	REMEMBERING	DEFINE the various concepts, terms in marketing and the various company orientations towards the market place.

CO105.2	UNDERSTANDING	CLASSIFY the various components of the marketing environment of a firm and explain the same in detail.
CO105.3	APPLYING	APPLY principles of segmentation, targeting and positioning to real world marketing offering (commodities, goods, services, e-products/e-services.)
CO105.4	ANALYSING	BREAKDOWN the consumer buying behavior journey into various components and DISTINGUISH between various buying roles for a real world marketing offering (commodities, goods, services, e-products/ e-services.)
CO105.5	EVALUATING	DEVELOP and EXPLAIN the marketing mix for real world marketing offering (commodities, goods, services, e-products/ e-services.)
CO105.6	CREATING	ELABORATE on the various types of Product Life Cycles and RELATE them with the marketing mix in the context of real world marketing offering (commodities, goods, services, e-products/ e-services.).

1. **Introduction to Marketing:** Definition & Functions of Marketing- Scope of Marketing, Evolution of Marketing, Core concepts of marketing – Need, Want, Demand, Customer Value, Exchange, Customer Satisfaction, Customer Delight, Customer loyalty, Concepts of Markets, Marketing V/S Market Competition, Key customer markets, market places, market spaces, Meta-markets, Digital Markets, Brick & Click Model. Impact of Globalization, Technology and Social Responsibility on Marketing. New Consumer Capabilities, New Company Capabilities. Functions of Marketing Manager. Linkage of Marketing functions with all functions in the organization. Company orientation towards market place: Product – Production - Sales – Marketing –Societal – Relational, Holistic Marketing Orientation. Selling versus marketing. Concept of Marketing Myopia. Marketing Process, Understanding Marketing as Creating, Communicating, and Delivering Value **(5+2)**

2. **Marketing Environment:** Concept of Environment, Macro Environment & Micro Environment – Components and characteristics, Needs & Trends, Major forces impacting the Macro Environment & Micro Environment, Need for analyzing the Marketing Environment. Analyzing the Political, Economic, Socio-cultural, Technical and Legal Environment. Demographics. **(5+2)**

3. **Segmentation, Target Marketing & Positioning: Segmentation** - Concept**,** Need & Benefits. Geographic, Demographic, Psychographic, Behavioural bases of segmentation for consumer goods and services. Bases for segmentation for business markets. Levels of segmentation, Criteria for effective segmentation. Market Potential & Market Share. Target Market **-** Concept of Target Markets and criteria for selection. Segment Marketing, Niche & Local Marketing, Mass marketing, Long Tail Marketing. Positioning **-** Concept of differentiation & positioning, Value Proposition & Unique Selling Proposition. **(8+2)**

4. **Consumer Behavior:** Meaning & importance of consumer behavior, Comparison between Organizational Buying behavior and consumer buying behavior, Buying roles, Five steps consumer buyer decision process – Problem Recognition, Information Search, Evaluation of Alternatives, Purchase Decision, Post Purchase behavior. Moment of Truth, Zero Moment of Truth, ZMOT, Moderating effects on consumer behavior**. (7+2)**

5. **Marketing Mix**: Origin & Concept of Marketing Mix, 7P's - Product, Price, Place, Promotion, People, Process, Physical evidence. **Product Life Cycle:** Concept & characteristics of Product Life Cycle (PLC), Relevance of PLC, Types of PLC and Strategies across stages of the PLC. **(10+2)**

Note: Real world examples / cases are expected to be analyzed in the class as well as included in the examination.

Suggested Text Books:
1. Marketing Management, Philip Kotler, Kevin Lane Keller, Abraham Koshy, Mithileshwar Jha, Pearson
2. Marketing Management, Rajan Saxena, TMGH
3. Marketing, Lamb Hair Sharma, Mc Daniel, Cengage Learning

Suggested Reference Books:
1. Principles of Marketing, Philip Kotler, Gary Armstrong, Prafulla Agnihotri, Ehasan Haque, Pearson
2. Marketing Management- Text and Cases, Tapan K Panda, Excel Books
3. Marketing Management, Ramaswamy & Namakumari, Macmillan.
4. Marketing Whitebook

Semester I		106 – Digital Business
3 Credits	LTP: 2:1:1	Compulsory Generic Core Course

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO106.1	REMEMBERING	DESCRIBE the conceptual framework of e commerce, mobile commerce and social commerce.
CO106.2	UNDERSTANDING	SUMMARIZE the impact of information, mobile, social, digital, IOT and related technologies on society, markets & commerce.
CO106.3	APPLYING	ILLUSTRATE value creation & competitive advantage in a digital Business environment.
CO106.4	ANALYSING	EXAMINE the changing role of intermediaries, changing nature of supply chain and payment systems in the online and offline world.
CO106.5	ANALYSING	CLASSIFY the prevalent digital business models into various groups and OUTLINE their benefits and limitations.
CO106.6	EVALUATING	EXPLAIN the various applications of Digital Business in the present day world.

1. **Electronic Commerce:** The Digital Revolution and Society, The Digital and Social Worlds - The Digital Economy, The Digital Enterprise, Virtual Communities, Online Communities, Defining Electronic Commerce, Emerging E-Commerce Platforms. E-Business, Electronic Markets and Networks; The Content and Framework of E-Commerce, Classification of E-Commerce by the Nature of the Transactions and the Relationships Among Participants, E-Commerce Business Models, Integrating the Marketplace with the Marketspace, Web 2.0. Drivers, Benefits and Limitations of E-Commerce, Impact of E-Commerce on business, government, customers, citizens and society. **(7+2)**

2. **Mobile Commerce, Social Commerce and IoT:** Mobile Commerce, Attributes Applications and Benefits of M-Commerce, Mobile Marketing - Shopping and Advertising. **Social Commerce:** Social Commerce, Social Business (Enterprise), Social Business Networks and Social Enterprise, Social Media, Platforms for Social Networking; Social Media Marketing, Enterprise 2.0, Improved Business Models. Entrepreneur Networks, Enterprise Social Networks, The Benefits and Limitations of Social Commerce, Benefits to Customers, Retailers, Employees, players in the ecosystem. Social Collaboration (Collaboration 2.0) - Essentials of Social Collaboration, Consumer-to-Consumer Electronic Commerce (C2C), Person-to-Person models. **Internet of Things:** Concept of IoT, Smart Homes and Appliances, Smart Cities, Smart Cars, Wearable Computing and Smart Gadgets. **(7+2)**

3. **Digital Business Ecosystem:** Electronic Commerce Mechanisms, Online Purchasing Process, E-Marketplaces - Types, Components and Participants, Disintermediation and Reintermediation; Customer Shopping Mechanisms - Webstores, Malls, and Portals, Webstores, Electronic Malls , Web (Information) Portals. **Intermediaries:** Roles of Intermediaries in E-Marketplaces, Merchant Solutions: Electronic Catalogs, Search Engines, and Shopping Carts, Electronic Catalogs, E-Commerce Search Activities, Auctions - Traditional Auctions Versus E-Auctions, Dynamic Pricing. **Changing Supply Chains:** Structure of the Supply Chain, EC Order Fulfillment Process, Speeding Up Deliveries, Partnering Efforts and Outsourcing Logistics, Order Fulfillment in Make-to- Order (MTO) and Mass Customization. **Digital Payments:** Smart Cards, Stored-Value Cards, EC Micropayments, Payment Gateways, Mobile Payments, Digital and Virtual Currencies, Security, Ethical, Legal, Privacy, and Technology Issues. **(7+2)**

4. **Digital Business Applications - I: Electronic Retailing:** B2C Electronic Retailing, Characteristics, Advantages, Limitations, E-Tailing Business Models, Classification of Models by Distribution Channel, Referring Directories, Malls with Shared Services. Social Shopping – Concept, Benefits and Drivers, Social Shopping Aids – Recommendations, Reviews, Ratings, and Marketplaces, Real-Time Online Shopping. The Online Versus Off-Line Competition, Click-and-Brick models, Product and Service Customization and Personalization. **Fintech:** E-Banking, Mobile Banking, Pure Virtual Banks, Insurance, and Stock Trading, Other Mobile Finance Applications. **Digital Government:** Government-to-Citizens, Government-to-Business, Government-to-Government, Government-to-Employees Models, Internal Efficiency and Effectiveness, E-Government and Social Networking, M-Government. **E-Learning, E-Training, and E-Books**: Basics of E-Learning, Characteristics, Advantages, Limitations, Distance Learning and Online Universities, Online Corporate Training, Social Networks and E-Learning, E-Learning Management Systems, Electronic Books. **(7+2)**

5. **Digital Business Applications - II: Online Travel and Tourism Services:** Characteristics of Online Travel, Benefits, Limitations, and Competition in Online Travel Services. **E-Employment:** Online Job Market, Social Networks Based Job Markets, Social Recruiting, Virtual Job Fairs and Recruiting Events, Benefits and Limitations of the Electronic

Job Market. **E-Health**: Definition, Electronic Medical Record Systems (EMR), Doctors' System, Patients Services, Medical Devices and Patients Surveillance. **Entertainment, Media & Gaming:** Service Industry Consumer Applications. Digital Products, Internet TV and Internet Radio, Social Television (TV) Mobile Entertainment, Mobile Marketing, Mobile Streaming Music and Video Providers, Entertainment in Cars; Gaming - Mobile Games, Social Games and Gamification, Business of Social Games, Educational Social Games; Mobile Gambling, Mobility and Sports; Social Entertainment. **(7+2)**

Note: The focus of the entire course should be on business issues and not merely on technology.

Suggested Text Books:
1. Introduction to E Commerce & Social Commerce, Turban E , Whiteside J , King D, Outland J Springer
2. E-Business and E-Commerce Management- Strategy, Implementation and Practice, Dave Chaffey, Pearson Education.
3. Electronic Commerce – A Managerial Perspective, Efraim Turban, David King, Dennis Viehland, Jae Lee, Pearson Education.

Semester II		201 – Marketing Management
3 Credits	LTP: 2:1:1	Compulsory Generic Core Course

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO201.1	REMEMBERING	DESCRIBE the key terms associated with the 4 Ps of marketing.
CO201.2	UNDERSTANDING	COMPARE and CONTRAST various approaches to pricing for a real world marketing offering (commodities, goods, services, e-products/ e-services.)
CO201.3	APPLYING	DEMONSTRATE an understanding of various channel options for a real world marketing offering (commodities, goods, services, e-products/ e-services.)
CO201.4	ANALYSING	EXAMINE the product line of a real world marketing offering (commodities, goods, services, e-products/ e-services.)
CO201.5	EVALUATING	EXPLAIN the role of various communication mix elements for a real world marketing offering (commodities, goods, services, e-products/ e-services.)
CO201.6	CREATING	DESIGN a marketing plan for a real world marketing offering (commodities, goods, services, e-products/ e-services.)

1.   Product: Meaning, The Role of Product as a market offering, Goods & Services Continuum, Classification of consumer products- convenience, shopping, shopping, unsought goods. Classification of industrial products- materials and parts, capital items, supplies and services. The Product Hierarchy, Product Systems and Mixes, Product Line Analysis, Product Line Length, The Customer Value Hierarchy. New Product Development - Need, Booz Allen & Hamilton Classification Scheme for New Products, New Product Development Process - Idea Generation to commercialization. Branding: Concept, Definition, Commodity Vs. Brand, Product Vs Brand, Concept of Brand equity. **(7 + 2)**
2.   Pricing: Meaning, The Role of Pricing, Importance and Factors influencing pricing decisions. Setting the Price: Setting pricing objectives, Determining demand, Estimating costs, Analyzing competitors' pricing, Selecting pricing method, selecting final price. Adapting the Price: Geographical pricing, Price discounts & allowances, Promotional pricing, Differentiated pricing, concept of transfer pricing, Dynamic pricing (surge pricing, auction pricing), Pricing in online marketing (free, premium, freemium). Price Change: Initiating & responding to price changes. **(7 + 2)**
3.   Place: Meaning, The Role of Marketing Channels, Channel functions & flows, Channel Levels, Channel Design Decisions - Analyzing customers' desired service output levels, establishing objectives & constraints, Identifying & evaluating major channel alternatives. Channel Options - Introduction to Wholesaling, Retailing, Franchising, Direct marketing, Introduction to Omni channel & hybrid channel options. Market Logistics Decisions - Order processing, Warehousing, Inventory, and Logistics. **(7 + 2)**
4.   Promotion: Meaning, The role of marketing communications in marketing effort. Communication Mix Elements - Introduction to Advertising, Sales Promotion, Personal Selling, Public Relations, Direct Marketing. Concept of Integrated Marketing Communications (IMC), Developing Effective Communication - Communication Process, Steps in Developing effective marketing communication - identifying target audience, determining communication objectives, designing a message, Choosing media, Selecting message source, Collecting feedback. Shaping the overall promotion mix: promotional mix strategy, push-pull strategies. **(7 + 2)**

5.   Product Level Planning: Preparation & evaluation of a product level marketing plan, Nature & contents of Marketing Plans - Executive Summary, Situation Analysis, Marketing Strategy, Financials, Control. Marketing Evaluation & Control - Concept, Process & types of control - Annual Plan Control, Profitability Control, Efficiency Control, Strategic Control, Marketing audit. **(7 + 2)**

Note: Real world examples / cases are expected to be analyzed in the class as well as included in the examination.

Suggested Text Books:
1.   Marketing Management, Philip Kotler, Kevin Lane Keller, Abraham Koshy, Mithileshwar Jha, Pearson
2.   Marketing Management, Rajan Saxena, TMGH
3.   Marketing, Lamb Hair Sharma, Mc Daniel, Cengage Learning

Suggested Reference Books:
1.   Principles of Marketing, Philip Kotler, Gary Armstrong, Prafulla Agnihotri, Ehasan Haque, Pearson
2.   Marketing Management- Text and Cases, Tapan K Panda, Excel Books
3.   Marketing Management, Ramaswamy & Namakumari, Macmillan.
4.   Marketing Whitebook

Semester II			202 – Financial Management
3 Credits	LTP: 2:1:1		Compulsory Generic Core Course

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO202.1	REMEMBERING	DESCRIBE the basic concepts related to Financial Management, Various techniques of Financial Statement Analysis, Working Capital, Capital Structure, Leverages and Capital Budgeting.
CO202.2	UNDERSTANDING	EXPLAIN in detail all theoretical concepts throughout the syllabus
CO202.3	APPLYING	PERFORM all the required calculations through relevant numerical problems.
CO202.4	ANALYSING	ANALYZE the situation and • comment on financial position of the firm • estimate working capital required • decide ideal capital structure • evaluate various project proposals
CO202.5	EVALUATING	EVALUATE impact of business decisions on Financial Statements, Working Capital, Capital Structure and Capital Budgeting of the firm

1.   Business Finance: Introduction to Business Finance, Meaning and Definition of Financial Management, Objectives of Financial Management- (Profit Maximization and Wealth Maximization), Modern Approach to Financial Management- (Investment Decision, Financing Decision, Dividend Policy Decision), Finance and its relation with other disciplines, Functions of Finance Manager **(3+2)**

2.   Techniques of Financial Statement Analysis: Introduction, Objectives of financial statement analysis, various techniques of analysis viz Common Size Statements, Comparative Statements, Trend Analysis, Ratio Analysis, Funds Flow Statement & Cash Flow Statement **(10 + 2)**

3.   Working Capital Management: Meaning of Working Capital, its components& types, Operating Cycle, Factors affecting working capital, Estimation of working capital requirement. (Total Cost Method & Cash Cost Method) **(8 + 2)**

4.   Capital Structure: Meaning and Factors affecting Capital Structure, Different sources of finance. Concept and measurement of Cost of Capital (measurement of Specific Cost and WACC), Trading on Equity, Concept of Leverages and its types.**(6 + 2)**

5.   Capital Budgeting: Meaning, Definition of Capital Budgeting, Time value of money.Tools of evaluation of the project based on traditional techniques and modern techniques - ARR, Payback Period, Discounted Payback Period, NPV, PI & IRR **(6+2)**

Note: Numerical Problems will be asked on following topics only—
1.   Common Size Statements
2.   Comparative Statements

3. Trend Analysis
4. Ratio Analysis (Calculation of ratios plus its interpretation)
5. Estimation of working capital requirement (Total Cost Method & Cash Cost Method)
6. Operating Cycle
7. Measurement of Specific Cost (Cost of Equity, Preference, Retained Earnings and Debt) and WACC
8. Capital Structure
9. Leverages
10. Capital Budgeting (ARR, Payback Period, Discounted Payback Period, NPV, PI & IRR)

Suggested Text Books:
1. Financial Management, Shashi K. Gupta and R.K. Sharma (Kalyani Publication)
2. Basics of Financial Management, V.K. Saxena and C.D.Vashist (Sultan Chand & Sons)
3. Financial Management, A Contemporary Approach, Rajesh Kothari (SAGE)
4. Financial Management, Dr. Mahesh Abale & Dr. Shriprakash Soni (Himalaya Publishing House Pvt. Ltd.)
5. Working Capital Management, Theory and Practice, Dr. P. Periasamy (Himalaya Publishing House)
6. Financial Management, I M Pandey (Vikas Publishing House Pvt. Ltd)
7. Fundamentals of Financial Management, A.P.Rao (Everest Publishing House)
8. Advanced Financial management, N.M. Vechalekar

Suggested Reference Books:
1. Financial Management, Rajiv Srivastava and Anil Misra (OXFORD University Press)
2. Financial Management, Ravi Kishore (Taxmann)
3. Financial management, V.K. Bhalla (S. Chand)
4. Financial Management, Jonathan Berk, Peter DeMarzo and Ashok Thampy (Pearson Publication)

Semester II		203 – Human Resource Management
3 Credits	LTP: 2:1:1	Compulsory Generic Core Course

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO203.1	REMEMBERING	DESCRIBE the role of Human Resource Function in an Organization.
CO203.2	REMEMBERING	ENUMERATE the emerging trends and practices in HRM.
CO203.3	UNDERSTANDING	ILLUSTRATE the different methods of HR Acquisition and retention.
CO203.4	APPLYING	DEMONSTRATE the use of different appraisal and training methods in an Organization.
CO203.5	ANALYSING	OUTLINE the compensation strategies of an organization
CO203.6	EVALUATING	INTERPRET the sample job descriptions and job specifications for contemporary entry level roles in real world organizations.

1. **Human Resource Management: Concept and Challenges -** Introduction, Objectives, Scope, Features of HRM, Role of HRM, Importance of HRM, Policies and Practices of HRM, Functions of HRM ,Challenges of HRM. Introduction to SHRM: Define SHRM, importance and nature. HRM Models: Harvard Model, SHRM "matching model". **(5+2)**
2. **HR Acquisition & Retention:** Human Resource Planning: Definition, Objective, Need and Importance, HRP Process, Barriers to HRP. Job Analysis Process – Contents of Job Description & Job Specification, Job description Vs job specification, Job design, Factors affecting Job design, Job enrichment Vs job enlargement. Recruitment Introduction & Sources of Recruitment, Difference between recruitment and selection-Recruitment, Selection Process, Induction and Orientation. Career Planning-Process of career planning and development Succession Planning Process, Transfer and Promotion. Retention of Employees: Importance of retention, strategies of retention. **(8+2)**
3. **Managing Employee Performance and Training:** Performance Appraisal & Performance Management – Definition, Objective, Importance, Appraisal Process and Appraisal Methods. Why to measure performance and its purpose. Performance Appraisal Vs Performance Management, Potential Management. Training and Development - Definition – Scope – Conceptual framework of Training and development of Employees, Role of Training in Organizations, Objectives, The Training and Development Process, Training Need Assessment, Types of training,

Difference between training and development, E-Learning. Benefits of training, Evaluation of Training Effectiveness: Kirkpatrick model. **(8+2)**

4.	**Compensation Management:** Concept, Objectives, Importance of Compensation Management, Process, Current Trends in Compensation. Factors in compensation plan. Wage/ Salary differentials, Components of salary. Incentives and Benefits – Financial & Nonfinancial Incentive, Fringe Benefits. Employees Separation - Retirement, Termination, VRS, Golden Handshake, Suspension, Concepts & Methods, Grievance Procedure in Indian Industry. **(8+2)**

5.	**Emerging Trends in HRM:** HRIS- Need, Advantages & Uses of HRIS. HR Accounting- Concepts, Objective, Advantage, Limitation & Method. HR Audit- Concept, Objective, Scope & Process. HR Shared Services- Concept, Objective, Benefits, Issues creating HR Shared Services.**(6+2)**

Suggested Text Books:
1.	Human Resource Management, Dr. S.S. Khanka, Sultan Chanda , Delhi
2.	Human Resource Management, Deepak Bhattacharya, Sage Publishing Ltd.
3.	Human Resource Management, Arun Monppa , Tata McGraw Hill Publishing Company
4.	Human Resource Management, Mirza & Zaiyaddin
5.	Human Resource Management, Dr. P.C.Pardeshi , Niramli Publication
6.	Human Resource Management, R.S.Dwiwedi , Vikas Publishing House.
7.	Human Resource Management, C.B.Mamoria , Himalaya Publishing House
8.	Human Resource Management, Gary Dessler Dorling Kindersley Pvt Ltd.
9.	Human Resource Management: Text and Cases, K Aswathappa , Tata McGraw Hill Publishing Compnay.
10.	Performance Appraisal and Management, Himalaya Publishing House.

Suggested Reference Books:
1.	Human Resource Management in Organizations, Izabela Robinson, Jaico Publishing House.
2.	Armstrong's Essential Human Resource Management Practice - A guide to people management, Michael Armstrong, Koganpage.
3.	Applied Psychology in Human Resource Management, Cascio & Aguins, PHI.

Semester II		204 – Operations & Supply Chain Management
3 Credits	LTP: 2:1:1	Compulsory Generic Core Course

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO204.1	REMEMBERING	DEFINE basic terms and concepts related to Production, Operations, Services, Supply Chain and Quality Management.
CO204.2	UNDERSTANDING	EXPLAIN the process characteristics and their linkages with process-product matrix in a real world context.
CO204.3	UNDERSTANDING	DESCRIBE the various dimensions of production planning and control and their inter-linkages with forecasting.
CO204.4	APPLYING	CALCULATE inventory levels and order quantities and MAKE USE OF various inventory classification methods.
CO204.5	ANALYSING	OUTLINE a typical Supply Chain Model for a product / service and ILLUSTRATE the linkages with Customer Issues, Logistic and Business Issues in a real world context.

**1.	Introduction to Operations and Supply Chain Management:** Definition, Concept, Significance and Functions of Operations and SCM. Evolution from manufacturing to operations management, Physical distribution to Logistics to SCM, Physical Goods and Services Perspectives. **Quality:** Definitions from various Perspectives, Customers view and Manufacturer's view, Concept of Internal Customer, Overview of TQM and LEAN Management, Impact of Global Competition, Technological Change, Ethical and Environmental Issues on Operations and Supply Chain functions. **(7+2)**

**2.	Operations Processes: Process Characteristics in Operations:** Volume Variety and Flow. Types of Processes and Operations Systems - Continuous Flow system and intermittent flow systems. **Process Product Matrix:** Job Production, Batch Production, Assembly line and Continuous Flow, Process and Product Layout. **Service System Design Matrix:** Design of Service Systems, Service Blueprinting. **(6+2)**

3. **Production Planning & Control (PPC):** Role and Functions of PPC **Demand Forecasting:** Forecasting as a Planning Tool, Forecasting Time Horizon, Sources of Data for forecasting, Accuracy of Forecast, Capacity Planning. **Production Planning:** Aggregate production Planning, Alternatives for Managing Demand and Supply, Master Production Schedule, Capacity Planning - Overview of MRP, CRP, DRP, MRP II. **Production Control:** Scheduling, Loading, Scheduling of Job Shops and Floor Shops, Gantt Charts. **(8+2)**

4. **Inventory Planning and Control**: Continuous and intermittent demand system, concept of inventory, need for inventory, types of inventory - seasonal, decoupling, cyclic, pipeline, safety - Implications for Inventory Control Methods. Inventory Costs **-** Concept and behavior of ordering cost, carrying cost, shortage cost. **EOQ –** definition, basic EOQ Model, EOQ with discounts. Inventory control **-** Classification of material - ABC Analysis -VED, HML, FSN, GOLF, SOS. (Numericals expected on Basic EOQ, EOQ with discounts & ABC), Inventory turns ratios, Fixed Order quantity Model - Periodic Review and Re-order Point. **(8+2)**

5. **Supply Chain Management:** Supply chain concept, Generalized Supply Chain Management Model - Key Issues in SCM – Collaboration, Enterprise Extension, responsiveness, Cash to Cash Conversion. **Customer Service:** Supply Chain Management and customer service linkages, Availability service reliability perfect order, customer satisfaction. Enablers of SCM - Facilities, Inventory, Transportation, Information, sourcing, Pricing. **(6+2)**

Suggested Text Books:
1. Operations Management Theory & Practice, B.Mahadevan , Pearson.
2. Operations Now - Supply Chain Profitability & Performance, Byron J. Finch, McGraw Hill.
3. Production and Operations Management, R B Khanna, PHI, New Delhi..
4. Production & Operations Management, S N Chary, McGraw Hill.
5. Supply Chain Management - Strategy, Planning & Operation,Sunil Chopra, Peter Meindl, D. V. Kalra, Pearson Education.

Suggested Reference Books:
1. Supply Chain Logistics Management, Donald Bowersox, David Closs, M Bixby Cooper, Tata McGraw Hill.
2. Operations Management, William J. Stevenson, TMGH.
3. Operations Management, Lee Krajewski, Larry Ritzman, Manoj Malhotra, Pearson Education.
4. Introduction to Materials Management , J.R. Tony Arnold, Stephen Chapman, Ramakrishnan, Pearson.

Generic Courses (Electives) – University Level – Semester I & II

Semester I		107 – Management Fundamentals
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO107.1	REMEMBERING	ENUMERATE various managerial competencies and approaches to management.
CO107.2	UNDERSTANDING	EXPLAIN the role and need of Planning, Organizing, Decision Making and Controlling.
CO107.3	APPLYING	MAKE USE OF the principles of goal setting and planning for simple as well as complex tasks and small projects.
CO107.4	ANALYSING	COMPARE and CONTRAST various organizational structures of variety of business and not-for-profit entities in a real world context.
CO107.5	EVALUATING	BUILD a list of the decision making criteria used by practicing managers, leaders and entrepreneurs in routine and non-routine decision making situations and EVALUATE and EXPLAIN the same.
CO107.6	CREATING	FORMULATE and DISCUSS a basic controlling model in a real life business, start-up and not-for-profit organizational context.

1. **Basic Concepts:** Manager, Managing, Workplace, Organization, Management Functions, Mintzberg's Managerial Roles, The Universality of Management, Approaches to Management - Early Management, Classical Approach, Behavioral Approach, Quantitative Approach, Contemporary Approaches. Managerial Competencies: Communication, team work, planning and administrative, strategic and global competencies; Managerial Skills; How Is

the Manager's Job Changing?, Importance of Customers to the Manager's Job, Importance of Innovation to the Manager's Job, Importance of Sustainability to the Manager's Job. **(5)**

2. **Planning:** Concept, need, nature, Management By Objectives (MBO) - Process of MBO - Benefits of MBO, Planning and Performance, Goals and Plans, Types of Goals, Types of Plans, Setting Goals and Developing Plans, Approaches to Setting Goals, Developing Plans, Approaches to Planning, Planning Effectively in Dynamic Environments. **(6)**

3. **Organizing:** Organization, Organizing, Organizational Structures, Principles of Work Specialization , Departmentalization, Chain of Command, Span of Control, Centralization and Decentralization, Formalization. Mechanistic and Organic Structures, Factors Affecting Structural Choice - Strategy, Size, Technology, Environmental Uncertainty. Traditional Organizational Designs - Simple Structure, Functional Structure, Divisional Structure, Matrix Structure, Team Structures, Project Structure, Adaptive Organizations – Boundary less Organization, Virtual Organizations, Learning Organization, Flexi Work, Tele-working, Global Organizations. **(7)**

4. **Decision Making:** The Decision-Making Process - Identifying a Problem - Identifying Decision Criteria - Allocating Weights to the Criteria - Developing Alternatives - Analyzing Alternatives - Selecting an Alternative - Implementing the Alternative - Evaluating Decision Effectiveness. Making Decisions: Rationality, Bounded Rationality, The Role of Intuition, The Role of Evidence-Based Management. Types of Decisions & Decision-Making Conditions. Decision-Making approaches - Quantitative approach, Environmental Approach, System Approach, Ethical Approach, Intuitive Approach, Case Study Approach Decision-Making Styles - Linear–Nonlinear Thinking Style Profile, Decision-Making Biases and Errors. Effective Decision Making in Today's World - Correctness of decision, Decision environment, Timing of decision, Effective communication of Decision, Participation in decision Making-Implementation of decision. **(7)**

5. **Controlling:** Controlling, Definition, need and Importance, The Control Process, Managerial Decisions in Controlling, Feed-forward / Concurrent / Feedback Controls. Financial Controls, Information Controls, Benchmarking of Best Practices. **(5)**

Suggested Text Books:
1. Fundamentals of Management by Robbins, S.P. and Decenzo, D.A., Pearson Education Asia, New Delhi.
2. Management, Koontz and Wechrich, TMGH
3. Management, Stoner, et. al., Prentice Hall of India, New Delhi.

Suggested Reference Books:
1. Management, Hellregel, Thomson Learning, Bombay
2. Management, Robbins & Coulter, Prentice Hall of Hall of India, New Delhi.
3. Management - Text & Cases, Satya Raju, PHI, New Delhi.
4. Management, Richard L. Draft, Thomson South-Western

Semester I		108 – Indian Economy
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO108.1	REMEMBERING	DESCRIBE the present state of Indian Economy and LIST major economic policy issues in the current context.
CO108.2	UNDERSTANDING	SUMMARIZE the sectoral composition of the Indian Economy and DISCUSS the trends therein.
CO108.3	APPLYING	PREDICT consequences of Growth of Monopolies, Concentration of Economic Power and Inequality in the Indian Economy.
CO108.4	ANALYSING	EXAMINE the changing profile of human capital, employment, productivity and ILLUSTRATE the linkages with GDP composition of India.
CO108.5	EVALUATING	EVALUATE the role of Foreign Trade in the Indian Economy.
CO108.6	CREATING	BUILD a case for co-existence of LPG model along with the role of the state in the Indian Economy.

1.   **Perspective of Indian Economy:** Indian Economy as a Developing Economy, Basic Characteristics Overview of Economic Planning, Role of Monetary policy and Fiscal Policy, Budget terminology, Economic Growth, GDP and GDP Trends, Money Supply & Inflation, Inflation trends, RBI – overview of role and functions, Capital Markets – overview of role and functions, Concept of Poverty, Estimates of Poverty, Poverty Line, Economic Reforms and Reduction of Poverty, Concept of Inclusion, Need of inclusive growth, Financial inclusion. Concept of Hard & Soft Infrastructure. Hard Infrastructure - Transport Infrastructure, Energy Infrastructure, Water management infrastructure, Communication Infrastructure, Solid waste management, Earth monitoring and measuring networks. Soft Infrastructure - Governance Infrastructure, Economic infrastructure, Social infrastructure, Critical Infrastructure, Urban infrastructure, Green infrastructure, Education Infrastructure, Health Infrastructure. **(6)**

2.   **Human Resources and Economic Development :** The Theory of Demographic Transition, Size and Growth Rate of Population in India, Quantitative Population Growth Differentials in Different Countries, The Sex Composition of Population, Age Composition of Population, Density of Population, Urbanization and Economic Growth in India, The Quality of Population, Population Projections (2001-2026), Demographic Dividend. **Human Development in India -** The Concept and Measures of Human Development, Human development Index for Various States in India, National Human Development Report, Changing profile of GDP and employment in India, GDP, Employment and Productivity per Worker in India, Relative Shift in the Shares of NSDP and Employment in Agriculture, Industry and Services in Different States. **(6)**

3.   **Sectoral composition of Indian Economy:** Primary, Secondary, Tertiary Sectors, Issues in Agriculture sector in India ,land reforms, Green Revolution and agriculture policies of India , Industrial development , small scale and cottage industries, Industrial Policy, Public sector in India, Services sector in India. Areas of Market Failure and Need for State Intervention, Redefining the Role of the State, Liberalization, Privatization and Globalization (LPG) Model of Development, Planning commission v/s NITI Aayog, Public Versus Private Sector Debate, Unorganised Sector and India's Informal Economy. **(6)**

4.   **Inequality and Economic Power in India:** FDI, Angel Investors and Start-ups, Unicorns, M&A, Investment Models, Role of State, PPP (Public-Private Partnership), Savings and Investment Trends. Growth of Large Industrial Houses Since Independence, Growth of Monopolies and Concentration of Economic Power in India, Competition Policy and Competition Law, Growth and Inequality, India as an Economic Superpower, Growth of the Indian Middle Class, Indian MNCs : Mergers and Acquisitions, Outsourcing, Nationalism and Globalization, Small-scale and Cottage Enterprises, The Role of Small-scale Industries in Indian Economy, Poverty, Vulnerability and Unorganized Sector Employment-The High Degree of Correlation, Estimate of Organized and Unorganized Workers. **(6)**

5.   **The Foreign Trade of India:** Importance of Foreign Trade for a Developing Economy, Overview of Foreign Trade Since Independence, Composition of India's Foreign Trade, Direction of India's Foreign Trade, India's Balance of Payments on Current Account, Balance of Payments Crisis, Balance of Payments Since the New Economic Reforms of 1991, India's Trade Policy, India's Foreign Trade Policy, An Analysis of Trends in Exports and Imports, Special Economic Zones (SEZs)-An Overview. **(6)**

Suggested Text Books:
1.   Indian Economy , Dutt R and Sundharam K.P.M, S .Chand, Delhi
2.   Indian Economy, Agarwal A. N., Vikas Publishing House, Delhi
3.   Indian Economy, Misra S.K. and Pury V.K., Himalaya Publishing House, New Delhi
4.   Business Environment , Bedi S K, Excel Books
5.   Economic Reforms in India - A Critique, Dutt Ruddar, S. Chand, New Delhi .

Suggested Reference Books:
1.   Economic Environment of Business , Adhikary, Sultan Chand and Sons
2.   Business, Government and Society, George A and Steiner G A, Macmillan
3.   Economic Environment of Business , Ghosh, Vikas
4.   Business Environment, Francis Cherunilam, Himalaya Publishing House, Bombay
5.   Industrial Economy of India, Kuchhal S.C., Chaitanya Publishing House, Allahabad

Semester I		109 – Entrepreneurship Development
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO109.1	REMEMBERING	DEFINE the key terms, LIST the Attributes and Characteristics of Entrepreneurs features and ENUMERATE the Factors influencing Entrepreneurship Growth.
CO109.2	UNDERSTANDING	DISCUSS the various theories of entrepreneurship.
CO109.3	APPLYING	CONSTRUCT a framework for a typical EDP.
CO109.4	ANALYSING	OUTLINE the role of Government and various support organizations in encouraging and supporting Entrepreneurship.
CO109.5	EVALUATING	COMPOSE an inventory of possible entrepreneurial opportunities in contemporary local, regional and national context.
CO109.6	CREATING	CREATE a business plan for an entrepreneurial venture.

1. **Entrepreneurship:** Concept of Entrepreneur. Intrapreneur, Entrepreneurship and Manager. Difference between Entrepreneur and Intrapreneur, Entrepreneur and Entrepreneurship. Attributes and Characteristics of successful entrepreneurs. Functions of an Entrepreneur, Classification of Entrepreneurs. Role of Entrepreneur in Indian Economy, Developing entrepreneurial culture, Factors influencing Entrepreneurship Growth - Economic, Non-Economic Factors, For profit or Not for profit entrepreneurs, Constraints for the Growth of Entrepreneurial Culture, Entrepreneurship as a career, Entrepreneurship as a style of management, Emerging Models of Corporate Entrepreneurship, India's start up revolution–Trends, Imperatives, benefits; the players involved in the ecosystem, Business Incubators-Rural entrepreneurship, social entrepreneurship, women entrepreneurs, Cases of Tata, Birlas, Kirloskar and new generation entrepreneurs in India. **(6)**

2. **Theories of entrepreneurship:** Innovation Theory by Schumpeter & Imitating, Theory of High Achievement by McClelland, X-Efficiency Theory by Leibenstein, Theory of Profit by Knight, Theory of Social change by Everett Hagen. **(4)**

3. **Entrepreneurship development:** Entrepreneurial Competencies, Developing Competencies. Concept of entrepreneurship development, Entrepreneur Training and developing, Role of Entrepreneur Development Programs (EDP), Role of DIC, SISI , EDII , NIESBUD, NEDB, EDP - Objectives – contents – methods - execution. Role of Mentors. Innovation and Entrepreneurship, Design Thinking Process. Role of consultancy organizations in promoting Entrepreneurs, Problems and difficulties of Entrepreneurs - Marketing Finance, Human Resource, Production; Research - external problems, Mobility of Entrepreneurs, Entrepreneurial change, occupational mobility - factors in mobility. **(6)**

4. **Role of Central Government and State Government in promoting Entrepreneurship:** Introduction to various incentives, subsidies and grants, Export Oriented Units, Fiscal and Tax concessions available, Women Entrepreneurs - Role, Problems and Prospects, Reasons for low women Entrepreneurs, Assistance Programme for Small Scale Units – Institutional Framework – Role of SSI Sector in the Economy – SSI Units – Failure, Causes and Preventive Measures – Turnaround Strategies. Future of Entrepreneurship Development and Government, Start Up India, Make in India. **(5)**

5. **Enterprise Promotion:** Creating Entrepreneurial Venture, Entrepreneurship Development Cycle, Business Planning Process, The business plan as an entrepreneurial tool, Elements of Business Plan, Objectives, Market Analysis, Development of product / idea - Resources, Capabilities, and strategies, identifying attributes of strategic resources, Opportunity Analysis, innovator or imitator, SWOT analysis, Internal and External Environment Analysis, Industry Analysis, Embryonic Companies and Spin off's, Porter's five forces model, Identifying the right Business Model Canvas, Seven Domains of John Mullins, Opportunities in Emerging/Transition/Decline industries, Opportunities at the bottom of the pyramid, Opportunities in social sector, Opportunities arising out of digitization, Marketing, Finance, Organization & Management, Ownership - Franchising, networking and alliances, Buying an existing business, Critical risk contingencies of the proposal, Scheduling and milestones. **(9)**

Suggested Text Books:
1. Dynamics of Entrepreneurship Development, Vasant Desai
2. Entrepreneurship: New Venture Creation, David H. Holt
3. Entrepreneurship Development New Venture Creation, Satish Taneja, S.L.Gupta
4. Project management, K. Nagarajan.
5. Entrepreneurship: Strategies and Resources, Marc J. Dollinger

Suggested Reference Books:
1. The Culture of Entrepreneurship, Brigitte Berger

2. Innovation and Entrepreneurship, Peter F. Drucker
3. Entrepreneurship, Robert D. Hisrich, Michael P. Peters, Dean A. Shepherd
4. Entrepreneurship As Strategy, G. Dale Meyer, Kurt A. Heppard
5. New Vistas of Entrepreneurship: Challenges & Opportunities, A. Sahay, M.S.Chhikara
6. Entrepreneurship and Small Business Management, Siropolis
7. The Entrepreneurial Connection, Gurmeet Naroola
8. Thought Leaders, Steven Brandt
9. Corporate Entrepreneurship, Vijay Sathe
10. Corporate Entrepreneurship: Entrepreneurial Development Inside Organizations, Michael H.Morris, Donald F.Kuratko
11. Intrapreneurship: Gifford Pinchot
12. Lead like an Entrepreneur, Neal Thornberry
13. You Too Can Become an Entrepreneur, Nalinaksha Mutsuddi
14. Make The Move: Demystifying Entrepreneurship, Ishan Gupta, Rajat Khare

Semester I		110 – Essentials of Psychology for Managers
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO110.1	REMEMBERING	DEFINE the basic concepts of psychology.
CO110.2	UNDERSTANDING	EXPLAIN the sensing and perceiving processes.
CO110.3	APPLYING	APPLY principles of learning and conditioning to human behavior.
CO110.4	ANALYSING	ILLUSTRATE the linkages between learning, memory and information processing.
CO110.5	EVALUATING	EXPLAIN the basic intrapersonal processes that influence social perception.

1.   Basic Concepts: Introduction to Psychology, Definitions of Psychology, Goals of Psychology, History of Psychology, Modern Psychology, Psychology: Its Grand Issues and Key Perspectives, Psychology - Trends for the New Millennium. Biological Bases of Behavior: Neurons - Building Blocks of the Nervous System, The Nervous System - its Basic Structure and Functions, The Brain and Consciousness – states of consciousness, dreams, hallucinations, The Brain and Human Behavior, Heredity and Behavior - Genetics and Evolutionary Psychology. **(6)**
2.   Sensation and Perception : Sensing and perceiving, Sensory Thresholds, Sensory Adaptation, The Senses - Hearing, Vision, Perceptual Processes, Information Processing – Bottom Up Processing, Top Down processing, Bottom Up and Top Down (together) processing, Culture, Experience & Perception, Perceptual Constancy, Perceptual Expectations, Perceptual illusions, Gestalt Theory, Perceptual Development and Learning. **(6)**
3.   Learning and Conditioning: A Definition of Learning, Classical Conditioning, Instrumental Conditioning, Classical and Instrumental Conditioning Compared: Biofeedback and Reinforcement, Verbal Learning, Basic Conditioning and Learning Phenomena, Reinforcement, Schedules of reinforcement, role of reinforcement in developing subordinate Social Behavior, Transfer of Training, Learning by Observing Models, Biological Limits. **(6)**
4.   Memory: Learning and Memory as Intertwined Processes, Kinds of Information Stored in Memory, Measures of Retention, The Three Components of Memory – Encoding, Storage, Retrieval, Interference Theory, Decay Theory, Information Processing I: Separate-Store Models, Information Processing II: Levels of Processing, Issues in Memory. **(6)**
5.   Cognition: Thinking - Mental Imagery, Problem Solving, Decision Making. Concept Formation, Language development. Relationship between language and thinking. **Emotion:** Definition of Emotion, the Physiology of Emotion, Emotional Expression - Verbal & Non Verbal, Labelling Emotions, Theories of Emotion – Common sense theory of emotion, James Lang theory of emotion, Cannnon Bard Theory of Emotion, Cognitive Arousal Theory of Emotion**(6)**

Suggested Text Books:
1. Psychology Ciccarelli, S. K & Meyer, G.E Pearson Education Ltd.
2. Introduction to Psychology, Clifford T. Morgan, Richard A King, John R Weisz and John Schopler, Indian Edition

Suggested Reference Books:
1. Essentials of understanding psychology, Feldman.S.R, Tata Mc Graw Hill.
2. Psychology, Baron, R.A and Misra, G. Pearson Education Ltd.

Semester I		111 - Legal Aspects of Business
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO111.1	REMEMBERING	DESCRIBE the key terms involved in each Act.
CO111.2	UNDERSTANDING	SUMMARIZE the key legal provisions of each Act.
CO111.3	APPLYING	ILLUSTRATE the use of the Acts in common business situations.
CO111.4	ANALYSING	OUTLINE the various facets of basic case laws of each Act from a legal and managerial perspective.

1. **The Contract Act, 1872:** Essential Elements of Valid Contract, Essential elements of Valid Contracts, Contracts of Indemnity & Guarantee, Contingent Contract, Quasi Contract, Discharge of contract, Breach of contract-Meaning & remedies, Agency - Creation of Agency – Agent and Principal (Relationship/rights), Types of agency. **(5+1)**
2. **Sale of Goods Act, 1930:** Contract of sale of goods, Conditions & warranties, Transfer of property or ownership, Performance of the Contract of Sale, Rights of unpaid seller, Sale by Auction. **(5+1)**
3. **The Negotiable Instrument Act, 1881:** Negotiable Instruments – Meaning, Characteristics, Types. Parties, Holder and holder in due course, Negotiation and Types of Endorsements, Dishonor of Negotiable Instrument – Noting and Protest. **(5+1)**
4. **The Companies (Amendment) Act, 2015:** Company – Definition, Meaning, Features and Types, One Person Company, Incorporation of Company – Memorandum of Association (MOA), Articles of Association (AOA), Share capital & Debentures, Acceptance of deposits, Appointment of director including woman Director. **(5+1)**
5. **The Consumer Protection Act, 1986**, Unfair & Restrictive Trade Practices, Dispute Redressal Forums – District, State & National Forum, Composition, Jurisdiction, Powers, Appellate Authority. **Information Technology Act, 2000**, Digital Signature, Electronic Governance, Electronic Records E – Contracts, E – Business models, E – Commerce & Security, Cyber Crimes. Intellectual Property Laws – Understanding of concepts of patents, copyrights, trademarks and designs. **(5+1)**

Suggested Text books:
1. Business Legislations for Management, M.C. Kuchhal
2. Elements of Mercantile Law, N.D.Kapoor
3. Business and Corporate Laws, Dr. P.C. Tulsian

Suggested Reference Books:
1. Legal Aspects of Business, Ravinder Kumar
2. Business Laws, S. D. Geet
3. Business Laws, S.S. Gulshan
4. Legal Aspects of Business, Akhileshwar Pathak

Semester I		112 – Demand Analysis and Forecasting
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO112.1	REMEMBERING	DESCRIBE the key terms associated with demand analysis, demand estimation and demand forecasting.
CO112.2	UNDERSTANDING	SUMMARIZE the use of demand forecasting in various functions of management.
CO112.3	APPLYING	IDENTIFY the pros and cons of various forecasting methods
CO112.4	ANALYSING	DECONSTRUCT a forecast into its various components
CO112.5	EVALUATING	BUILD a forecast for common products and services using time-series data.

1.   Demand Analysis: An Overview, Significance of Demand Analysis and Forecasting, How Predictable Is the Future? Some Causes of Forecast Error, Myths versus Reality of Forecasting, Data Collection, Storage, and Processing Reality, Art-of-Forecasting, Reality of Judgmental Overrides, Reality of Unconstrained Forecasts, Constrained Forecasts, and Plans, Accuracy of Forecast , Short Run Forecast , Long Term Forecast. Applications of Forecasting – Forecasting economic trends, Sales Forecasts, Staffing forecasts, budgeting, revenue and tax planning, cash flows forecasting, raw material planning, inventory planning, etc. **(5+1)**

2.   Estimation of Demand - Marketing Research Techniques - Consumer Surveys, Consumer Clinics and Focus Groups, Market Experiments in Test Stores. Statistical Estimation, Variable Identification, Time Series and Cross Sectional Data Collection, Specification of the Model, Estimation of the Parameters, Interpretation of Regression Statistics. **(5+1)**

3.   Forecasting Demand : Overview of Forecasting Methods, Selecting a Forecasting Technique, Purpose of Forecast, Type of Users, Patterns in the Data Series, Lead Time, Minimum Data Requirement, Desired Accuracy, Cost of forecasting, Qualitative Forecasting Techniques - Survey and Opinion Polling Techniques, Delphi Method, Cross Impact Analysis, Historical Analogy. **(5+1)**

4.   Quantitative Forecasting Methods Using Time Series Data: Time Series Analysis - Trend Analysis, Cyclical Variations, Seasonal Effects, Random Fluctuations, Smoothing Techniques, Moving Averages, Exponential Smoothing, Single Exponential Smoothing, Holt's Two-Parameter Method, Holt's-Winters' Method, Winters' Additive Seasonality Standard Statistical Error Terms, Specific Measures of Forecast Error, Out-of-Sample Measurement, Forecast Value Added. Barometric Techniques - Leading, Lagging and Coincident Economic Indicators, Diffusion and Composite Indexes, Choose the Appropriate Forecasting Method Use of Software Packages for Forecasting such as EXCEL. **(5+1)**

5.   New Product Forecasting: Using Structured Judgment, Differences between Evolutionary and Revolutionary New Products, General Feeling about New Product Forecasting, New Product Forecasting Overview, What Is a Candidate Product? New Product Forecasting Process, Structured Judgment Analysis, Structured Process Steps, Statistical Filter Step, Model Step, Forecast Step. **(5+1)**

Suggested Text Books:
1.   Demand-Driven Forecasting: A Structured Approach to Forecasting, Charles W. Chase
2.   Demand Forecasting for Managers, Stephan Kolassa
3.   Forecasting: Principles and Practice, George Athanasopoulos and Rob J. Hyndman

Suggested Reference Books:
1.   Fundamentals of Demand Planning and Forecasting - Forecasting & Planning , Chaman L. Jain and Jack Malheron

Semester II		207 – Contemporary Frameworks in Management
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO207.1	REMEMBERING	DEFINE Emotional Intelligence (EQ), IDENTIFY the benefits of emotional intelligence and RELATE the 5 Dimensions of Trait EI Model to the practice of emotional intelligence.
CO207.2	UNDERSTANDING	DESCRIBE how companies achieve transition from being good companies to great companies, and DISCUSS why and how most companies fail to make the transition.
CO207.3	APPLYING	APPLY the 21 laws that make leadership work succesfully to improve your leadership ability and ILLUSTRATE its positive impact on the whole organization.
CO207.4	ANALYSING	EXAMINE the fundamental causes of organizational politics and team failure.
CO207.5	EVALUATING	EXPLAIN the approach to being effective in attaining goals by aligning oneself to the "true north" principles based on a universal and timeless character ethic.

1. **Emotional Intelligence :** What is Emotional Intelligence, Benefits of EI, Understand the difference between Trait EI and Ability EI, 5 Dimensions of Trait EI Model - Self Awareness (SA), Managing Emotions (ME), Motivation (M), Empathy (E), Social Skills (SS) - Self awareness (SA) - Self Awareness, Seeing the other side, Giving in without giving up, Life Positions – you and only you can choose your mindset, Managing Emotions (ME) - Self-Regulation, Managing Emotions, The 'EQ brain' and how it works, The science of emotions, Understanding Emotions, Find your self-control, Using Coping Thoughts, Using Relaxation Techniques, Self-Motivation (M) – Optimism, Pessimism, The balance between optimism and pessimism, The power of re-framing, Empathy (E) – Empathy, Barriers to empathy, Developing your empathy, Social Skills (SS) - Social skills, Making an impact, Creating a powerful first impression, Assessing a situation, Being zealous without being offensive, Traits of a person with high social skills. Determine your EQ

2. **The 7 habits of highly effective people:** Paradigms and principles, Inside-out, The seven habits - an overview - Private victory Habit 1. Be proactive: principles of personal vision, Habit 2. Begin with the end in mind: principles of personal leadership, Habit 3. Put first things first: principles of personal management, Public victory. Paradigms of interdependence. Habit 4. Think win/win: principles of interpersonal leadership, Habit 5: Seek first to understand, then to be understood: principles of empathetic communication, Habit 6. Synergize: principles of creative cooperation, Renewal. Habit 7. Sharpen the sword: principles of balanced self-renewal

3. **Five dysfunctions of a team:** Absence of trust—unwilling to be vulnerable within the group, Fear of conflict—seeking artificial harmony over constructive passionate debate, Lack of commitment—feigning buy-in for group decisions creates ambiguity throughout the organization, Avoidance of accountability—ducking the responsibility to call peers on counterproductive behavior which sets low standards, Inattention to results—focusing on personal success, status and ego before team success

4. **The 21 irrefutable laws of leadership:** The law of the lid, The law of influence, The law of process, The law of navigation, The law of addition, The law of solid ground, The law of respect, The law of intuition, The law of magnetism, The law of connection, The law of the inner circle, The law of empowerment, The law of the picture, The law of buy-in, The law of victory, The law of the big mo, The law of priorities, The law of sacrifice, The law of timing, The law of explosive growth, The law of legacy.

5. **Good to Great:** Level 5 Leadership - Leaders who are humble, but driven to do what's best for the company, First Who, Then What: Get the right people on the bus, then figure out where to go. Find the right people and try them out in different seats on the bus (different positions in the company), Confront the Brutal Facts: The Stockdale paradox, Hedgehog Concept: Three overlapping circles: What lights your fire ("passion")? What could you be best in the world at ("best at")? What makes you money ("driving resource")? Culture of Discipline: Rinsing the cottage cheese, Technology Accelerators: Using technology to accelerate growth, within the three circles of the hedgehog concept, The Flywheel: The additive effect of many small initiatives.

Suggested Reference Books:
1. Emotional Intelligence, Daniel Goleman
2. The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change, Stephen R. Covey
3. The Five Dysfunctions of a Team: A Leadership Fable , Patrick M. Lencioni
4. The 21 Irrefutable Law of Leadership-John C. Maxwell
5. Good to Great, Jim Collins

Semester II		208 - Start Up and New Venture Management
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO208.1	REMEMBERING	DESCRIBE the strategic decisions involved in establishing a startup.
CO208.2	UNDERSTANDING	EXPLAIN the decision making matrix of entrepreneur in establishing a startup.
CO208.3	APPLYING	IDENTIFY the issues in developing a team to establish and grow a startup
CO208.4	ANALYSING	FORMULATE a go to market strategy for a startup.
CO208.5	EVALUATING	DESIGN a workable funding model for a proposed startup.
CO208.6	CREATING	DEVELOP a convincing business plan description to communicate value of the new venture to customers, investors and other stakeholders.

1.   Being an Entrepreneur: The entrepreneur, Profile analysis, behaviour and motivations, Lean Start –up, The entrepreneurial ecosystem, Entrepreneurs and strategic decisions , Sustainability of Entrepreneurship: Dilemmas of an entrepreneur for success; Handling doubts on survival of business, Struggles-Causes of failure–Product/ market, financing, managerial-Resilience. Legal Fundamentals - When, how and where to incorporate. **(5)**

2.   Customer Discovery: Entrepreneurial Opportunity Search and Identification; Market Intelligence, Market analysis, Market research, Customer validation, developing your business model, Crafting your value proposition, Product Development , Managing the product development process, Long Tail markets, Product launch goals, Go-to-Market Strategy, The role of selling in a startup, Sales forecasting for startups, Mapping buyer response modes. Social media Promotion tools. **(7)**

3.   The Financial Road Map: Planning/Budgeting, Developing a financial roadmap, financial statements: the four components, How to budget for startup success, Bootstrapping and alternative sources of funding, Informal capital– Friends & Family, Role of Government in ED, various schemes - PMEGP, CGTMSE, MPDA, SFURTI. Role of MSDE; Schemes by MSDE: PMKVY, SANKALP, STAR. Crowd funding, Venture capital, Private Equity, Financing Mix and the Financing continuum shareholding- Cliff -Vesting schedule-Relative importance of Operational Involvement, The Pitch, Preparing for your investor presentation, Elements of the perfect investment pitch. **(6)**

4.   Entrepreneurial Leadership: Building and managing the founder team, Attracting and retaining the right people, The Team - Board/Governance, The role of a successful board, Different board models for different ventures, How to assemble a board of advisors, separating leadership from management, Legal Matters- Organizational form– partnership, sole proprietorship, Tax, Legal expenses, hiring the service providers. Employee management and leadership in the workforce, Recruiting, selection and hiring, Hiring the first employee. **(5)**

5.   Business Plan: Need & Objectives, Target audience, Contents - Cover page and table of contents, Executive summary, Description of the current situation: Basic company information, products/services, management team, business organization, future goals, vision, and mission, Description of opportunity and market: Who are the buyers, who are the competitors, what are the competitive advantages of the company? Description of the business model, the marketing and sales strategy, Basic facts on the financials: Cash flow projection (life line), income statement (bottom line/profit and loss), balance sheet (business health/assets, liabilities, etc.), funding requirements, Risk analysis and possible exit strategies. Conclusion and appendixes: Résumés, literature, technical descriptions. Executive summary. Elevator pitch, Building a strong presentation, innovative methods of presenting a business plan –mind map, animated videos, etc. **(7)**

Suggested Text Books:
1.   New Venture Management: The Entrepreneur's Roadmap (Entrepreneurship Series), Donald F. Kuratko and Jeffrey S. Hornsby, Pearson
2.   The Manual for Indian Start-ups: Tools to Start and Scale-up Your New Venture, Vijaya Kumar Ivaturi, Meena Ganesh, Penguin Random House India.
3.   Managing New Ventures, Anjan Raichoudhuri, Prentice-Hall of India Pvt.Ltd
4.   Develop Your Idea!: Get Off to a Flying Start With Your Startup. Guided Exercises, Templates & Resources for Exploring New Business Ventures, K. N. Kukoyi
5.   Managing Small Business by Longenecker, Moore, Petty and Palich, Cengage Learning, India Edition.
6.   Entrepreneurship: New Venture Creation by David H. Holt
7.   The Dynamics of Entrepreneurial Development & Management by Desai, Vasant , Himalaya Publishing House, Delhi
8.   Entrepreneurship and Small Business Management by Siropolis
9.   Lead like an Entrepreneur by Neal Thornberry

Suggested Reference Books:
1.   Fundamentals of Entrepreneurship, Nandan H, PHI
2.   Cases in Entrepreneurship by Morse and Mitchell, Sage South Asia Edition.
3.   Entrepreneurship – Indian Cases on Change Agents by K Ramchandran, TMGH.
4.   Entrepreneurship – The engine of growth, edited by Mark Rice and Timothy Habbershon, Published by Praeger Perspectives.
5.   Entrepreneurship: Theory, Process and Practice by Kuratko, D.F. & Hodgetts, R.M. Thomson Press.
6.   Entrepreneurship Development: Small Business Enterprises by Charantimath, P. , Pearson.
7.   A Guide to Entrepreneurship by David, Otes , Jaico Books Publishing House, Delhi.
8.   Indian Entrepreneurial Culture by A Gupta , New Age International.

9.   Make The Move: Demystifying Entrepreneurship by Ishan Gupta, Rajat Khare

Semester II		209 - Geopolitics & World Economic Systems
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: At the end of this course, the learner shall be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO209.1	REMEMBERING	ENUMERATE the various elements of global economic system.
CO209.2	UNDERSTANDING	EXPLAIN the role of key trade organizations in the global economic system.
CO209.3	APPLYING	INDENTIFY the crucial elements of international trade laws.
CO209.4	ANALYSING	ANALYSE the forces that work for and against globalization.
CO209.5	EVALUATING	ASSESS the impact of the elements of the Global Economic System on the India Economy.

1.   Introduction to Global Economic & political Systems: Meaning of Global Economy and its History Structure and Components of Global Economy, Theory of Hegemonic Stability, Differences among National Economies, Market Oriented Capitalism, Developmental Capitalism, Social Market Capitalism, Comparative Analysis, Effects of Globalization on Indian Economy. **(6)**

2.   The Trading System: Debate over Free Trade – Functions of GATT and WTO, The Uruguay Round and World Trade Organization, Trade Blocs – EU, OECD, OPEC, SAARC, ASEAN, NAFTA, Threats to Open Trading System, Developments in International Trade Theory, Bi-lateral, Multilateral Trade Agreements, Impact of Trade wars in liberalized economy. **(6)**

3.   International Trade Laws: International Contracts of Sale of Goods Transactions, International Trade Insurance, Patents, Trademarks, Copyright and Neighboring Rights. Intellectual property Rights, Dispute settlement Procedures under GATT & WTO, Payment systems in International Trade, International Labour Organization and International Labour Laws. **(6)**

4.   International Monetary System: The International Financial System - Reform of International Monetary Affairs - The Bretton Wood System and the International Monetary Fund, Controversy over Regulation of International Finance, Developing Countries' Concerns, Exchange Rate Policy of Developing Economies. **(6)**

5.   Contemporary issues and Challenges in Global Economic Environment - Indian perspective: Globalization and its Advocacy, Globalization and its Impact on India, Fair Globalization and the Need for Policy Framework, Globalization in Reverse Gear-The Threatened Re-emergence of Protectionism. Euro zone Crisis and its impact on India, Issues in Brexit, World recession, inflationary trends, impact of fluctuating prices of crude oil, gold etc. **(6)**

Suggested Text Books:
1.   Global Political Economy, Robert Gilpin, Princeton University Press
2.   International Trade Law An Interdisciplinary, Raj Bhala, Non-Western Textbook
3.   International Trade Law, Indira Carr and Peter Stone
4.   Development and Sustainability: India in a Global Perspective edited by Sarmila Banerjee, Anjan Chakrabarty

Suggested Reference Books:
1.   International Economics, Paul Krugman, Maurice Obstfeld and Marc Melitz, Pearson, Global Edition
2.   Globalizing Capital, A history of the International Monetary system, Barry Eichengreen, Princeton University Press.

Semester II		210 – Qualitative Research Methods
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOME
CO210.1	REMEMBERING	ENUMERATE the key terms associated with Qualitative research approach.
CO210.2	UNDERSTANDING	COMPARE and CONTRAST Qualitative research approach with the Quantitative approach.

CO210.3	APPLYING	CONSTRUCT appropriate research and sampling designs for Qualitative research work in real world business and non-business contexts
CO210.4	ANALYSING	ILLUSTRATE the use of appropriate qualitative research methods in real world business and non-business contexts.
CO210.5	EVALUATING	EVALUATE the quality of Qualitative Research work
CO210.6	CREATING	COMBINE Qualitative and Quantitative research approaches in a real world research project.

1. **Qualitative Research:** Nature, Relevance, Need, Characteristics and Limitations of Qualitative Research, Ethics in Qualitative Research, Interrelationship of Qualitative and Quantitative Research, Linking Qualitative and Quantitative Research in One Design, Combining Qualitative and Quantitative Data, Combining Qualitative and Quantitative Methods, Linking Qualitative and Quantitative Results, Triangulation. **(5)**

2. **Qualitative Research Design:** Basic Qualitative Research Designs, Case Studies, Comparative Studies, Retrospective Studies, Longitudinal Qualitative Studies, Appropriateness of the Approach to the Issue, Fitting the Approach into the Research Process. Qualitative Research Sampling **-** Theoretical Sampling, Gradual Selection as a General Principle in Qualitative Research, Purposive Sampling, Width or Depth as Aims of Sampling, Case Constitution in the Sample, Sample Size decisions in Qualitative Research, Principle of Saturation. **(5)**

3. **Qualitative Research Methods:** Focused Interview, Semi-Standardized Interview, Problem-Centered Interview, Expert Interview, Group Interviews, Focus Groups, Non-participant Observation, Participant Observation, Ethnography. Grounded Theory Methodology. **(5)**

4. **Projective Techniques:** Principle of projection, applications, association, construction, expression based techniques, design and interpretation, Zaltman's Metaphor Elicitation Techniques. **(5)**

5. **Quality Criteria in Qualitative Research:** Reliability, Validity, Objectivity, Alternative Criteria, Criteria for Evaluating the Building of Theories, Quality Assessment as a Challenge for Qualitative Research, Triangulation, Analytic Induction, Generalization in Qualitative Research, The Constant Comparative Method, Process Evaluation and Quality Management. **(5)**

Suggested Text Books:
1. An Introduction to Qualitative Research, Uwe Flick, 4th Edition, SAGE
2. Research Methods in the Social Sciences, Bridget Somekh & Cathy Lewin, 5th Edition, SAGE India

Suggested Reference Books:
1. Qualitative Research Methods in Public Relations and Marketing Communications, Christine Baymon & Immy Holloway, Routledge
2. Qualitative Journeys, Minichiello & Kottler, SAGE

Semester II		211 – Business, Government & Society
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOME
CO211.1	REMEMBERING	DESCRIBE the economic roles of government in the Indian context.
CO211.2	UNDERSTANDING	EXPLAIN the macroeconomic crises around the world.
CO211.3	APPLYING	ILLUSTRATE the interlinkages between economic growth , poverty and inequality.
CO211.4	ANALYSING	EXAMINE the rationale, success and failures of Public Private Partnerships in the Indian context.
CO211.5	EVALUATING	ASSESS the forces for and against Globalization and the socio-economic impact of Globalization.
CO211.6	CREATING	DISCUSS the interplay between technology, business and society.

1. **Roles of Business, Government, and Society:** Interdependence and Conflict, Regulation of Business, Functions of State; Economic roles of government; Government and legal environment; Economic roles of Government in India; Indian experience with overall and sectoral growth, Inter-sectoral linkages and role of foreign direct investment, The Constitutional environment , Macroeconomic crises since 1990s- Indian and global experiences.

2.   Poverty, Inequality and Economic Growth: Industrial Development, Rural-Urban Dynamics, Population and Development, Finance for Development, Trade and Development, State and the Market, Privatization and Regulation, Institutions and Growth.

3.   Public Private Partnerships: The Rationale for Public Private Partnerships, Different Kinds of Public Private Partnerships with a special emphasis on the Build Operate and Transfer Model (BOT), Issues in Regulation that come about with privatization, Pricing mechanisms available to a regulator to ensure universal access and efficiency, Discussion of the privatization experience in different sectors, water, electricity, telecommunication, and railways with a special emphasis on India.

4.   Multinational Corporations: Perspectives on Globalization, Globalization: The MNC and TNC Organizations, Globalization of Brands, Globalization of the Indian Business and Firms, Coping with Global Competition, Conflict with Nation States. Domestic and Global forces - for and against Globalization, Brexit and latest developments.

5.   Business in a Global Environment: Business as Blending of People Technology and Ethical Behaviour, Achieving Business Success through Social Responsibilities, Changing Workplace - Influence of demography, influence of technology, gender issues, social justice and affirmative action, Industrial Relations.

Suggested Text Books:
1. Business, Government and Society: A Managerial Perspective byJohn Steiner, George Steiner, Tata McGraw Hill
2. Business, Government, and Society by Douglas E. Greer, Prentice Hall
3. Business and Its Environment by David P., International Edition

Semester II		212 - Business Process Reengineering
2 Credits	LTP: 2:0:0	Generic Elective – University Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO212.1	REMEMBERING	DEFINE the key terms associated with Business Process Reengineering.
CO212.2	UNDERSTANDING	EXPLAIN the various supporting and opposing forces to Business Process Reengineering in simple business situations.
CO212.3	APPLYING	APPLY modeling tools for simple business processes.
CO212.4	ANALYSING	FORMULATE a working plan to establish a Business Process Reengineering team.
CO212.5	EVALUATING	EVALUATE the success of a BPR initiative in relation to the impact on organizational KPIs.
CO212.6	CREATING	IMAGINE ways to improve business or non-business processes.

1.   **Introduction to Business Process Reengineering (BPR):** Definition of business processes – Concept of BPR - Definition of business process redesign, BPR - Evolution, Definition, Need for reengineering, Benefits, Role of leader & manager, Breakthrough reengineering model, BPR guiding principles, Business process reengineering & performance improvement, Key targets of BPR, Myths about BPR , What reengineering isn't , BPR and other management concepts: TQM, Quality function deployment, ISO standards, ERP. BPR and Process Simplification, BPR and Continuous Improvement. **(6)**

2.   **Business vision and process objectives:** The Key Elements of BPR, Develop a Vision, Establish a Responsible Team, Prepare the Organization for Change, Redesign the Business Process, Case Studies. Business Processes, People, Information Technology. Processes to be redesigned, selection criteria, dysfunction, importance feasibility. Measuring existing processes, BPR Goals – Cycle time reduction, Cost reduction, Quality improvement, Customer Satisfaction, BPR team characteristics. **(6)**

3.   **Enablers of BPR:** Enablers of BPR in manufacturing – Agile Manufacturing, Lean Manufacturing, JIT, Collaborative Manufacturing, Intelligent Manufacturing, Production Planning, Product design & development. Relationship between BPR and information technology, Role of information technology in reengineering, Criticality of IT in business process. **(6)**

4.   **BPR implementation methodology:** Different BPR Methodologies, Different Phases of BPR, Relationship between BPR phases, Tools used in Modelling the Business - flow-charting, business activity maps, relational diagrams, benefit/cost analysis, Process Modelling, Notations, Case Studies. BPR KPIs Definition, Measuring KPIs, Methodologies (Common Assessment Framework (CAF), Balanced Scorecard), Case Studies. **(6)**

5.   **Change Management:** The Power of Habit in organizations, Planned changes in business re-engineering projects; Factors relating to change management systems and culture, Committed and strong leadership, Factors relating to organizational structure, Factors related to BPR program management, Factors related to IT infrastructure, Factors Relating to BPR Failure, Problems in communication and organizational resistance, Lack of organizational readiness for change, Problems related to creating a culture for change, Lack of training and education, Factors related to management support, Ineffective BPR teams, A framework for barrier management.

Suggested Text Books:
1.   Hammer, M. and Champy, J, Re-engineering the Corporation: A Manifesto for Business Revolution, Harper Business
2.   R. Radhakrishnan S.Balasubramanian, Business Process Reengineering, PHI
3.   Vikram Sethi and William R. King, Organisational Transformation through Business Process Reengineering, Pearson
4.   K. Shridhara Bhatt, Business Process Reengineering, Himalaya Publications
5.   Hammer, M. and Stanton, S.A, The Re-engineering Revolution, Harper Business

Suggested Reference Books:
1.   Harmon, P , Business Process Change : A Guide for Business Managers and BPM and Six Sigma Professionals, Elsevier/Morgan Kaufmann Publishers.
2.   Kock, N.F., Process Improvement and Organizational Learning: The Role of Collaboration Technologies, Idea Group.
3.   R. Anupindi et al., Managing Business Process Flows: Principles of Operations Management, Pearson Education Inc.
4.   Walford, R.B., Business Process Implementation for IT Professionals and Managers, Artech House.
5.   Henry J Johansson, H J Johansson, Mo, Business Process Reengineering, Wiley

Generic Courses (Electives) – Institute Level – Semester I & II

Semester I		113 - Verbal Communication Lab
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO113.1	REMEMBERING	RECOGNIZE the various elements of communication, channels of communication and barriers to effective communication.
CO113.2	UNDERSTANDING	EXPRESS themselves effectively in routine and special real world business interactions.
CO113.3	APPLYING	DEMONSTRATE appropriate use of body language.
CO113.4	ANALYSING	TAKE PART IN professional meetings, group discussions, telephonic calls, elementary interviews and public speaking activities.
CO113.5	EVALUATING	APPRAISE the pros and cons of sample recorded verbal communications in a business context.
CO113.6	CREATING	CREATE and DELIVER effective business presentations, using appropriate technology tools, for common business situations.

1.   **Basics of Communication:** Communication elements and process , Need of Communication Skills for Managers, Channels ,forms and dimensions of communication , Verbal and non-verbal communication, Principles of nonverbal communication - through clothes and body language , Persuasive communication: the process of persuasion, formal and informal persuasion, Barriers to communication and how to overcome the barriers, Principles of effective communication. **(5)**
2.   **Speaking :** Characteristics of effective speech, voice quality, rate of speaking, clear articulation, eye contact, use of expressions, and gestures and posture; Types of managerial speeches: speech of introduction, speech of vote of thanks, occasional speech, theme speech, formal speeches during meetings. **(5)**
3.   **Soft skills:** How communication skills and soft skills are inter-related, Body language-posture, eye-contact, handling hand movements, gait - Voice and tone, Meeting and Boardroom Protocol - Guidelines for planning a meeting, Before the meeting, On the day of the Meeting, Guidelines for Attending the meeting, For the Chairperson, For attendees, For Presenters, Telephone Etiquette, Cell phone etiquette, Telephone etiquette guidelines, Mastering the

telephone courtesy, Active listening, Putting callers on hold, Transferring a call, Screening calls, Taking a message, Voice Mail, Closing the call, When Making calls, Closing the call, Handling rude or impatient clients, Cross-cultural communication, cultural sensitivity, Cross-cultural issues which affect Communication across different Cultures, Culture and non-verbal communication, Effective intercultural communication, Business and social etiquette. **(7)**

4.   **Presentation skills:** Principles of Effective Presentations, Planning, Structure and Delivery, Principles governing the use of audiovisual media, Time management - Slide design and transition: representation of textual information into visuals for effectiveness of communication - Style and persuasiveness of the message - Adherence to the number of slides, Dynamics of group presentation and individual presentation. **(5)**

5.   **Interviews:** Essentials of placement interviews, web /video conferencing, tele-meeting. Impression Formation, Tactics, The Self-presentational Motive, The Compass Qualities; First and Lasting Impressions; Magic Pills; Toxic Traits; The Social Context: Norms and Roles, The Target's Values, Physical Appearance; Communication Style; Content of Communication; Actions; The Environment; Success; Changing from the Outside-in, Current Social Image, The Private Self, Worrying about Impressions. **(5)**

Note:
1.   The entire course should be delivered with a skills development focus.
2.   Video recordings of student's performances (speaking tasks) should be carried out and used for intensive reviews for performance improvement.

Suggested Text Books:
1.   Business Communication Today, Bovee C L et. al., Pearson Education
2.   Business Communication, P.D. Chaturvedi, Pearson Education
3.   Business Communication, T N Chhabra, Bhanu Ranjan, Sun India
4.   Verbal and Non-Verbal Reasoning, Prakash, P, Macmillan India Ltd., New Delhi
5.   Objective English, Thorpe, E, and Thorpe, S, Pearson Education, New Delhi

Suggested Reference Books:
1.   Communication Skills for Effective Management, Hargie et. al., Palgrave
2.   Communication for Business, Tayler Shinley, Pearson Education
3.   Technical Communication, Anderson, P.V, Thomson Wadsworth, New Delhi
4.   The Oxford Guide to Writing and Speaking, John Seely, Oxford University Press, New Delhi
5.   Dictionary of Common Errors, Turton, N.D and Heaton, J.B, Addision Wesley Longman Ltd.

Semester I		114 - Enterprise Analysis - Desk Research
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO114.1	REMEMBERING	DESCRIBE the key historical, organizational, market related, financial, governance, leadership and social responsibility dimensions of a real world business organization.
CO114.2	UNDERSTANDING	SUMMARIZE the regional, national and global footprint of a real world business organization.
CO114.3	APPLYING	DEMONSTRATE the use of secondary – offline and online resources to profile a real world business organization.
CO114.4	ANALYSING	ANALYSE, using tables and charts, the trends in market standing and financial performance of a real world business organization over the last 5 years.
CO114.5	EVALUATING	COMPOSE a succinct summary of future plans of a real world business organization the company website, shareholders reports and other information available in the public domain.
CO114.6	CREATING	IMAGINE the key challenges and opportunities for a real world business organization in the immediate future (1 to 3 years).

1.   Enterprise History & Background: Establishment, Original & Current Promoters, Business Group or Business Family to which it belongs, Vision-Mission-Philosophy – Values-Quality Policy, Brief profiles of the Chairman, CEO, MD,

Members of Board of Directors along with their career highlights CSR Initiatives, Technical and other collaborations if any, Recent Mergers and Acquisitions, if any. **(6)**

2.   Organization : Organization Structure, Geographical (domestic and global) foot print – at the time of inception and spread over the years, company's current head quarter worldwide as well as head quarter / corporate office in India, Manufacturing /Service locations Indian and major worldwide, Certifications if any - ISO / EMS / FDA / CMMI , etc. Online presence. Initiatives towards gender diversity, Initiatives towards social inclusion, Initiatives towards environment conservation. Current Talent needs. Key highlights of the company's website. **(6)**

3.   Markets: Major Customers, customer segments, Products, Product lines, Major Brands, Market Share – nationally, region wise, product wise, Advertising Agency, Advertising Punch Line/Slogan, Logo, Key Alliances in the past 5 years & impact. Mergers & Acquisitions, if any. Technological developments. Dirsuptive innovations affecting the organization. Labour unrest if any – reasons thereof and impact. Emerging potential competition through first generation entrepreneurs or global / local players. **(6)**

4.   Financials: Data to be studied, tabulated, graphically depicted, analyzed and presented for last 5 years for the Revenues, Profitability, Market Capitalization, Segmented Revenues, Auditors. Listing status & Scrip Codes – BSE and NSE, Global Listings on International Stock Markets, Share Price Face Value, Current Market Value, Annual High Low Figures, P/E Ratio, Shareholding Pattern. **(6)**

5.   Governance: Philosophy, Action taken by SEBI if any, Involvement in Scams, Insider Trading Issues, Standard & Poor's Corporate Governance Scores, CRISIL Rating. Major Awards and Achievements of the Organization in the last 5 years. Forward looking statements of the top management. **(6)**

Note:
1.   Students should work in groups of 3 to 5 each under the guidance of a faculty.
2.   Students shall carry out an indepth study of any THREE Organizations of their choice.
3.   Organizations selected should demonstrate a variety across sectors, ownerships, size, and other key dimensions.
4.   Students shall submit a structured detailed report.

Suggested Text Books:
1.   No text books are prescribed.
2.   The course has to be taught using the company annual reports and other publications, company website, social media feeds, business newspapers and business data bases such as ACE equity, CRISIL database, etc.

Semester I		115 - Selling & Negotiations Skills Lab
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO115.1	REMEMBERING	DESCRIBE the various selling situations and selling types.
CO115.2	UNDERSTANDING	OUTLINE the pre-sales work to be carried out by a professional salesperson.
CO115.3	APPLYING	IDENTIFY the key individuals involved in a real world sales process for a real world product/ service / e-product / e-service.
CO115.4	ANALYSING	FORMULATE a sales script for a real world sales call for a product/ service / e-product / e-service.
CO115.5	EVALUATING	DECONSTRUCT the pros and cons of sample real world sales calls for a product/ service / e-product / e-service.
CO115.6	CREATING	DEVELOP a sales proposal for a real world product/ service / e-product / e-service and for a real world selling situation.

1.   Basics of Selling: Importance of Selling. Role in the context of organization – survival and growth. Types of Selling **-** Different in selling situations, New business versus service selling, Newton's classification of sales types, McMurry & Arnold's classification of selling types, Consumer indirect selling, Industrial selling, Missionary, Sales Team/group selling Merchandising, Telesales, Franchise selling, International selling. **(5)**

2.   Pre-Selling Work : Attributes of a Good Salesperson - Personality & physical characteristics, Enthusiasm, Confidence, Intelligence, Self-worth, Knowledge- product, Competition, organization, market, customer, territory; People Buy From People, Communication skills, Persuasive skills, Personal Diary, Time management, Managing Sales

Documents and collaterals management. Fear Factor in Sales. Maximising Productivity in a Sales Role, Meetings and Your Time, The Telephone - Social Media & Online Data Bases as a Sales Tools, Developing Your Script, Mailers, Pre-Call Planning, Generating Appointments. **(7)**

3.   Selling in Action: Identifying Key Individuals – Prospecting, Influencers and Decision Makers, Talking to the Right Individuals, Making that Good First Impression, How to Win Friends and Influence People, Dale Carnegies Six Principles of Relationship, What's In It For Me?, Honesty and Integrity. **(5)**

4.   Objection handling: Analyzing the Reasons for Objections, Seeing What We Can Do, Listen - Probe - Advise (L-P-A), Exercise: Objection Handling, Uncovering Objections, Seven Types of Objections, Turning Objections into Selling Opportunities. Selling Techniques: Cross Selling, Up Selling, Value Added (Suggestive) Selling, Advancing Opportunity, Exceeding Customer Expectations, Giving Recognition. **(6)**

5.   Sales Conversation, Negotiation & Closure: Starting a Quality Prospecting Conversation, Listeners Control Conversations, Trial Closing, Creating an Opportunity: Situation vs Problem Questions, Difficulty Questions, Negative and Positive Answer Questions, Directive Questions, Rhetorical Questions. Problems with Positional Bargaining, Opening Up the Negotiation, Approaches to Better Negotiation, You Have Alternatives, Reverse Psychology in Negotiation. Sales Proposals: How to Construct a Sales Proposal, Important Factors to Consider, Putting It All Together. **(7)**

Note:
1.   The course should be delivered from a skills building perspective.
2.   Principles should be supplemented by live exercises on personal selling

Suggested Text Books:
1.   Selling & Sales Management, Geoffrey Lancaster & David Jobber, Macmillan India Ltd.
2.   Negotiation: Communication for diverse settings, Michael L Spangle and Myra Isenhart, Sage South Asia Edition.
3.   The Sales Bible: The Ultimate Sales Resource, Jeffrey Gitomer, Wiley India
4.   How to win friends and influence People, Dale Carnegie
5.   The Art of Closing the Sale, Brian Tracy, Pearson Education.

Suggested Reference Books:
1.   Sales Management, Bill Donaldson, Palgrave Publications
2.   You can negotiate anything, Herb Cohen
3.   Managing Sales Leads, Crocker and Obermayer, American Marketing Association

Semester I			116 - MS Excel
2 Credits	LTP: 0:3:1		Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO116.1	REMEMBERING	SELECT appropriate menus and functions of MS Excel to Create, Format, Import, Merge, Save, Print Spreadsheets & Charts using business data.
CO116.2	UNDERSTANDING	SHOW how to do basic troubleshooting and fix mistakes most people make when working with spreadsheets.
CO116.3	APPLYING	USE various functions of MS Excel, Execute pivot table analysis, common (and powerful functions), and different types of lookups (vlookup, hlookup, and index/match).
CO116.4	ANALYSING	ILLUSTRATE the use of the most commonly used data-manipulation commands in MS Excel.
CO116.5	EVALUATING	DERIVE insights from multiple data sources in MS EXCEL and work with it to answer relevant business questions.
CO116.6	CREATING	CREATE standard Excel Templates for routine business data management and analysis activities.

1.   Introduction to Spreadsheets - Understanding Microsoft Excel, Excel Workbook Windows, Basic Spreadsheet Skills, Excel Help System, Opening and Closing Workbooks, Understanding Workbook File Formats, Creating New Workbooks, Selecting Cells, Auto Sum and Auto Fill Function, Cell Referencing and Request, Formatting Cells, Formatting

Numbers, Placing Cell Alignment, Cell, Rows and Columns, Understanding Worksheets, Editing, Copying and Moving Cells, Page Layouts in Excel, Proofing Workbooks, Basic Options, Ribbons and Toolbar.**(4)**

2.   Defining Names in Excel, Sorting Data, Using Excel Tables, Filtering Data in Excel, Understand Charts, Chart Design Options and Tools, Chart Format Tools, Combo Charts, Functions within Excel, Understanding Date Function, Information Functions, Logical Functions, Find and Replace, Headers and Footers, Adding Comments, Conditional Formatting. **(5)**

3.   Using Text to Columns, The Paste Special Function, Data Validation, Subtotals and Grouping, Consolidating Data, Scenario Analysis, Data Tables in Scenario Analysis, What-if Analysis, Mats and Trig Functions, Text Functions in Excel, Using Lookup Functions, Vlookups, HLookups, Match, Using Statistical Functions, Database Functions, Financial Functions, Formula Auditing and Error Tracing, Hyperlinks in Excel, Linking Data, Understanding Pivot Tables, Using Pivot Charts, Workbook Properties, Protecting and Sharing Worksheets, Data Encrypting and Finalising Workbooks, Understanding Macros, Custom Number Formats in Excel, Using Custom Lists, Working with Templates, Tracking Changes in Excel, Merging and Compare Excel Workbooks. **(7)**

4.   Using Pivot tables – Slicers -Report Filters for basic analytics, Contact Management and Marketing With Excel, Managing Customers, Vendors And Employees, Gaining Product And Service Insights, Sales reports using Excel, Supervising Sales With Excel, Preparing Invoices, Assessing Account Aging, Analyzing Demographics, Creating Scheduling And Marketing Calendars, Creating Standard Excel Templates for routine business data management and analysis activities. **(7)**

5.   Managing Money With Excel, Building & Tracking Budgets, Planning And Tracking Loans, Keeping Account Registers, Creating Formulas for Financial Applications, PV, PMT, NPER, RATE, Creating Balance Sheet, Investment Calculations, Depreciation calculations, Lab based Evaluation, Gauging Business Status with Excel, Configuring Cash Flow Statements, Resolving Business Ratios, Creating Standard Excel Templates for routine business data management and analysis activities. **(7)**

Note:
1.   The entire course should be delivered in the computer lab in an application oriented manner.
2.   Business Applications should be stressed rather than merely teaching Excel as a software.

Suggested Text Books:
1.   Excel 2016 Bible, John Walkenbach, John Wiley & Sons
2.   Excel: Formulas & Functions, Robert Dinwiddie
3.   Excel 2007 for Dummies by Greg Harvey
4.   New Perspectives on Microsoft Office Excel 2007
5.   Microsoft Excel 2016 Step by Step, Curtis Frye

Semester I		117 - Business Systems and Procedures
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO117.1	REMEMBERING	TABULATE the key elements of a typical business system and related work flow procedures.
CO117.2	UNDERSTANDING	EXPLAIN a business system and related procedures.
CO117.3	APPLYING	PREDICT the fail points / bottle necks in a typical business process.
CO117.4	ANALYSING	BREAK DOWN a business system into simpler components and explain the inter-relationships.
CO117.5	EVALUATING	DEVELOP a process based thinking approach.
CO117.6	CREATING	CREATE standard operating procedures and flow charts / other visual representations for typical business systems and processes.

1.   **Business Systems and Procedures:** Concept and need - Characteristics of a good procedure. Writing a Standard Operating Procedure (SOP)– Procedure Identification - Information Gathering–Interviewing – Analysis – Writing – Implementation – Review- Identifying Fail Points - Fine-tuning. Process Mapping Tools – Aid Memoir – Flowchart – Swim Lane Diagrams – Flow Charting Software – Using MS Word and Excel for Flowcharting - Case Studies. Re-engineering information flow and paper flow – Process Mapping for Current and Future State Map.

2.   **Systems Study:** Process Mapping, Improvement and Writing SOP's for an entire range of activities for a typical business process in a manufacturing/ service organization. Students should visit appropriate organizations to study the real life processes.

3.   Detailed study of atleast **FIVE** Systems and underlying Procedures, such as: (list is illustrative only)
   a) Attendance Recording System in a manufacturing / service organization.
   b) Employee scheduling in a retail mall.
   c) Facilities management and scheduling system in automobile workshop.
   d) Inventory Management
   e) Just in Time Inventory System in a manufacturing / service organization.
   f) Kitchen Order Ticket (KOT) System in a Restaurant.
   g) KYC verification system in a mutual fund house.
   h) Loan approval system in a cooperative bank.
   i) Maintenance system in a facility.
   j) On-boarding of new employees in a manufacturing / service organization.
   k) Payroll Management
   l) Performance Appraisal system in a manufacturing / service organization.
   m) Point of sale (POS) system in an organized retail store.
   n) Purchase Order System in a manufacturing / service organization.
   o) Quality Audit system
   p) Receivables Management
   q) Stock Taking system in a library.
   r) Warehouse management system.

4.   Presentation of individual/group projects

Suggested Text Book:
1.   Business Process Management – A Rigorous Approach, Martyn A Ould , British Computer Society, First South Asia Edition.

Semester I		118 - Managing Innovation
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO118.1	REMEMBERING	DESCRIBE the key ideas relevant to innovation, intellectual property, business models
CO118.2	UNDERSTANDING	INTERPRET the various theories of innovation and EXPLAIN with examples the types of innovation.
CO118.3	APPLYING	EXPERIMENT WITH innovation as a systematic process and generate innovative ideas for new products and services.
CO118.4	ANALYSING	DISSECT contemporary start-up businesses for their business models, extent of innovation, success and failure.
CO118.5	EVALUATING	CREATE an inventory of product and process innovations for daily use consumer products and routine business processes in a typical organization.
CO118.6	CREATING	CREATE a potential list of innovation needs for India in the local, regional and national context and ASSESS the likelihood of constructing a business model around these needs in the current local, regional and national context.

6.   Basics of Innovation: Concept of Innovation. Invention and Creativity - Role and relationship with innovation, Product innovation and process innovation, Radical and incremental innovation, Technological innovation, commercial or organizational Innovation, Characteristics of innovation in different sectors , Innovation in Indian context, Innovation and Creativity, Jugad and innovation, Innovation in Current Environment- local, regional and national context. **(4)**

7.   Economics and Management of Innovation: Schumpeter and creative destruction, The evolutionary theory of Nelson and Winter, The model of the dynamic capabilities of David Teece, Porter and competitive advantages, The value

chain, Drucker and the systematic innovation, Innovations diffusion, Speed, Adoption. Innovation and Knowledge, Tacit and explicit knowledge, Knowledge as a public good. **(5)**

8.   Models of Innovation – Static Models: Incremental versus Radical Innovation, Abernathy –Clark Model, Henderson – Clark Model, Disruptive Technological Change Model, Innovation Value – Added Chain, Strategic Leadership View, Familiarity Matrix, Imitability & Complementary Assets – Teece Model. Dynamic Models: Utterback – Abernathy Model, Tushman – Rosenkopf technology Life Cycle Model, Foster's S Curve.(7)

9.   Instruments for Innovation: Challenges of Innovation, Innovation as a systematic practice, Steps of Innovation Management, Learning Cycle, The roles of the innovator, Functional Sources of Innovation – Internal Value Chain, Spillovers from Competitors, Suppliers, Customers and Complimentary Innovators, The generation of ideas: brainstorming, Creativity, Divergent V/s Convergent Thinking, Design Thinking, Blue Ocean Strategy. Experimentation in Innovation Management, Technology Innovation Process, Idea Championship, Participation for Innovation, Co-creation for Innovation, Screening the innovative ideas, Proto typing to Incubation. **(7)**

10.   Management and Marketing of Innovation: Innovation Management Planning, Technology Forecasting, Innovation Sustainable Conditions, Management of Innovation, Concept of IPR. Creation of IPR, Types of IPR, Patents and Copyrights, Patents in India. **Business Models:** What is a Business Model? The evolution of the business model, The Business Model Canvas, Business Models and value proposition, Business Model Failure: Reasons and Remedies, Incubators: Business Vs Technology, Future markets and Innovation needs for India. **(7)**

Suggested Text Books:
1.   Innovation Management, Allan Afuah, Oxford Indian Edition.
2.   Innovation Management, Shlomo Maital and D V R Seshadri, Response Books, Sage Publications, New Delhi.
3.   Innovation: the attacker's advantage, Foster, Richard N., London, Macmillan.
4.   Adair on Creativity and Innovation, Edited by Neil Thomas, Viva Books
5.   Innovating at the Edge – How organizations Evolve and Embed Innovation Capability, Tim Jones, Butterworth-Hienemann, South Asian Edition.
6.   Managing Creativity & innovation, Harvard Business Essentials, Harvard Business School Press

Suggested Reference Books:
1.   The Innovator's ToolKit , Harvard Business Press.
2.   Fastrack to Success Innovation , Andy Bruce and David Birchall, Prentice Hall - Financial Times.
3.   Getting to Innovation, Arthur B VanGundy, PHI – Eastern Economy Edition
4.   Blue Ocean Strategy, Kim & Mauborgne

Semester I		119 - Foreign Language I
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO119.1	REMEMBERING	RECALL and SPELL simple words in the foreign language
CO119.2	UNDERSTANDING	TRANSLATE simple sentences from English to the foreign language and vice-versa.
CO119.3	APPLYING	CONSTRUCT a dialogue, in the foreign language, for basic human interactions in a social context.
CO119.4	ANALYSING	TAKE PART IN an interaction in a non-business setting using the foreign language.
CO119.5	EVALUATING	INTERPRET a short write up written in the foreign language.

1.   Salutations: (a) To greet the people and say Good afternoon, Good Evening, Goodbye, ask name and say your name, seek clarification and help, numbers from 1 to 10 **(b)**To say where you live. Describe your house and members of your family. Weights and Measures, length & breadth, use of decimal system, area and volume. Cardinal numbers & Ordinal Numbers. **(c)** Ask and give personal information, Nationality, profession and language, Numbers from 11 to 50. To ask time by clock and by span, days of the week, months of the year. **(6)**

2.   Conversation Skills: **(a)** To ask and express interests, Preferences; likes and dislikes; to invite, to accept the invitation or to politely decline the invitation; hobbies and how to spend your leisure. **(b)** To talk about the weather; to talk about the daily personal routine and related activities. Seasons & holidays in France/Germany/Japan. **(c)** To talk

about clothing - size, colour, material. Purchase at a super market, modes of payment. To name and explain human body to express common bodily ailments (fever, headache etc.) **(6)**

3. **Geographical Description**: **(a)** Country, location on the world map, borders and neighboring countries, ports and industrial towns. **(b)** Information and clarification of places. Asking for directions to the public places. Modes of Transport. Numbers 51 to 100 and 1000, 10,00,000 etc. **(6)**

4. **Social: (a)** Visit to a restaurant, to express agreement/disagreement; to ask for price/quantity. **(b)** To talk about/express future actions, to plan a business trip with related requirements: hotel, tickets, car, Rent a car, places to visit, traffic signs etc. Documents required like Passport, International Driving license, Insurance cover etc. **(6)**

5. **Business: (a)** To ask about personal past events, to narrate personal experience, to comprehend difference between letters like Personal/Business Letters, telegram & e- mail; formats of Letter head and e mail. **(b)** Vocabulary relating to the Transactions at the Post office, Bank, Insurance Company – personal, health, accident, marine, equivalent terms of transaction – FOB, C.I.F, F.A.S, payment through Letter of credit. **(6)**

Note: Institute may offer any one of the following foreign languages to the students: SPANISH / FRENCH/ GERMAN/ JAPANESE / CHINESE

Suggested Text Books:
Relevant Standard Text Books, Videos, Audio CDs.

Semester II		213 - Written Analysis and Communication Lab
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO213.1	REMEMBERING	DESCRIBE stages in a typical communication cycle and the barriers to effective communication.
CO213.2	UNDERSTANDING	SUMMARIZE long essays and reports into précis and executive summaries.
CO213.3	APPLYING	USE Dictionary and Thesaurus to draft and edit a variety of business written communication.
CO213.4	ANALYSING	EXAMINE sample internal communications in a business environment for potential refinements.
CO213.5	EVALUATING	COMPOSE variety of letters, notices, memos and circulars.

1. **Written Communication:** Different types of communication like letters, memos, reports, fax, email, presentations and multimedia, choosing the means of communication, stages in communication cycle, Barriers to effective communication, communication systems. **(5)**

2. **Writing Techniques:** Rules of good writing, adaptation and selection of words, masculine words, writing with style- choosing words with right strength and vigor, using a thesaurus, writing effective sentences, developing logical paragraphs, Précis writing, Developing coherent paragraphs, overall tone, drafting, editing and finalizing the business letters. Planning the persuasive message, common types of persuasive requests, principles of persuasive communication. Reformulating and summarizing - What is a summary? Using synonyms & antonyms, reducing phrases, guidelines for writing summaries, business summaries Comprehension: using a dictionary, grammatical precision, (phonetics), contextual clues, guidelines for comprehension. **(7)**

3. **Recruitment and employment correspondence:** Application letter, curriculum vitae, interview, references, offer of employment, job description, letter of acceptance, letter of resignation, writing routine and persuasive letters. **(6)**

4. **Internal Communications:** Memoranda, meetings - agenda and minutes, Writing memos, circulars, notices and emails. Positive and negative messages such as Letter of Appreciation, Letter of Congratulations, Warning Letter, Show Case Notice. Writing Follow up letters and reminders, Writing Sales letters, collection letters, Poster Making. Report writing - What is a report , Objectives of report, types of report, Report Planning, Types of Reports, Process, Structure and Layout, planning, Nature of Headings, Ordering of Points, Logical Sequencing, Graphs, Charts, Writing an Executive Summary, List of Illustration, Technique of writing a report, characteristics of business reports. **(6)**

5. **External Communications:** Public notices, invitations to tender bid, auction, notices, etc. Writing business proposals, Preparing Press Release and Press Notes**. (6)**

Note:
1. The entire course should be delivered in a workshop and application oriented manner. It is expected that not more than 10 to 15% of the time should be devoted to the theoretical aspect.
2. Workbooks should be prepared that comprehensively cover major situations of managerial communication and should be handed over to the students right at the beginning of the course.
3. Students should be asked to submit the completed workbooks at the end of the term.

Suggested Text Books:
1. Business Communication Today, Bovee C L et. al., Pearson Education
2. Business Communication, P.D. Chaturvedi, Pearson Education
3. Business Communication, T N Chhabra, Bhanu Ranjan, Sun India
4. Verbal and Non-Verbal Reasoning, Prakash, P, Macmillan India Ltd., New Delhi
5. Objective English, Thorpe, E, and Thorpe, S, Pearson Education, New Delhi

Suggested Reference Books:
1. Communication Skills for Effective Management, Hargie et. al., Palgrave
2. Communication for Business, Tayler Shinley, Pearson Education
3. Technical Communication, Anderson, P.V, Thomson Wadsworth, New Delhi
4. The Oxford Guide to Writing and Speaking, John Seely, Oxford University Press, New Delhi
5. Dictionary of Common Errors, Turton, N.D and Heaton, J.B, Addision Wesley Longman Ltd.

Semester II		214 - Industry Analysis - Desk Research
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO214.1	REMEMBERING	DESCRIBE the key characteristics of the players in an industry.
CO214.2	UNDERSTANDING	SUMMARIZE the management ethos and philosophy of the players in the industry.
CO214.3	APPLYING	DEMONSTRATE an understanding of the regulatory forces acting on the industry.
CO214.4	ANALYSING	COMPARE and CONTRAST, using tables and charts, the market and financial performance of the players in an industry.
CO214.5	EVALUATING	ASSESS the impact of recent developments on the industry and its key players.
CO214.6	CREATING	PREDICT the future trajectory of the evolution of the industry in the immediate future (1 to 3 years).

1.   **Industry Analysis – the Basics:** Nature of the Industry, Players in the industry, Nature of competition, Market shares of top 5 & bottom 5 players, Possible Classification of players into Leaders, Challengers, Followers, Nichers, Positioning & Differentiation strategies of key players. Branding strategies, Pricing Policies, Cartelization if any and comments thereon, Capacity analysis – total capacity of the industry and break up capacity amongst key players, Current Capacity Utilization rates, Planned future capacity additions, Geographical spread of plants/facilities/ capacities (Domestics as well as Global), Demand Supply balance in the industry – at global, national and regional level, Key factors affecting demand, Key supply side constraints, Professional Trade bodies of the Industry, Business Functions carried out Online by the key players. Online presence of the players, Incremental Innovations in the industry, Disruptive Innovations in the industry. **(5)**

2.   **Promoters & Management Ethos:** Background of promoter groups of top 5 and bottom 5 players in the industry, Management ethos and philosophy, Brief profiles of CMDs, CEOs, and key top management personnel with their career highlights, Detailed profile of one distinguished top management personnel each from any two players in the Industry, CSR policy, Corporate Governance Initiatives, Initiatives towards social inclusion, Initiatives towards environment conservation. **(5)**

3.   **External Environment:** Controlling ministry and / or regulator if any for the Industry, Regulatory Policies at the state, national and global level and their impact on the industry as a whole with analysis of impact on top 5 players and bottom 5 players, Key National and Global issues affecting the industry, Key initiatives by the Government to promote the industry, Environmental issues, CSR initiatives, Regulatory actions against the players for e.g. Action by SEBI, Competition Commission of India, MTRP Commission, FDA, etc. against irregularities , legal violations if any. **(5)**

4.   **Financials:** Profitability, Revenues, Margins of top 5 & bottom 5 players over the last 5 years and trends/changes therein, Sick players if any and their turnaround strategies, if any, Key factors contributing to costs, Ratio analysis of financial data for last 5 years for top 5 and bottom 5 companies in the industry. **(5)**

5.   **Recent Developments:** Impact of key relevant provisions of the latest Fiscal policy on the industry and various players therein, Analysis of Key relevant provisions of latest Exim Policy in case of industries that are focused on Global Markets for exports or industries that have significant import components, Key Alliances in the past 5 years and their performance & impact on other players in the industry, Mergers & Acquisitions, if any. Technological developments, Labour unrest if any – reasons thereof and impact on the particular player and the industry as a whole, emerging first generation entrepreneurs, if any, in the industry, Corporate wars & feuds in the industry, if any. **(5)**

Note:
1.   Students should work in groups of 3 to 5 each under the guidance of a faculty.
2.   Students shall carry out an indepth study of any TWO industries of their choice.
3.   Industries selected should be distinct from each other.
4.   Students shall submit a structured detailed report.

Suggested Text Books:
1.   No text books are prescribed.
2.   The course has to be taught using the company annual reports and other publications, company website, social media feeds, business newspapers and business data bases such as ACE equity, CRISIL database, etc.

Semester II		215 – Entrepreneurship Lab
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO215.1	REMEMBERING	IDENTIFY a basket of potential business opportunities in the local, regional or national context.
CO215.2	UNDERSTANDING	COMPARE and CONTRAST the shortlisted business opportunities to SELECT the most suitable / promising opportunity.
CO215.3	APPLYING	DEVELOP a business model around the shortlisted business opportunity.
CO215.4	ANALYSING	FORMULATE the organization structure for the proposed start up
CO215.5	EVALUATING	EVALUATE the market potential and ESTIMATE the financing requirements for the initial 1 to 3 years after launch.
CO215.6	CREATING	CREATE a proposal for funding the start up.

This course provides a hands-on experience to the students to convert and apply theoretical and conceptual knowledge about entrepreneurship into practical entrepreneurship. During the course, students shall identify and evaluate a new business opportunity (which may be supplied by an entrepreneur or innovator in the nearby region.)

Students shall work in a group, of not more than 5 students, on a real-life business case.

Scope of the work expected:
1.   Business Model Designing
2.   Business Plan Designing
3.   Financial Planning
4.   Prototype Making
5.   Test Marketing
6.   Planning Commercial Launch.

Suggested Text Books:
1.   New Venture Management: The Entrepreneur's Roadmap (Entrepreneurship Series), Donald F. Kuratko and Jeffrey S. Hornsby, Pearson
2.   The Manual for Indian Start-ups: Tools to Start and Scale-up Your New Venture, Vijaya Kumar Ivaturi, Meena Ganesh, Penguin Random House India.

3. Managing New Ventures, Anjan Raichoudhuri, Prentice-Hall of India Pvt.Ltd
4. Develop Your Idea!: Get Off to a Flying Start With Your Startup. Guided Exercises, Templates & Resources for Exploring New Business Ventures, K. N. Kukoyi
5. Managing Small Business by Longenecker, Moore, Petty and Palich, Cengage Learning, India Edition.
6. Entrepreneurship: New Venture Creation by David H. Holt
7. The Dynamics of Entrepreneurial Development & Management by Desai, Vasant , Himalaya Publishing House, Delhi
8. Entrepreneurship and Small Business Management by Siropolis
9. Lead like an Entrepreneur by Neal Thornberry

Suggested Reference Books:
1. Fundamentals of Entrepreneurship, Nandan H, PHI
2. Cases in Entrepreneurship by Morse and Mitchell, Sage South Asia Edition.
3. Entrepreneurship – Indian Cases on Change Agents by K Ramchandran, TMGH.
4. Entrepreneurship – The engine of growth, edited by Mark Rice and Timothy Habbershon, Published by Praeger Perspectives.
5. Entrepreneurship: Theory, Process and Practice by Kuratko, D.F. & Hodgetts, R.M. Thomson Press.
6. Entrepreneurship Development: Small Business Enterprises by Charantimath, P. , Pearson.
7. A Guide to Entrepreneurship by David, Otes , Jaico Books Publishing House, Delhi.
8. Indian Entrepreneurial Culture by A Gupta , New Age International.
9. Make The Move: Demystifying Entrepreneurship by Ishan Gupta, Rajat Khare

Semester II		**216 - SPSS**
2 Credits	**LTP: 0:3:1**	**Generic Elective – Institute Level**

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO216.1	REMEMBERING	IDENTIFY the key menus of SPSS and DESCRIBE their functionality.
CO216.2	UNDERSTANDING	EXPLAIN the main features of SPSS
CO216.3	APPLYING	MAKE USE OF various tools to manage date, describe data and display graphical output using SPSS.
CO216.4	ANALYSING	ANALYSE data using various statistical tests of SPSS
CO216.5	EVALUATING	INTERPRET and EXPLAIN the outputs from SPSS
CO216.6	CREATE	DESIGN, DEVELOP and TEST advanced multivariate models using SPSS.

1. **Overview**: SPSS Environment, Introduction to various menus, Data file, Output file, Frequently –used dialog boxes, Editing output, Printing results. Creating and editing a data file – Variable and data view, Value Labels.
2. **Managing Data:** Listing cases, replacing missing values, computing new variables, recording variables, exploring data, selecting cases, sorting cases, merging files, splitting files, Visual Binning. **Frequencies:** Frequencies, bar charts, histograms, percentiles. **Descriptive Statistics:** Measures of central tendency, variability, deviation from normality, size and stability. Cross Tabulation and chi-square analyses, The means Procedure. **Graphs:** Creating and editing graphs and charts
3. **Bivariate Correlation:** Bivariate Correlation, Partial Correlations and the correlation matrix. **The T-test Procedure:** Independent –samples, paired samples, and one sample tests. **Non Parametric Tests:** ChiSquareTest, 1 sample test, 2 independent samples test, k independent samples, 2 related samples test, k related samples.
4. **One Way ANOVA Procedure:** One way analysis of variance, General Linear model: Two –way analysis of variance, General Linear model: three –way analysis of variance and the influence of covariates
5. **Advanced Tools:** Simple Linear Regression , Multiple regression analysis. Multidimensional scaling, Reliability Analysis, Factor analysis, Cluster analysis.

Suggested Text Books:
1. Discovering Statistics Using SPSS, by Andy Field A, SAGE
2. How to Use SPSS: A Step-By-Step Guide to Analysis and Interpretation by Brian C. Cronk

		217 - Foreign Language II
Semester II		
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO217.1	REMEMBERING	LISTEN to simple audio-visual recordings in the foreign language.
CO217.2	UNDERSTANDING	TRANSLATE simple letters from English to the foreign language and vice-versa.
CO217.3	APPLYING	CONSTRUCT a business email, in the foreign language.
CO217.4	ANALYSING	TAKE PART IN an interaction in a business setting using the foreign language.
CO217.5	EVALUATING	COMPOSE a covering letter and resume in the foreign language.

1. **Listening:** Understand Simple Questions and Instructions. **Reading:** Understand Single Words and Sentences but also Signposts, Signs and Posters. **Speaking:** Provide Short Information about the Job and the Person. **Writing:** Fill in Forms and Provide Information About Name, Address, Nationality etc. **(6)**

2. **Listening:** Understand Information about the Person and the Work. **Reading**: Understand Simple Letters, Appointments, Invitations and Information in Short Texts. **Speaking:** Answer Simple Questions About One's Working Field. **Writing:** Write Faxes and e-mails. **(6)**

3. **Listening:** Understand Standard Information Related to the Working Field. **Reading:** Understand Standard Letters and Texts about Working Processes and Product Descriptions. **Speaking:** Provide Information about the Job, the Departments, the Company, the Products and Processes in a Conversation or on the Phone. **Writing:** Answer Standard Inquiries, Make Quotations, Write Short Texts with a Familiar Content, Possibly Give Some Explanation and Answer Simple Questions. **(6)**

4. **Listening:** Understand Complex Information Related to the Working Field in Meetings, Discussions and at Presentations. **Reading:** Understand Reports and Contracts with a Company-related Content. **Speaking:** Describe and Explain Work Processes and Projects. Report on Meetings and Presentations. Explain Concepts and Clarify Misunderstandings. **Writing:** Write Formal Standard Letters and Texts about One's Field of Expertise. Explain a Graphic and Reflect the Content. **(6)**

5. **Grammar**: Future tense, imperfect tense, degrees of comparison, imperative mood. Script, Letters of alphabet, accents, sounds of groups of letters, punctuation marks, articles, nouns, sing./Pl , genders; mas. /fem. Structure of sentences & types like affirmative, negative interrogative & negative interrogative, Verbs: classes of verbs and conjugation patterns, Pronominal verbs; Present tense, The idea of auxiliary verb; prepositions; pronouns- subject, interrogative, relative, possessive, emphatic ; adjectives, adverbs. **(6)**

Note: Institute may offer any one of the following foreign languages to the students: SPANISH / FRENCH/ GERMAN/ JAPANESE / CHINESE

Suggested Text Books:
Relevant Standard Text Books, Videos, Audio CDs

Foundation Courses (Elective) - Semester I & II

		FOU – 001: Elementary English
Semester I		
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU001.1	REMEMBERING	LABEL the different parts of a sentence, correctly SPELL and PRONOUNCE the words in common usage and effectively LISTEN to short AV material (English).
CO-FOU 001.2	UNDERSTANDING	PARAPHRASE published written and audio visual content (English) in own words.
CO-FOU 001.3	APPLYING	CONSTRUCT short paragraphs and essays (English) for a specified task, to elicit, to select, to describe, to summarize information.

CO-FOU001.4	ANALYSING	TAKE PART IN conversations using general, social and professional (English) language.
CO-FOU001.5	EVALUATING	CHECK written and audio visual content (English) for grammatical correctness.
CO-FOU001.6	CREATING	SUBSTITUTE right words / terms / phrases in a compiled text.

1. **Fundamental grammatical structures and functions** - sentence types, tenses, voice, parts of speech, word order, expressing possibility, obligation, necessity, prohibition, criticism; expressing preferences, making assumptions; asking for/ refusing/giving permission; making offers, suggestions, punctuation, etc. **(3)**
2. **Building fundamental vocabulary** - to fulfill the above mentioned functions in roles, topics and discussions, synonyms, antonyms, homonyms, homophones, using dictionary, using thesaurus. **(3)**
3. **Listening** – short AVs in English, understanding the gist, the main points, look for detail or specific information, deduce the meaning. **(3)**
4. **Reading material** - reading various common place publications, using different strategies for different reading purposes, identifying the main points in a text, looking for detail, locating specific information in a text, understanding a text structure, right pronunciation, etc. **(3)**
5. **Conversation on different topics** - people, jobs, places to visit, festivals/celebrations, eating habits, attire, current affairs – popular personalities, disasters/accidents, politics, technology, sports/hobbies, environment, education, entertainment, transport, crime, etc. **(3)**

Suggested Text Books:
1. English Grammar and Composition, Wren & Martin, S. Chand Publishing
2. Word Power Made Easy, Norman Lewis

Semester I		FOU – 002: Elementary Mathematics and Statistics
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU002.1	REMEMBERING	MEMORIZE and REPRODUCE all basic formulae covered in the syllabus.
CO-FOU002.2	UNDERSTANDING	EXPRESS numbers in various forms such as fractions, percentages, equivalent simplest fractions.
CO-FOU002.3	APPLYING	CALCULATE Percentages, Profit & Loss, Simple & Compound Interest, frequency, cumulative frequency, basic areas and basic volumes.
CO-FOU002.4	ANALYSING	ILLUSTRATE relationships using direct and inverse proportion, simple graphs, linear and quadratic equations.
CO-FOU002.5	EVALUATING	INTERPRET basic statistical data, graphs, and venn diagrams.
CO-FOU002.6	CREATING	CREATING and SOLVING simple simultaneous equations.

1. **Numbers:** Integers and fractions, squares, cubes, square roots and cube roots by prime factorization, negative numbers; Examples of very large and very small numbers such as million/billion/trillion, positive, negative, zero and fractional indices, laws of indices. **(1)**
2. **Preliminary Mathematics:** HCF & LCM, Ratio & Proportion, Problems based on Ages. **(2)**
3. **Ratio, rate and proportion:** Ratios involving rational numbers, writing a ratio in its simplest form, average rate, direct and inverse proportion, problems involving ratio, rate and proportion **(1)**
4. **Fractions & Percentages :** Expressing one quantity as a percentage of another, comparing two quantities by percentage, percentages greater than 100%, increasing/decreasing a quantity by a given percentage, reverse percentages, problems involving percentages **(1)**
5. **Mathematical Operations for Business:** Percentage, Profit & Loss, Simple & Compound Interest. **(1)**
6. **Time and Number related Mathematical operations:** Time & Work, Time, Speed & Distance, Number System, Permutation, and Series. **(2)**
7. **Basic Statistics:** Classification and tabulation of data, presentation of data, graphical presentation of data by frequency curve, frequency polygon, ogives, histogram. **(2)**
8. **Set Theory:** Basic concepts, Venn diagrams, interpretation. **(2)**

9. **Trigonometry :** Basic Trigonometry, Area and Volume. **(1)**
10. **Equations:** Simultaneous Equations, Quadratic Equations. **(2)**

References:
1. Rajagopalan and Sattanathan, Business Mathematics
2. Praveen, R. V., Quantitative Aptitude and Reasoning, PHI Learning
3. Goon Gupta and Das Gupta, Fundamentals of Statistics, Vol. 1, The World Press Pvt. Ltd., Kolkata.
4. Sharma, Arun, How to prepare for Quantitative Aptitude for the CAT, Tata McGraw Hill

Semester I		FOU – 003: Elementary Business Economics
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU003.1	REMEMBERING	ENUMERATE the basic terms covered in the syllabus.
CO-FOU003.2	UNDERSTANDING	INTERPRET the historical trends in key economic data from a managerial and business perspective.
CO-FOU003.3	APPLYING	MAKE USE OF key Government and Non-Government economic publications to gather insights from a managerial and business perspective.
CO-FOU003.4	ANALYSING	ILLUSTRATE broad inter-relationships between various economic parameters within the national context and global context.
CO-FOU003.5	EVALUATING	EXPLAIN the role and objectives of Monetary and Fiscal policy.
CO-FOU003.6	CREATING	HYPOTHESIZE the expected short term trends of key economic indices.

1. Concept of Economic Development, Concept of emerging, developed and developing economy, Concept of PPP **(1)**
2. Economic Map of the Globe, Economic map of India. **(1)**
3. Reserve Bank of India – composition, role, functions. **(1)**
4. Economic Survey of India - Role, Scope, Objectives, Sections, Key highlights of last Economic Survey. **(1)**
5. Union Budget - Role, Scope, Objectives, Sections, Key highlights of last Union Budget, Concept of Fiscal Deficit, Combined Fiscal Deficit. **(1)**
6. Monetary Policy – Concept, Frequency, MPC - Role, Scope, Objectives of Monetary Policy, Key highlights of last few Monetary Policy statements, impact – sentimental and material on economy. **(1)**
7. Key Economic Indicators – Inflation, IIP, GDP, CRR, Bank Rate, Exchange Rate, Unemployment rate, Ease of doing business index, etc. **(1)**
8. Inflation – Concept, CPI, WPI, Composition, Changes over time, Trends, Usage in policy making, Implications of high and low CPI, WPI. **(1)**
9. Exchange rates – Concept, USD – INR, Euro – INR, Yuan – INR, Renminbi – INR, Key trends and influencing factors. **(1)**
10. GDP – Composition, Trends. **(1)**
11. Key Stock Markets & Stock Indices – Sensex, Nifty, Sectoral Indices in India, Global Indices - European Indices, American Indices, Asian Indices. **(1)**
12. Commodity Markets – Crude, Precious Metals, Industrial Metals, Agro Commodities, MCX, NCDEX. **(1)**
13. Direct & Indirect Taxes – Concept of Direct Tax, Indirect Tax, Income Tax, Wealth Tax, GST. **(1)**
14. Key Sources of Data – Census, CSO, Niti Aayog, Different Ministries of Government of India, CRISIL, NCAER, Credit Rating Agencies. **(1)**
15. Introduction of G7, G 20, BRICS, ASEAN, SAARC, EuroZone, PIIGS, ADB, WB, etc. **(1)**

Suggested Text Books:
1. Indian Economy , Dutt R and Sundharam K.P.M, S .Chand, Delhi
2. Indian Economy, Agarwal A. N., Vikas Publishing House, Delhi
3. Indian Economy, Misra S.K. and Pury V.K., Himalaya Publishing House, New Delhi

Semester I		FOU – 004: Elementary Accounting
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU004.1	REMEMBERING	DESCRIBE the basic accounting terminologies and concepts covered in the course syllabus.
CO-FOU004.2	UNDERSTANDING	EXPLAIN the concepts covered in the course syllabus.
CO-FOU004.3	APPLYING	APPLY concepts covered in the course syllabus to accurately do the required calculations.
CO-FOU004.4	APPLYING	DETERMINE the key elements of business transactions and complete their accounting.
CO-FOU004.5	EVALUATING	DESIGN and OPERATE the entire accounting process (from entry to Balance - Sheet) for any given transaction.

1. **Basic Concepts and Terminologies** –Business Transaction, Meaning and Scope of Book Keeping and Accountancy, Importance of Book Keeping and Accountancy, Basic Terminologies related to Book Keeping and Accountancy, Classification of Accounts, Principle of Double Entry and Golden Rules of Accounting. (3+1)
2. **Journal Entries** – Preparation of Journal and passing journal entries (2+1)
3. **Ledger Posting & Balancing** – Preparation of Ledger Accounts, Posting the journal entries in the ledger accounts, Ledger Accounts Balancing and Interpretation of Ledger Account Balances. (2+1)
4. **Trial Balance** – Preparation of Trial Balance and Importance of Trial Balance in Accounting Process. (1+1)
5. **Final Accounts of Sole Proprietor** –Trading Account, Profit & Loss Account and Balance Sheet without adjustments. (2+1)

Suggested Text Books:
1. T.S. Grewal's Double Entry Book Keeping
2. Taxmann's Fundamentals of Accounting (CA CPT), CA D.G. Sharma
3. Book Keeping and Accountancy, Ainapure and Ainapure
4. Managerial Accounting, Dr. Mahesh Abale and Dr. Shriprakash Soni

Suggested Reference Books:
1. Financial Accounting for Management: Shankarnarayanan, Ramanath- CENGAGE Learning
2. Financial Accounting for Managers, Sanjay Dhmija, Pearson Publications
3. Accounting For Managemen, Jawahar Lal
4. Accounting, Shukla Grewal

Semester I		FOU – 005: Elementary Information Technology
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU005.1	REMEMBERING	DESCRIBE various components of a computer, network.
CO-FOU005.2	UNDERSTANDING	EXPLAIN the characteristics and usage of various elements of a computer, a network and operating systems.
CO-FOU005.3	APPLYING	USE various input, output, memory and local network devices.
CO-FOU005.4	ANALYSING	TEST and do basic troubleshooting of a standalone desktop or desktop connected to a network.
CO-FOU005.5	EVALUATING	EXPLAIN basic terminology related to data and information.
CO-FOU005.6	CREATING	DISCUSS emerging trends in IT.

1. **Computer Basics:** Introduction, Evolution of Computers, Computer Generations, Classification of Computers, Computer Applications. Computer Organization, Memory and Storage **-** Basic Computer Organization (a) Input devices - keyboard, voice devices, scanner, MICR, OMR, Bar code reader, digital camera, etc. (b) Output devices - Visual Display

Unit, printers, plotters, Audio Output, etc.(c) Memory or Storage Devices – Memory or Storage Unit - Physical Devices Used as Storage Cells, Random Access Memory, Read Only Memory, Secondary Storage, Compact Disk Read Only Memory, Flash Memory, Archival Storage, etc. (d) Central Processing Unit. Basic trouble shooting. Connecting a desktop, laptop to LCD, printer, etc. **(4)**

2. **Computer Software:** Introduction, System Software, Application Software, Software Installing and Uninstalling, Booting, Software Development Steps, Programming Languages - Classification of Programming Languages. Operating System **-** Introduction, Role and functions of Operating System, Working Knowledge of GUI Based Operating System, Use of menus, tools and commands of windows operating system, File Handling and Management. **(4)**

3. **Computer Networks:** Overview of Computer Network, Types of computer networks (LAN, WAN and MAN), Network topologies, Components of computer networks (servers, workstations, network interface cards, hub, switches, cables, etc.) Internet and its Tools - Introduction, Internet Evolution, Basic Internet Terminology, Data over Internet, Modes of Data Transmission, Types of Networks, Types of Topologies, Protocols used in the Internet, Getting Connected to Internet Applications, Internet Applications, Computer Ethics. **(3)**

4. **Information Technology Basics:** Introduction, Data and Information, Types of Data, Need for Information Storage and Processing, **(2)**

5. **Emerging Trends in IT:** Introduction, Electronic Commerce, Electronic Data Interchange, Smart Cards, Mobile Communications, Internet Protocol TV. **(2)**

Suggested Text Books:
1. Computers Today, Basandra SK, Galgotia.
2. Fundamentals of Information Technology, Leon, Vikas
3. Information Technology: Inside and outside, Cyganski, Pearson
4. Computer Applications in Management, Kakkar DN, Goyal R, New Age
5. Information Technology for Management, B Muthukumaran, Oxford University Press

Semester I		FOU – 006: Elementary Business Etiquette
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU006.1	REMEMBERING	DEFINE terms and concepts used to describe appropriate business etiquette attitudes and behaviors.
CO-FOU006.2	UNDERSTANDING	EXPLAIN what is meant by business etiquette and how it impacts the workplace.
CO-FOU006.3	APPLYING	DEMONSTRATE appropriate behaviors within specific business situations.
CO-FOU006.4	ANALYSING	TAKE PART IN professional business meetings and real & virtual business conversations.
CO-FOU006.5	EVALUATING	DETERMINE the right attire for business, casual and multicultural events.
CO-FOU006.6	CREATING	PLAN a professional business meeting and a business meal.

1. **Professionalism at Work:** Making a good first impression, understanding the mechanics of human perception, being aware of elements in image building, developing a culture of excellence, basic understanding of acceptable attitudes and mannerisms at work, the role of Good Manners in Business? Disability Etiquette - Basic disability Etiquette practices, Courtesies for wheelchair users, Courtesies for blind or visually impaired, Courtesies for the deaf, People with speech impairments. Multi-cultural challenges, Multi-cultural etiquette, Cultural differences and their effect on business etiquette, Select Cultural Highlights **(5)**

2. **Body Language at Work:** Non verbal communication, the 'smile' factor, building posture, facial expressions and eye contact, gestures for effective communication. **(3)**

3. **Business Etiquette Basics:** Introduction to business etiquette - The ABCs of etiquette Meeting and greeting scenarios, Enduring Words, Making introductions and greeting people, Greeting Components, The protocol of shaking hands, Introductions, Introductory scenarios, Addressing individuals, Networking for business, Business card protocol, Managing your business voice, Speaking Diplomatically, Managing Question and Answer Sessions Effectively **-** Anticipatory Q & A, Dealing with hostile questions, Reframing principles, Case Studies and Practice, Cell phone

Etiquette, Voice Mail Etiquette, Internet & email etiquette, Internet usage in the workplace, Email, Netiquette, Online chat, Online chat etiquette, Online chat etiquette guidelines. **(5)**

4. **Dining Etiquette**: Planning a meal, issuing invitations, How to proceed through a receiving line, seating guidelines, navigating a place setting, appropriate table manners. **(1)**

5. **Business Attire & Professionalism:** Dressing sense, selecting the right clothing for a business wardrobe, Business style and professional image, Dress code, Guidelines for appropriate business attire, Grooming for success, Guidelines for appropriate business attire, Multicultural dressing, Making-up basics. **(1)**

Suggested Text books:
1. The Essentials of Business Etiquette: How to Greet, Eat, and Tweet Your Way to Success, Barbara Pachter
2. Modern Manners: Tools to Take You to the Top, Dorothea Johnson and Liv Tyle
3. Business Etiquette: 101 Ways to Conduct Business with Charm and Savvy, Ann Sabath
4. Indian Business Etiquette, Raghu Palat, Jaico Publishing
5. Business Etiquette: A Guide for the Indian Professional, Shital Kakkar Mehra

Semester II		FOU – 007: Elementary MS Word
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU007.1	REMEMBERING	SHOW basic menus of MS WORD on the screen and RECALL the functionality.
CO-FOU007.2	UNDERSTANDING	DEMONSTRATE the use of formatting, layout and printing tools of MS Word to create professional word documents.
CO-FOU007.3	APPLYING	APPLY the viewing, referencing tools of MS Word.
CO-FOU007.4	ANALYSING	ILLUSTRATE the use of reviewing tools for collaborative MS word documents.
CO-FOU007.5	EVALUATING	DESIGN and execute Mail merged documents.
CO-FOU007.6	CREATING	COMPILE a professional report using templates, Tables, Table of contents, referencing, headers, footers and page numbers.

1. Introduction to MS WORD, The Screen and its Elements, The Office Button, Quick Access, The View Buttons, Print Layout, Full Screen Reading, Web Layout, Outline , Draft, Zoom, The Status Bar, Creating a New Document, Starting on a New Blank Document, Templates, Writing and Simple Formatting - Simple formatting, Formatting with Styles, Customising Styles. **(3)**

2. Pictures and Graphics, Pictures, Insert a Picture from a File, Adjusting Picture Size, Positioning and Text Wrapping, Captions, Cross-References to Characters, Pictures and Headlines, Clip Art, SmartArt, Excel Charts, Create a New Excel Chart in Word, Insert a Chart from an Excel Project File, Tables Tools, Illustrations, Equations, Symbols. **(3)**

3. Tables of contents and other references - Create a table of contents, Edit a citation placeholder, Create a bibliography, Foot note & End Note, Captions & Index, Mail Merge – Preparation, Retrieving Merge Data, Complete the Merge. **(3)**

4. Page Layout, Margins, Adjusting the Margins, Page Setup, Setting Page Size, Orientation, Columns, Sections, Page Header and Footer, Tabs (tabulators), Page Numbers, Links, Page breaks and section breaks, Applying Multiple headers, Checking Spelling, grammar, and thesaurus. **(3)**

5. Collaboration - Protect your document with passwords, permission, and other restrictions, Tracking changes and comments - Turn track changes on or off, Review tracked changes and comments. **(3)**

Suggested Text Books:
1. Microsoft Word 2016 Step by Step, Joan Preppernau
2. Microsoft Word 2016 Introduction Quick Reference Guide - Windows Version (Cheat Sheet of Instructions, Tips and Shortcuts, Lamina

Semester II		FOU – 008: Elementary MS Powerpoint
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU008.1	REMEMBERING	SHOW basic menus of MS Powerpoint on the screen and RECALL the functionality.
CO-FOU008.2	UNDERSTANDING	DEMONSTRATE the use slide management, slide layout and reviewing tools of MS Powerpoint to create professional presentations.
CO-FOU008.3	APPLYING	USE tables, charts, smart art, animation and references in a powerpoint presentation.
CO-FOU008.4	ANALYSING	ILLUSRATE the various modes of delivery of the final powerpoint presentation.
CO-FOU008.5	EVALUATING	DEVELOP custom themes and customize slide masters and layouts.
CO- FOU008.6	CREATING	COMPILE a professional powerpoint presentation using templates, tables, images, hyperlinks, animation, templates, headers, footers and slide numbers, etc.

1.   **Get started with PowerPoint:** PowerPoint basics, Start PowerPoint, Work in the PowerPoint user interface, Create and manage presentations, Open and navigate presentations , Display different views of presentations, Change the display of content, Display and edit presentation properties, Save and close presentations, Compatibility with earlier versions, Create and manage slides , Add and remove slides, Insert new slides , Copy and import slides and content, Hide and delete slides, Divide presentations into sections, Rearrange slides and sections, Apply themes, Change slide backgrounds. **(4)**

2.   **Editing and Managing Text:** Insert and manage slide text, Enter and edit text, Insert nonstandard characters, Add supplementary text to slides, Insert equations, Add a slide footer, Move, copy, and delete text, Format text placeholders, Format characters and paragraphs, Apply WordArt text effects, Configure AutoCorrect options, Check spelling and choose the best wording, Find and replace text and fonts. **(5)**

3.   **Tables, Shapes and Charts:** Present text in tables, Insert tables, Format tables, Modify table structure, Embed and link to Excel content, Insert and manage visual elements, Insert and manage simple graphics, Insert, move, resize, edit and format pictures, Draw and modify shapes, Draw and add text to shapes, Locate additional formatting commands, Move and modify shapes, Format shapes, Connect shapes, Capture and insert screen clippings, Create a photo album. Create and manage business graphics, Create diagrams, Sidebar: Picture diagrams Modify diagrams, Format diagrams, Create charts, Modify charts, Manage chart data, Modify the display of chart elements, Pie charts, Format charts, and Custom chart templates. **(6)**

4.   **Animation:** Add sound and movement to slides Animate text and pictures on slides, Customize animation effects , Bookmark points of interest in media clips, Add audio content to slides, Add video content to slides, Compress media to decrease file size, Hyperlink to additional resources, Add and manage slide transitions. **(5)**

5.   **Finalize presentations:** Create custom presentation elements, Create custom themes, Customize slide masters and layouts, Save custom presentation templates, Save and share presentations, Save presentations in other formats, Share presentations from PowerPoint, Restrict access by using passwords, Add and review comments, Coauthor presentations. Review presentations , Add notes, Configure slides for presentation or printing , Inspect and finalize presentations, Print presentations and handouts, Prepare and deliver presentations, Adapt presentations for different audiences, Rehearse a presentation and set slide timings, Prepare presentations for travel, Present slide shows, Start the slide show, Use the slide show tools. **(5)**

Suggested Text Books:
1.   Microsoft PowerPoint 2016 Step by Step, Joan Lambert
2.   Microsoft PowerPoint 2016 Made Easy: A Step-by-Step Guide for PC Users, Dr. Harold Lloyd Fisher Jr., Kymitra L. Fisher (Editor)
3.   Exploring Microsoft PowerPoint 2016 Comprehensive , Mary Anne Poatsy, Rebecca Lawson, Cynthia Krebs, Robert T. Grauer

Semester II		FOU – 009: Data Interpretation and Logical Reasoning
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU009.1	REMEMBERING	RECOGNIZE when additional information is needed to solve problems.
CO-FOU009.2	UNDERSTANDING	EXPRESS quantitative and non-quantitative data, associations and linkages in a logical format.
CO-FOU009.3	APPLYING	USE statistical information when reported in condensed form or as summary statistics to make informed decisions.
CO-FOU009.4	ANALYSING	DISSECT arguments, SEQUENCE relationships, EXAMINE assumptions, DETECT fallacies and INFERENCE from the same.
CO-FOU009.5	EVALUATING	ESTIMATE and CHECK answers to logical and data sufficiency problems in order to determine reasonableness, identify alternatives, and select correct options.
CO-FOU009.6	CREATING	DEVELOP and EVALUATE inferences and predictions based on the data and information provided.

Data Interpretation
1. Tables
2. Pie Charts
3. Caselets
4. Bars
5. Line Graphs
6. Data Sufficiency

Logical Reasoning
1. Blood Relations
2. Direction Sense
3. Puzzles
4. Data Arrangement, Seating Arrangement
5. Data Structures
6. Series
7. Coding-Decoding
8. Clocks and Calendars
9. Family Tree
10. Venn Diagram
11. Syllogism
12. Proposition, Assumptions
13. Statements
14. Binary Logic
15. Sets

Suggested Text Books:
1. How to Prepare for Data Interpretation, Arun Sharma, Tata Mc Graw Hill
2. Puzzles to Puzzle you, Shakuntala Devi
3. Quantitative Aptitude, Abhijeet Guha, Tata Mc Graw Hill
4. Quantitative Aptitude, Agarwal R S, S Chand
5. Data Interpretation & Data Sufficiency, Ananta Ashisha
6. The Great Book of Puzzles & Teasers, George J Summers
7. Magical Book Series: Data Interpretation, K. Kundan
8. A Modern Approach to Verbal Reasoning, R.S. Aggarwal

Semester II		FOU – 010: Verbal Ability & Reading Comprehension
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU010.1	REMEMBERING	IDENTIFY parts of speech
CO-FOU010.2	UNDERSTANDING	SUMMARIZE a given text material in defined word limits.
CO-FOU010.3	APPLYING	MAKE USE OF foreign words in English Language, idioms and phrases.
CO-FOU010.4	ANALYSING	EXAMINE given text sentences and paragraphs for errors and correct them.
CO-FOU010.5	EVALUATING	SELECT the appropriate words in a given context.
CO-FOU010.6	CREATING	CONSTRUCT meaningful sentences and COMPOSE meaningful paragraphs from jumbled ones.

Verbal Ability and Reading Comprehension

1. Grammar, Parts of Speech, Articles. Nouns, Verbs, Adjectives, Pronouns, Conjunctions, Prepositions, Adverbs.
2. Clauses, Tenses, Subject & Verb Agreement, Question Tags
3. Analogies
4. Idioms & Phrases
5. Synonyms, Antonyms,
6. Homonyms, Homophones
7. One word substitution
8. Root words, origins of words, prefixes, suffixes,
9. Foreign language words used in English
10. Contextual usage, Different usage of same word
11. Spotting Errors, Error Correction
12. Fill in the blanks, Sentence correction, Sentence completion
13. Jumbled paragraphs, Para Completion and inference
14. Reading Comprehension
15. Verbal Logic, Verbal Reasoning, Syllogisms

Suggested Text Books:

1. How to Prepare for Verbal Ability and Reading Comprehension for CAT, Arun Sharma and Meenakshi Upadhyay/Arihant
2. 30 Days to a More Powerful Vocabulary, Wilfred Funk & Norman Lewis/ Simon & Schuster
3. How to Prepare for Verbal Ability and Reading Comprehension for the CAT, Sharma and Upadhyay
4. Puzzles to Puzzle you, Shakuntala Devi
5. A Modern Approach to Verbal Reasoning, R.S. Aggarwal
6. Competition Success Review

Semester II		FOU – 011: Quantitative Ability
1 Credit	LTP: 0:2:0	Foundation Course (Elective)

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO-FOU011.1	REMEMBERING	RECALL the formulas.
CO-FOU011.2	UNDERSTANDING	INTERPRET quantitative information and INFER from it.
CO-FOU011.3	APPLYING	DEMONSTRATE number sense, including dimensional analysis and conversions between fractions, decimals, and percentages.
CO-FOU011.4	ANALYSING	EXAMINE the validity and DETECT possible biases in arguments presented in quantitative forms.
CO-FOU011.5	EVALUATING	DETERMINE when approximations are appropriate and when exact calculations are necessary.
CO-FOU011.6	CREATING	FORMULATE the problem quantitatively and USE appropriate arithmetical,

		and/or statistical methods to SOLVE the problems.

Quantitative Aptitude
1. Geometry
2. Trigonometry
3. Mensuration
4. Ratios and Proportion
5. Number system
6. Work and time
7. HCF & LCM
8. Algebra
9. Profit & Loss
10. Quadratic and linear equations
11. Geometric Progression
12. Percentages
13. Averages
14. Partnership (Accounts)
15. Time-Speed-Distance
16. Surds and Indices
17. Inequalities
18. Logarithms

Suggested Text Books:
1. Shakuntala Devi, Puzzles to Puzzle you
2. Quantitative Aptitude, Abhijeet Guha, Tata Mc Graw Hill
3. Quantitative Aptitude, Agarwal R S, S Chand
4. Data Interpretation & Logical Reasoning, Gautam Puri
5. Logical Reasoning and Data Interpretation, Nishit K. Sinha
6. Data Interpretation & Data Sufficiency, Ananta Ashisha

Subject Core (SC) Courses - Semester II
Specialization: Marketing Management

Semester II		205MKT: Marketing Research
3 Credits	LTP: 2:1:1	Subject Core (SC) Course – Marketing Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO205MKT.1	REMEMBERING	IDENTIFY and DESCRIBE the key steps involved in the marketing research process.
CO205MKT.2	UNDERSTANDING	COMPARE and CONTRAST various research designs, data sources, data collection instruments, sampling methods and analytical tools and SUMMARIZE their strengths & weaknesses.
CO205MKT.3	APPLYING	DEMONSTRATE an understanding of the ethical framework that market research needs to operate within.
CO205MKT.4	ANALYSING	ANALYSE quantitative data and draw appropriate Inferences to address a real life marketing issue.
CO205MKT.5	EVALUATING	DESIGN a market research proposal for a real life marketing research problem and EVALUATE a market research proposal.
CO205MKT.6	CREATING	PLAN and UNDERTAKE qualitative or quantitative Market Research and demonstrate the ability to appropriately analyse data to resolve a real life marketing issue.

1. **Introduction to Marketing Research:** Definitions - Marketing Research, Market Research, Scope and Limitations of Marketing Research, Role of Information in Marketing Decisions, Value and Cost of Information, Marketing Information System and Marketing Research, Marketing Decision Support System, Threats to Marketing Research, Relationship between Marketing Research & Marketing, Organizing Marketing Research function, Evaluating utility of Marketing Research, Online Marketing Research, Recent Trends in Marketing Research, Marketing Research Industry in India. **(3+1)**

2. **Marketing Research Proposal:** The marketing research brief, The Marketing decision problem and marketing research problem, Defining the marketing research problem, developing the research approach, The decision maker & the environment, alternative courses of action, objectives of decision maker, consequences of alternative courses of action, Translating decision problem to research problem, The marketing research proposal (Background - basic problem/opportunity , Objectives , Research Design – Qualitative & Quantitative approaches, Data Requirements, Data collection methods, Data collection instruments, Population definition, Sample Plan, Sample size, Sampling Methodology, Statistical analysis, Cost Estimates, Time line, Appendices), Report Writing, Ethical Issues in Marketing Research – participant issues, sponsor issues, corporate espionage, code of ethics. **(5+1)**

3. **Advanced Analytical Tools:**

(a) **Conjoint Analysis:** Conceptual basis, procedure, type of data required, key decision, how to interpret output, applications to study trade off patterns of consumers as related to different levels of marketing mix elements (Question on interpretation of output is expected)

(b) **Factor Analysis:** Conceptual basis, type of data required, procedure, PCA, Interpreting factor matrix (factor loadings, communalities, Eigen value), determining number of factors using latent root criteria & scree test, interpreting & naming factors, applications in consumer behavior studies (interpretation of output is expected)

(c) **Cluster Analysis:** Conceptual basis, type of data required, procedure, clustering methods – single linkage rule, how to interpret output, applications related to psychographic & lifestyle market segmentation (interpretation of output is expected)

(d) **Multi- dimensional Scaling & Perceptual Mapping:** Conceptual basis, type of data required, key decision-attribute based versus non-attribute based approaches, procedure, how to interpret output, applications related to target market selection & positioning (interpretation of output is expected)

(e) **Discriminant Analysis (Two Group Case):** Conceptual basis, type of data required, determining the coefficients, interpreting discriminant function & classifying subjects using discriminant function, applications in marketing (interpretation of output is expected) **(10+2)**

4. **Marketing Research Applications - I:**

(a) **Sales Analysis and Forecasting:** Mining internal customer and sales data, In-store shopper marketing research and Retail shop audits, margin trend data, targeting best customers, identifying most efficient and effective advertising and promotion methods to reach existing consumers, Consumer panels, Customer satisfaction research, Concept of Market demand and Market potential, Forecasting, Forecasting methods, Choosing a forecast model, forecast errors. Moving Average and Exponential Methods, Decomposition Methods, Regression Models.

(b) **New Product Development and Test Marketing:** marketing information for new markets, new product categories, new product concepts, new product design and market validation research, test marketing – uses, types, methods, limitations. Conjoint analysis for understanding consumer preferences and application to product design.

(c) **Market Segmentation and Positioning:** researching traditional market segments, defining meaningful segments, assessing existing product strength and line extension potential, creative positioning strategy, repositioning strategy research, defining go-to-market strategy, current and potential markets. **Use of Factor analysis and perceptual maps**.

(d) **Pricing research:** Pricing research and pricing strategy decisions, optimum price-product-feature configurations and market positioning opportunities. **(10+2)**

5. **Marketing Research Applications - II:**

(a) **Brand Research:** brand concepts, brand names, brand power research, brand equity survey measurements, Brand tracking studies.

(b) **Advertising Research:** Concept testing research – evaluating advertising concepts, ad theme concepts and appeals, ad recall surveys, message and theme salience, impact measures, buying motivation and association measures, media research like readership surveys, Media audience tracking studies, TRP, Limitations of advertising research.

(c) **International Marketing Research:** Marketing research in international context - importance, complexities and issues, International secondary data sources, Primary data collection methods and complexities of data collection in international marketing research, Online data sources and research, Issues in multi-country data analysis - Data comparability and validity problems, major sources of errors, Report preparation and presentation.**(9+2)**

Suggested Text Books:
1.   Marketing Research, G C Beri, TMGH
2.   Marketing Research   - An Applied Orientation, Malhotra and Dash, Pearson Education.
3.   Marketing Research, Churchill, Jr, G.A. and D. Iacobucci, South Western: Thomson.
4.   Marketing Research, Zikmund, Babin, Cengage Learning
5.   Marketing Research, Boyd, H.P., R. Westfall and S. F. Stasch, Delhi: A.I.T.B.S.
6.   Marketing Research, Burns, G.A. and D. Bush, South Western: Thomson.

Suggested Text Books:
1.   Marketing Research, Green, P.E., Tull, D.S. and G. Albaum, New Delhi: Prentice Hall of India.
2.   Marketing Research, Suja Nair
3.   Marketing Research, Luck, D.J. and R.S. Rubin, New Delhi: Prentice Hall of India.
4.   Marketing Research, Tull, D.S. and D.I. Hawkins,New Delhi: Prentice Hall of India.

Semester II		206MKT: Consumer Behavior
3 Credits	LTP: 2:1:1	Subject Core (SC) Course – Marketing Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO206MKT.1	REMEMBERING	ENUMERATE social and psychological factors and their influence his/her behavior as a consumer.
CO206MKT.2	UNDERSTANDING	EXPLAIN fundamental concepts associated with consumer and organizational buying behavior.
CO206MKT.3	APPLYING	APPLY consumer behavior concepts to real world strategic marketing management decision making.
CO206MKT.4	ANALYSING	ANALYSE the dynamics of human behavior and the basic factors that influence the consumer's decision process.
CO206MKT.5	EVALUATING	EXPLAIN the consumer and organizational buying behavior process for a variety of products (goods/services).
CO206MKT.6	CREATING	DISCUSS the use of the Internet, e-commerce & information technology with respect to the changing consumer marketplace and ELABORATE on the various aspects of the changing Indian Consumer.

1.   **Introduction to Consumer Behavior**: Definition, Consumer and Customers, Buyers and Users, Organizations as Buyers, Use of Market Segmentation in Consumer Behavior, Dimensions of Consumerism, The Changing Patterns of Consumer Behavior in the context of the evolving Indian Economy, The Internet, e-commerce, and information technology and the changing consumer marketplace, Consumer Behavior and its Applications in Marketing. **(4+1)**
2.   **Individual Determinants of Consumer Behavior:**
(a)   **Consumer Personality –** Personality, Self-concept, Overview of Personality Theories, Brand Personality, Emotions.
(b)   **Consumer Perception -** Sensation (Exposure to Stimuli), Perceptual Selection, Perceptual Organization, Factors that Distort Individual Perception, Price Perceptions, Perceived Product and Service Quality, Consumer Risk Perceptions.
(c)   **Consumer Learning, Memory and Involvement -** Components of Learning, Behavioral Theory, Cognitive Learning Theory, Memory System, Memory Process, Concept of Involvement, Dimensions of Involvement, Involvement and Types of Consumer Behavior, Cognitive Response Model, Elaboration Likelihood Model, Social Judgment Theory, Brand Loyalty and Brand Equity.
(d)   **Consumer Attitudes -** Functions of Attitude, Attitude Models, Relationship between Attitude, Beliefs, Feelings and Behavior, Learning Attitudes, Changing Attitudes, Attitude Change Strategies for marketers.
(e)   **Consumer Motivation** - Needs and Goals, Motivational Conflict, Defense Mechanisms, Motive Arousal, Motivational Theories, Overview of Maslow's hierarchy of needs.**(11+1)**
3.   **Environmental Influences on Consumer Behavior:**

(a) **Cultural Influences on Consumer Behavior –** Concept of Culture, Values, Sub-cultures, Influence of Indian Culture on Consumers, Multiplicity of Indian Cultures and their influence on consumer behavior, Cross-cultural Influences.

(b) **Social Class and Group Influences on Consumer Behavior -** Concept of Social Class, Social Sub-Class, Money and Other Status Symbols, AIO classification of Lifestyle, VALS Typology, Source of Group Influences, Types & Nature of Reference Groups, Reference Group Influences and Applications, Group Norms and Behavior, Family Life Cycle Stages, Family Purchases, Family Decision-making, Purchasing Roles within family, Word-of-Mouth Communications within Groups, Opinion Leadership.

(c) **Indian Consumer:** Social classes in India - old and new Socio-Economic Classes (SEC) in Urban & Rural Markets, Characteristics of BoP Consumers, Gen Z Consumers, HNI Consumers in India.

(d) **Diffusion of Innovation -** Types of Innovation, Diffusion Process, Factors Affecting the Diffusion of Innovation, The Adoption Process, Time Factor in Diffusion Process, Culture, Communication and Diffusion. **(11+1)**

4. **Consumer Decision Making Process:**

(a) **Problem Recognition -** Types of consumer decisions, types of Problem Recognition, Utilizing problem recognition information

(b) **Search & Evaluation -** Types of information, Sources of Information Search, Search, Experience and Credence Aspects -Marketing Implications, Situational Influences on Purchase Decisions, Nature of Situational Influence, Situational Variables

(c) **Purchasing Process -** Why do people shop? Store & Non-store Purchasing Processes, Purchasing Patterns

(d) **Post-purchase Evaluation & Behavior -** Consumer Satisfaction, Dissatisfaction, Customer Delight, Consumer Complaint Behavior, Post- Purchase Dissonance.

(e) **Consumer Decision Models -** Types of Consumer Decisions, Nicosia Model of Consumer Decision-making, Howard-Sheth Model, Engel, Blackwell, Miniard Model **(11+1)**

5. **Organizational Buying Behavior:** Introduction, Organizational Buyer Characteristics, Purchase and Demand Patterns, Factors Influencing Organizational Buyer Behavior, organizational Buyer Decision Process, Organizational Buying Roles.**(3+1)**

Note: Live examples and cases to be discussed.

Suggested Text Books:
1. Consumer Behavior, David L. Loudon & Albert J. Della Bitta, Tata McGraw Hill, 4th Edition
2. Consumer Behavior, Hawkins, Mothersbaugh, Tata McGraw Hill
3. Consumer Behavior, Batra, Kazmi, Excel Books
4. Consumer Behavior, Leon Schiffman, Leslie Kanuk, S.Ramesh Kumar, Pearson, 10th Edition
5. Consumer Behavior, Engel, Blackwell & Miniard
6. Consumer Behavior - An Indian perspective, Dr. S.L Gupta, Sumitra Pal, Sultan Chand and Sons
7. Consumer Behavior - In Indian Perspective, Suja R. Nair, Himalaya Publishing House.
8. Why we Buy: The Science of Shopping, Paco Underhill, Simon and Schuster Paperbacks.

Suggested Reference Books:
1. We are like that only by Rama Bijapurkar, Penguin
2. The Marketing White Book, Business World
3. Economic Times, Business Standard, Mint, Business world.(Brand equity & Brand wagon)

Subject Elective (SE) Courses - Semester II
Specialization: Marketing Management

Semester II		217MKT: Integrated Marketing Communications
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Marketing Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO217MKT.1	REMEMBERING	DESCRIBE the IMC mix and the IMC planning process.
CO217MKT.2	UNDERSTANDING	EXAMINE the role of integrated marketing communications in building brand identity, brand equity, and customer franchise.

CO217MKT.3	APPLYING	CONSTRUCT a marketing communications mix to achieve the communications and behavioural objectives of the IMC campaign plan.
CO217MKT.4	ANALYSING	ANALYZE and critically evaluate the communications effects and results of an IMC campaign to determine its success for a variety of brands.
CO217MKT.5	EVALUATING	DESIGN a sales promotion campaign and CHOOSE the avenues for Public Relations, Publicity and Corporate Advertising for a consumer and a business-to-business product.
CO217MKT.6	CREATING	DEVELOP an integrated cross-media strategy and creative message and concept to reach the target audience and deliver the brand promise through an IMC campaign for a variety of brands.

1.   Integrated Marketing Communication: Integrated Marketing Communication, Evolution of Integrated Marketing Communication, Role of IMC in creating brand identity, brand equity, and customer franchise, Communication Process, Promotional Mix: Tools for IMC, The IMC Planning Process, Global IMC. The Value of IMC plans – information technology, changes in channel power, increase in competition, brand parity, integration of information, decline in the effectiveness of mass-media advertising. **(3)**

2.   Advertising- I:
(a)   Definition, History, Roles and Functions of Advertising, Types of Advertising, Steps in Development of Advertisement.
(b)   **Advertising Design:** Appeals, Message Strategies & Execution Framework: Advertising Design, Advertising Theory, Types of Advertising Appeals, Structure of an Advertisement, Message Strategies, Cognitive strategies, Execution Strategies, Creating an Advertising, Advertising Effectiveness.
(c)   **Copywriting:** Meaning and Definition of Copywriting, The Copywriter, Copywriting for Print, Copywriting guidelines, Radio Copywriting, TV Copywriting, Writing for the Web, Tips for writing good web content. **(10)**

3.   Advertising- II:
(a)   **Media Planning and Strategies:** Growth and Importance of Media, Meaning and Role of Media Planning, Media Plan, Market Analysis, Media Objectives, Developing and Implementing Media Strategies, Evaluating the effectiveness.
(b)   **Print Media and Outdoor media:** Characteristics of the press, Basic media concepts, Newspapers, Magazines, Factors to consider for magazine advertising, Packaging, Out-of-home Advertising, Directory Advertising.
(c)   **Broadcast and Internet Media:** Meaning of Broadcast Media, Radio as Medium, Television as Medium, Internet Advertising, Email Advertising. **(10)**

4.   Sales Promotion: Scope and Role of Sales Promotion, Growth of Sales Promotion, Consumer Oriented Sales Promotion, Techniques in Sales Promotion, Trade Oriented Sales Promotion, Coordinating sales promotion and advertising; Sales promotion abuse; Personal selling. **(4)**

5.   Public Relations, Publicity and Corporate Advertising: Definition of Public Relations, Publicity and Corporate Advertising; Difference between public relations and advertising, Functions of Public Relations; Creating positive image building activities; Preventing or reducing image damage; Sponsorship and Event marketing; Role of internet in Public Relations, Publicity, Advantages and Disadvantages of Publicity. **(3)**

Suggested Text Books:
1.   Advertising and Promotion, Belch, George and Belch, Michael, Tata McGraw Hill, New Delhi.
2.   Integrated Advertising, Promotion and Marketing Communication, Clow, Kenneth & Black, Donald, Pearson Education, New Delhi.
3.   Advertising Management, Jethwaney, Jaishree and Jain, Shruti, Oxford University Press, New Delhi.
4.   Advertising and Promotions, Semenik Allen, Cengage Leaning
5.   Advertising and Promotion, SHH Kazmi, SatishBatra, Excel Books
6.   Advertising and Promotions, Shah, D'Souza, Tata McGraw Hill

Suggested Reference Books:
1.   Integrated Marketing Communication, Tom Duncan, McGraw-Hill
2.   Integrated Marketing Communication: Trends and Innovations, Shridha Jain, Global India Publications
3.   IMC, The Next Generation, Don Schultz and Heidi Schultz, Tata McGraw Hill, New Delhi.

Semester II		218MKT: Product and Brand Management
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Marketing Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO218MKT.1	REMEMBERING	DEFINE the key concepts and DESCRIBE the elements of a product strategy.
CO218MKT.2	UNDERSTANDING	EXPLAIN the process and methods of brand management, including how to establish brand identity and build brand equity.
CO218MKT.3	APPLYING	IDENTIFY the Brand Marketing Strategies for Leaders, Challengers, Followers and Niche Strategies for real life consumer, business products and services operating in various markets and in the digital space.
CO218MKT.4	ANALYSING	EXAMINE the key brand concepts by articulating the context of and the rationale of application for real life consumer, business products and services operating in various markets and in the digital space.
CO218MKT.5	EVALUATING	FORMULATE effective branding strategies for real life consumer, business products and services operating in various markets and in the digital space.
CO218MKT.6	CREATING	COLLECT brand audit data using appropriate tools and PROPOSE strategic recommendations for Reinforcing / Revitalizing / Rejuvenating failed Brands for real life consumer, business products and services in various markets and in the digital space.

1. Product Management: Product management as a basis of marketing organization structure. Role of product manager, Product management in consumer product industry Vs. industrial product industry. Overview of product level marketing plans. **(5)**

2. Product Strategy: Elements of a product strategy, Defining Competitive set, Category Attractiveness Analysis, Competitor Analysis, Customer Analysis, setting objectives, selection of strategic alternatives – increasing sales, market share, profitability, New product failure. **(5)**

3. Brand Management and Brand Equity: Definition of brand, Challenges in Branding Strategic brand management process, Brand Equity Models- Brand Asset Valuation, Aaker Model, BRANDZ ,Brand Resonance, Customer based Brand equity, Brand knowledge, Sources of brand equity - Brand Awareness, Brand Image. **(7)**

4. Planning and Implementing Brand Marketing Programs: The Four steps of brand building, creating customer value, Identifying and establishing brand positioning, Positioning guidelines, Choosing brand elements to build brand equity, Options and tactics for Brand, New perspectives on marketing, Integrating marketing communication to build brand equity, Conceptualizing the leveraging process, Co- branding, Celebrity Endorsement. Brand Marketing Strategies for Leaders, Challengers, Followers, Niche Strategies. **(7)**

5. Growing and Sustaining Brand Equity: The brand value chain, Brand audit, Designing brand tracking studies, Capturing customer mind set through quantitative and qualitative research techniques, Brand architecture, Brand hierarchy, Designing brand strategy, New products, Brand extensions- advantage and disadvantage, Reinforcing brands, Revitalizing brands, Rejuvenating failed Brands. **(6)**

Suggested Text Books:
1. Product Management, Lehmann & Winer, TMGH
2. Product Management, S. A. Chunawalla, Himalaya Publishing House
3. Strategic Brand Management, Kevin Lane Keller, Pearson
4. Strategic Brand Management, J N Kapferer, Kogan Page
5. Brand Management, Dr. S.L.Gupta Himalaya Publishing House

Suggested Reference Books:
1. Product Management, Dr. C. Anandan, TMGH
2. Product & Brand Management, U.C. Mathur, Excel books
3. Building Brand Equity, David Aaker
4. Branding Concepts & Process, Debashish Pati
5. Brand Positioning Strategies for Competitive Advantage, Subrato Sen Gupta

Semester II		219MKT: Personal Selling Lab
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Marketing Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO219MKT.1	REMEMBERING	LIST the key terms in selling and DESCRIBE the qualities of Winning Sales Professionals
CO219MKT.2	UNDERSTANDING	EXPLAIN the theories and concepts that are central to personal selling.
CO219MKT.3	APPLYING	Apply the interpersonal and team skills necessary in successful relationship selling.
CO219MKT.4	ANALYSING	ILLUSTRATE the use of various sales techniques needed to achieve a profitable sale in a real world scenario for a real world product/ service / e-product / e-service.
CO219MKT.5	EVALUATING	DEVELOP a customer plan that identifies all elements of personal selling, essential to creating successful sales in a real world scenario for a real world product/ service / e-product / e-service.
CO219MKT.6	CREATING	CREATE sales presentation for a real world product/ service / e-product / e-service and for variety of selling situations.

1.   Personal Selling & Salesmanship: Defining Personal selling and salesmanship, Selling as a profession, Objectives and importance of personal selling, Essentials of Personal Selling, Traditional & Modern Selling Approach, Ethical and Legal Considerations in Personal Selling, Role of Selling in Marketing, Types of selling, Qualities of Winning Sales Professionals - Physical, Mental, Social and Character Traits. Theories of Selling: AIDA, Right set of circumstances theory of selling, Buying Formula theory of selling, Behavioral Equation theory, Career in Personal Selling / Sales; What Companies Look for in New Salespeople. **(4)**

2.   Personal Selling Process: Prospecting- objectives, sources and methods, Lead Generation, Getting appointment, Sales Responsibilities and Preparation; Pre approach-step toward sales planning-elements of sales call planning; Customer need discovery & Analysis; Approach- sales presentation/ demonstration- selection of appropriate presentation method, essentials of presentation, sales presentation mix- persuasive communication, visual presentation and dramatization, Use of questions- Direct questions, non- directive questions, rephrasing, redirect questions; Sales Leads, Account Management, Building long-term partnership by Selling, Strategic Understanding of Company, Products, Competition, and Markets Strategic Understanding of Company, Strategic Understanding of Products. **(7)**

3.   Personal Selling Process: Handling objection- hidden, stalling, no need, money objection, etc., objection handling techniques, Closing the sale- reading buying signals, closing techniques- the alternative choice, assumptive, the compliment, the summary, the continuous, the minor point, the tea account, the standing room and the probability; Follow up after sales- Discuss service requirements, handling complaints, Key Account Management. Customer Service : meaning of Customer Service, Importance of Customer Satisfaction Customer Follow-Up Strategies, Customer Service Questionnaire, Evaluating Customer Service. **(7)**

4.   Personal Selling Skills: Negotiation, Communicating Effectively with Diverse Customers – Meaning of Communication, Developing Communication Skills, essentials of Effective Communicator, Communication Styles, making choice of Communication Style, Communication and Trust Building , Listening Skills, Presentation and Demonstration, , Body Language- Space, Moments, Eye Contacts & Postures, Follow up Calls, Writing Effective Sales Letters and e- mails, Positive Mental Attitude, Goal Setting, Effective Dressing, Managing Yourself, Managing Time and Territory Self-Management Effectiveness and Efficiency Sales Activities, Setting Priorities Account And Territory Management, Working Smarter , Cold Call Mechanism, Tools and Technical aids for Selling. **(3)**

5.   Personal Selling Applications and Situations: Selling of services- financial, IT and telecommunication, advertising, education; Selling of industrial products- raw material, capital goods, supplies; Selling of consumer goods- convenience, shopping and specialty goods; International selling; Selling in rural markets; Selling high and low involvement products; Selling to new and existing customers Market; Selling to end users, intermediaries, government departments and agencies; Selling individual and groups. **(4)**

Suggested Text Books:
1.   Fundamentals of Selling by Charles M. Futrell, Tata McGraw Hill 10th Edition
2.   A B C' s of Selling by Charles M. Futrell, AITBS, New Delhi,

3.   World Class Selling by Roy Chitwood, JAICO Publishing House
4.   Successful Selling Solutions by Julian Clay, Viva Books
5.   Value Added Selling by Tom Reilly, TMGH

Suggested Reference Books:
1.   Achieving Sales Excellence by Howard Stevens, Viva Books Pvt. Ltd.
2.   Power Sales Presentation by Stephan Schiffman, Adams Media Corporations.
3.   Sales Essentials by Stephan Schiffman, Avon Massachusset
4.   Smarter Selling by Keith Dugdale& Lambert, Prentice Hall.
5.   Successful Sales- Get Brilliant Results Fast by Pauline Rowson, Viva Books.
6.   Successful Selling Skills by Richard Denny, The Sunday Times.
7.   The Art and Science of Negotiation by Raiffa H, Cambridge: Belknap/Harvard Press
8.   Getting to Yes by Fisher R and Ury W, Harmondsworth Middlesex, GB Penguin Books

Semester II		220MKT: Digital Marketing - I
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Marketing Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO220MKT.1	REMEMBERING	DEFINE various concepts related to Digital Marketing.
CO220MKT.2	UNDERSTANDING	EXPLAIN the role of Facebook, Google Ad words, Youtube and Email in digital marketing.
CO220MKT.3	APPLYING	MAKE USE OF Facebook, Google Ad words, Youtube and Email for carrying out digital marketing of real life products.
CO220MKT.4	ANALYSING	ILLUSTRATE the use of Facebook, Google Ad words, Youtube and Email in various contexts of Digital Marketing.
CO220MKT.5	EVALUATING	DESIGN digital media campaign using appropriate mix of Facebook, Google Ad words, Youtube and Email.
CO220MKT.6	CREATING	CREATE appropriate content for Facebook, Google Ad words, Youtube and Email campaigns.

1.   **Digital Marketing Planning and Structure:** Inbound vs Outbound Marketing, Content Marketing, Understanding Traffic, Understanding Leads, Strategic Flow for Marketing Activities. WWW, Domains, Buying a Domain, Website Language & Technology, Core Objective of Website and Flow, One Page Website, Strategic Design of Home Page, Strategic Design of Products & Services Page, Strategic Design of Pricing Page, Portfolio, Gallery and Contact Us Page, Call to Action (Real Engagement Happens), Designing Other Pages, SEO Overview, Google Analytics Tracking Code, Website Auditing, Designing Wordpress Website. **(5+1)**
2.   **Facebook Marketing Fundamentals:** Profiles and Pages, Business Categories, Getting Assets Ready, Creating Facebook Pages, Page Info and Settings, Facebook Page Custom URL, Invite Page Likes, Featured Video, Pin Post and Highlights, Scheduling Posts, Facebook Events, Reply and Message, Facebook Insights Reports, Competitor's Facebook Page, Ban User on Facebook Page, Connect with Twitter. Facebook Ad Campaigns: Organic v/s Paid, Defining Ad Objective, Performance Matrix, Ad Components, Designing Creative Image, Facebook Ad Structure, Setting Up Facebook Ad Account, Create Ad –Targeting, Create Ad –Budgeting, Create Ad –Creative, Content and CTA, Boosting Page Posts, Page Promotion, Video Promotion, Similar Ads and Audiences, Tracking Pixels Code, Remarketing -Website Visitors, Custom Audiences -Look Alike, Custom Audience -Saved Group, Managing and Editing Ads, Ad Reports and Ad Insights, Billing and Account. Facebook Business Manager, People, Pages and Roles, Ad Accounts Configurations, Ad Agencies and Assigning, Shared Login for FB Business A/c, Power Editor, Email Targeting on Facebook, Facebook Offers, CTA on Page, Posts for Location, Save Time with Third Party Tools, Case Studies. **(5+1)**
3.   **Google Adwords:** Understanding Adwords, Google Ad Types, Pricing Models, PPC Cost Formula, Ad Page Rank, Billing and Payments, Adwords User Interface, Keyword Planning, Keywords Control, Creating Ad Campaigns, Creating Text Ads, Creating Ad Groups, Bidding Strategy for CPC, Case Studies. PPC, CPM, CPA , Other Measuring Tools, Bidding Strategy on Location, Bidding Strategy on Schedule, Bidding Strategy on Devices, Conversion Tracking Code, Designing Image Ads, Creating Animated Ads, Examples on Animated Ads, Creating Video Ads, Youtube Video Promotion, Hi-Jack Competitor's Video Audience, Case Studies. Remarketing Strategies, Remarketing Rules, Remarketing Tracking Code, Linking Google Analytics, Designing Remarketing Images, Shared Budget, GWD Software, Case Studies. **(5+1)**

4.   YouTube Marketing: Video Flow, Google Pages for YouTube Channel, Verify Channel, Webmaster Tool –Adding Asset, Associated Website Linking, Custom Channel URL, Channel ART, Channel Links, Channel Keywords, Branding Watermark, Featured Contents on Channel, Channel Main Trailer, Uploading Videos, Uploading Defaults, Creator Library, Case Studies. Channel Navigation, Video Thumbnail, CTA –Annotation, CTA –Extro, CTA –Cards for Mobile, Redirect Traffic to Website, Post Upload Enhancements, Live Broadcasting, Managing Playlists, Managing Comments, Managing Messages, Monetization with Adsense, Paid YoutubeChannel, Channel Analytics, Real Time Analytics, Case Studies. **(5+1)**

5.   Email Marketing - Content Writing: Email Machine –The Strategy, Email Frequency, Why People Don't Buy, The Fuel –Value, Triggers in Email using 4Ps, Sequence of Email Triggers, Email Example - Topic, Intro, Product, Secondary Value, Fear, Regret, Ask for Sales, Reinforcement, Offers Announcements, Urgency, Cross Sales, Re-Engagement, Buyer vs Consumer. Email Software and Tools, Importing Email Lists, Planning Email Campaign, Email Templates and Designs, Sending HTML Email Campaigns, Web Forms Lead Importing, Integrating Landing Page Forms, Campaign Reports and Insights, Segmentation Strategy, Segmentation Lists, Auto-Responder Series, Triggering Auto – Responder Emails, Auto Responder Actions, Case Studies. **(5+1)**

Suggested Text Books:
1.   Google Adwords for Beginners: A Do-It-Yourself Guide to PPC Advertising, Cory Rabazinsky,
2.   Email Persuasion: Captivate and Engage Your Audience, Build Authority and Generate More Sales With Email Marketing, Ian Brodie
3.   Social Media Marketing All-In-One for Dummies, Jan Zimmerman and Deborah

Semester II		221MKT: Marketing of Financial Services - I
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Marketing Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO221MKT.1	REMEMBERING	RECALL and DESCRIBE the key terminology of Financial Services.
CO221MKT.2	UNDERSTANDING	DESCRIBE the various types of financial products and services.
CO221MKT.3	APPLYING	DEVELOP FAQs for each kind of financial products and services from an investment advisor's perspective.
CO221MKT.4	ANALYSING	COMPARE and CONTRAST the various types of financial products and services and ILLUSTRATE their benefits and limitations.
CO221MKT.5	EVALUATING	EVALUATE the financial products and services from an investment perspective for various kinds of investors.
CO221MKT.6	CREATING	COLLECT the application forms for all kinds of investments and DISCUSS each of them.

1.   **Financial Market Fundamentals: Equity Markets:** Capital Markets, Role in the Economy, Brief History of BSE and NSE. Trade lifecycle of a financial instrument, Market Participants in the Equity markets with perspectives on 'Buy' side and 'Sell' side, Key terminologies related to the Equity markets. **Bond Markets:** Introduction to bond markets, how bond markets operate? Key terminologies related to the bond markets. Regulatory aspects of the Bond Markets, Key players in the Bond Markets (such as FIIs, Hedge Funds etc.) **Debt Instruments:** Debt instruments and their classification based on type of issuer, and basis characteristics. Money Market Instruments (such as Certificate of Deposit, Re-purchase ''Agreements etc.) **(5+1)**

2.   **Mutual Funds: Basic Concepts:** Mutual Funds and their importance, Various entities of a Mutual Fund and their respective roles - Basic understanding of NAV and calculation of a Fund - NAV, Types of Loads and Commissions charged on Mutual Funds and their significance. **Types:** Types of Mutual Funds in India, classified on the basis of Structure, Investment Objective, and Investment Plan, Relative risks associated with various Mutual Funds in India. Basic understanding of ETFs and their key features. Differences between a Mutual Fund and an ETF. Basic understanding of a 'Hedge Fund' and its key features, Process of Fund Selection and various related measurement parameters, Various expenses incurred by a Fund. **Investment Advisors:** Guidelines for Investment Advisors while selling Mutual Funds to the clients. **(5+1)**

3.   **Insurance: Basics of Insurance:** Basic understanding of insurance products, types of insurance policies – Role of IRDA, Insurance industry in India. **General Insurance:** Types of liabilities covered, extent of insurance value, and conditions. **Life Insurance:** Basic concept of Life Insurance, its beneficiaries and its types, Concept of Term Insurance

and its various types, Traditional Life Insurance and its difference from Term Insurance, Whole Life Policy and Endowment Policy and the differences between them. ULIP and its comparison with conventional plans and Mutual Funds. **Marketing Channels in Insurance Markets:** Various channel members in the Industry such as Insurance Agents, Distributors, etc. **Basic Understanding**: Property and casualty/liability insurance, Commercial Insurance, Health Insurance. **(5+1)**

4.   **Other Financial Services: Leasing / Hire Purchase:** Definition, meaning, types, process, advantages, limitations, financial implications. **Housing Finance:** Major institutions involved, types, rate of interest, advantages, scenario in India. **Credit Cards:** Meaning, types, growth, advantages and disadvantages, growth in India. **Credit Rating Services:** Origin, definition, advantages, credit rating agencies - global and Indian, symbols, CRISIL, ICRA, equity ratings, CIBIL, scope in India. **Other Services:** Factoring, forfeiting, bill discounting, consumer finance and venture capital. **(5+1)**

5.   **Marketing of Financial Services: Importance of Financial Planning:** identification of investment needs for retail investors, studying investment behavior - Household Vs. Institutional Investors. **Alternate Investment Products:** Introduction to Alternate Investments and their various products and services, Portfolio Management Services and their features, Tax regulations from an Investment Advisor point of view. **Career opportunities in Marketing of Financial Services. (5+1)**

Suggested Text Books:
1.   Financial Services, M Y Khan, Tata McGraw-Hill
2.   Financial Services & Markets, Dr. Punithavathy Pandian, Vikas Publication
3.   Marketing of Financial Services, V.A. Avadhani, Himalaya Publishing House
4.   Financial Services Marketing, Christine Ennew , Nigel Waite
5.   Financial Services, Nalini Prava Tripathy, Prentice Hall of India Private Limited

Semester II		222MKT: Marketing of Luxury Products
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Marketing Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO222MKT.1	REMEMBERING	RECALL and DESCRIBE the key concepts and principles of luxury brand management and marketing.
CO222MKT.2	UNDERSTANDING	DESCRIBE the unique consumer behavior in the context of luxury products .
CO222MKT.3	APPLYING	IDENTIFY potential new luxury products and how they relate to a variety of markets, including emerging markets & India.
CO222MKT.4	ANALYSING	COMPARE and CONTRAST the luxury products , brands and industry with routine products, brands and industry.
CO222MKT.5	EVALUATING	ASSESS internal and external factors impacting the luxury markets, nationally, internationally and globally.
CO222MKT.6	CREATING	Formulate marketing strategy for contemporary luxury products and brand.

1.   **Theoretical foundations of luxury management:** Defining brand, luxury and relativity, luxury goods, luxury brand, fashion, difference and similarity between luxury and fashion, Unique properties, opportunities, and challenges of ever-changing markets of design, fashion, and luxury goods. Luxury - historical and contemporary perspectives. Main luxury sectors: definition and trends. Luxury brands in the emerging markets and the Indian context. **(5+1)**

2.   **Methodological approaches to understanding luxury:** Identifying a luxury product: basic approaches and main types, Features of consumer behavior, Basic psychological phenomena associated with luxury purchase, Luxury consumption motives, Luxury Brand Identity, Changing marketing dynamics and impact on the marketing, experience and consumption of luxury. **(5+1)**

3.   **Luxury Segmentation, Targeting, Positioning & Marketing Mix:** Pursuing long term profitability through sound marketing strategies. **Market segmentation** beyond the socioeconomic. **Positioning** – (a) Identity management - Communication policy, managing creativity, corporate image and volatility, (b) Channel management **Luxury marketing mix**: product policy, price policy, distribution policy, Craftsmanship: How are things made and why it matters, Communicating & Distributing Luxury. **(5+1)**

4.   **International luxury markets:** historical leaders and emerging countries, Binary Conventions in Luxury: East vs. West; Masculine vs. Feminine; Seriousness vs. Humor, What does Culture have to do with luxury and how you can use it to market luxury effectively. **(5+1)**

5.   **Luxury retail**: The beauty & fragrance industries, Fine Jewelry & timepieces; Accessories; Art, Beauty products, Hospitality, Automotive, Fashion. **(5+1)**

Suggested Text Books:
1.   The Luxury Strategy, Kapferer, Jean-Noel and V. Bastien, Kogan Press

Suggested Reference Books:
1.   The Luxury Strategy: Break the Rules of Marketing to Build the Luxury Brand, Bastien Vincent, Kapferer Jean-Noël, Kogan Page
2.   The idea of prestige: A conceptual and historical investigation, Berry, C.J., Cambridge University Press.
3.   Economics and consumer behavior, Deaton, A., & Muellbauer, J., Cambridge University Press.

Subject Core (SC) Courses - Semester II Specialization: Financial Management

Semester II		205FIN: Financial Markets and Banking Operations
3 Credits	LTP: 2:1:1	Subject Core (SC) Course – Financial Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO205FIN.1	REMEMBERING	RECALL the structure and components of Indian financial system through banking operations & Financial Markets.
CO205FIN.2	UNDERSTANDING	UNDERSTAND the concepts of financial markets, their working and importance.
CO205FIN.3	APPLYING	ILLUSTRATE the working and contribution of Banks and NBFCs to the Indian Economy.
CO205FIN.4	ANALYSING	ANALYZE the linkages in the Financial Markets.
CO205FIN.5	EVALUATING	EXPLAIN the various banking and accounting transactions.
CO205FIN.6	CREATING	DEVELOP necessary competencies expected of a finance professional.

1.   **Basic Concepts of Indian Financial System**: Structure and Components: Indian financial system in India, Role of financial system in economic development. Introduction to financial Institutions – Banking – Non Banking Institutions. Role and Functions of Banks and their Contribution to Indian Economy. Introduction to Financial Markets, Functions and Classification. Money Market, Capital markets, Bond markets, Commodity markets, Money markets, Derivatives markets, Futures markets, Foreign exchange markets, Crypto currency market **(7+2)**
2.   **Money Market:** Structure and components: Participants in Indian Money Market, Money Market Instruments, Structure of Money Market, Role of central bank in money market; Players in the Indian Money Market, The reforms in Indian Money Market. **(7+2)**
3.   **Capital Market:** Components & Functions of Capital Markets, Primary & Secondary Market Operations, Capital Market Instruments - Preference Shares, Equity Shares, Non-voting Shares, Convertible Cumulative Debentures (CCD), Fixed Deposits, Debentures and Bonds, Global Depository receipts, American Depository receipts, Global Debt Instruments, Role of SEBI in Capital Market. **(7+2)**
4.   **Banks and NBFCs:** Types of Banks & NBFCs: Central Bank, Nationalized & Co Operative Banks, Regional Rural Banks, Scheduled Banks, Private Banks & Foreign Banks, Mudra Bank, Small Finance Banks, Specialized Banks, NBFCs. Types of Banking: Wholesale and Retail Banking, Investment Banking, Corporate Banking, Private Banking, Development Banking. **(7+2)**
5.   **Concepts in Banking and Accounting of transactions:** Accounting in banks, Electronic Banking, RTGS, ATM, MICR, OCR, OMR, and DATANET, Petty Cash, Electronic Clearing Service (ECS), National Electronic Funds Transfer (NEFT) System, Real Time Gross Settlement (RTGS) System, IMPS. **(7+2)**

Suggested Text Books:
1.   Indian Financial Services, M Y Khan
2.   Marketing of Financial Services, Dr D Guruswamy
3.   Financial Services In India, Avadhani,V.A.
4.   Risk and Insurance Concepts , P Perriasamy, M Veerasevalam

5.   Financial services of India, Dr. D Guruswamy
6.   Capital Markets & Financial Services, Anil Agashe
7.   Financial services, M. Y. Khan

Semester II		206FIN: Personal Financial Planning
3 Credits	LTP: 2:1:1	Subject Core (SC) Course – Financial Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO206FIN.1	REMEMBERING	UNDERSTAND the need and aspects of personal financial planning
CO206FIN.2	UNDERSTANDING	Describe the investment options available to an individual
CO206FIN.3	APPLYING	IDENTIFY types of risk and means of managing it
CO206FIN.4	ANALYSING	DETERMINE the ways of personal tax planning
CO206FIN.5	EVALUATING	EXPLAIN retirement and estate planning for an individual and design a financial plan.
CO206FIN.6	CREATING	CREATE a financial plan for a variety of individuals.

1.   Introduction to Financial Planning: Need for Financial Planning, Assessing personal and financial goals, needs and priorities, attitudes and expectations and risk tolerance level, Personal Financial Planning Process, Preparation of Personal Budget, Personal Financial Statements, Responsibilities of a Financial Planner, Time Value of Money, KYC, PAN & AADHAR **(5+2)**

2.   Investment Planning: Introduction to Investment Planning, Investment Criteria- liquidity, safety and Profitability, Investment vehicles (Gold, Bonds, Equity, FD, Insurance, MFs, ETFs, Post Office Savings, Real Estate etc.), Risk and Return associated with these investments, Return comparison over a period of time from different asset classes, Investment strategies, Mutual Funds as Investment Vehicle-Special focus on SIP, STP, and SWP, NFOs, Trading in Commodities, Derivatives and F&Os, Crypto currency, Creating an Investment Portfolio, Awareness of mis-selling in investment products. **(10+2)**

3.   Risk Analysis, Insurance Planning and Debt: Risk analysis, Concept of long term risk, Insurance decisions in personal financial planning, Types of insurance cover- mortality, health, disability, property and liability, ULIPs and Term Plans, Credit Card Financing, Types of Consumer and Home Loans- cost and risk, Credit Score. **(8+2)**

4.   Tax Planning: What is Tax Deduction? Tax Deductions under the Section and respective Subsections of : 80C, 80D, 80E, 80G, 80 I, Sections 80 JJA, 80QQB, 80RRB, 80TTA, 80U and other relevant sections, Direct Tax Code (DTC), Taxation impact on different investment options, Personal tax planning, Filing IT Returns. **(6+2)**

5.   Retirement Planning and Estate Planning: Wealth creation, retirement planning for an individual, Pension Plans, Provident Fund, Gratuity, Life Insurance Plans., General Insurance Plans, Reverse Mortgage Plans, Senior Citizen Schemes, What is Estate? Who needs Estate Planning? Transferring assets during life time, Power of Attorney, Transferring assets post death – e.g., Nominations, Will, and Creating Trusts. **(6+2)**

Note:
1.   **The weightage in the question paper shall be as follows:** Numerical problems / Cases: 40% & Theory: 60%
2.   **Formats of documents to transfer assets should be discussed**
3.   **Numerical problems on the following should be taught :**
    a)   Time Value of Money: Compounding, Discounting, Annuities, Sinking Fund, Perpetuities
    b)   EMI calculation on loans

Suggested Text Books:

1.   Basics of Personal Financial Planning Insurance Education Series by NIA, K C Mishra, Steward Doss,
Cengage Delmar Learning India Pvt. Ltd.

Suggested Reference Books:
1.   Introduction to Financial Planning , Indian Institute of Banking & Finance
2.   Personal Financial Planning Theory and Practice, Kaplan Schweser
3.   Personal Finance, E. Thomas Gorman and Raymond E. Forgue, Southwest-Western Cengage Learning.
4.   Fundamentals of Financial Planning, Michael Dalton, Joesph Gillice, James Dalton and Thomas Langdon,
         Money Education
5.   Personal Financial Planning, Benedict Koh Wai Mun Fong, Pearson

6.   Personal Financial Planning, Lawrence J. Gitman , Michael D.Joehnk, Cengage NOW.

Subject Elective (SE) Courses - Semester II
Specialization: Financial Management

Semester II		217FIN: Securities Analysis & Portfolio Management
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Financial Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO217FIN.1	REMEMBERING	REMEMBER various concepts taught in the syllabus.
CO217FIN.2	UNDERSTANDING	EXPLAIN various theories of Investment Analysis and Portfolio Management.
CO217FIN.3	APPLYING	CALCULATE risk and return on investment using various concepts covered in the syllabus.
CO217FIN.4	ANALYSING	ANALYZE and DISCOVER intrinsic value of a security.
CO217FIN.5	EVALUATING	DESIGN/ CREATE optimal portfolio.

1.   **Introduction & Concepts: Investment:** Meaning, nature & objectives, Investments Vs. Speculation & Gambling, Investment Process, Investment Environment, Investment avenues: Marketable & Non marketable financial assets. **Portfolio Management:** Meaning, attributes, significance and process of Portfolio Management, Portfolio manager and his role **(3+1)**

2.   **Risk & Return Analysis: Risk & Return:** Meaning and Elements of Risk & Return, Measurements of Risk & Return, Relationship between risk and return. **Fundamental Analysis:** Economy analysis, industry analysis and company analysis, weaknesses of fundamental analysis. **Technical Analysis:** Meaning, Tools of technical analysis, Technical Analysis vs. Fundamental Analysis. **Efficient Market Theory:** Meaning. Forms of Market Efficiency, Efficient Market Hypothesis vs. Fundamental & Technical Analysis **(7+1)**

3.   **Valuation of bonds and shares: Bond Valuation:** Meaning, Types, Bond Prices, Bond Return, Risks in Bonds. **Equity Valuation:** Meaning, Concept of Present Value, Share Valuation Models, Multiplier Approach to Share Valuation **(5+1)**

4.   **Portfolio Analysis & Selection: Concept of portfolio and portfolio management:** Meaning, Types of Portfolio Risks, Diversification of Risks, Selection of Optimal Portfolio. **Markowitz Portfolio Selection Model:** Efficient set of portfolios, Optimal Portfolio selection, Limitations of the Model. **Capital Asset Pricing Model (CAPM):** Meaning, Assumptions & Limitations of CAPM. **Sharpe-The Single Index Model:** Measuring security risk & return, Measuring Portfolio Risk & Return. **Factor Models and Arbitrage Pricing Theory:** Arbitrage Pricing Theory and its principles, Comparison of Arbitrage Pricing Theory with the Capital Asset Pricing Model **(7+1)**

5.   **Portfolio Revision & Evaluation : Portfolio Revision:** Meaning and need of Portfolio Revision, Constraints in Portfolio Revision, Revision Strategies, **Portfolio Evaluation:** Meaning and need of Portfolio Evaluation, Evaluation Perspectives,Measuring Portfolio Returns & Risk Adjusted Returns **(3+1)**

Suggested Text Books:
1.   Investment Analysis and Portfolio Management, Chandra, Prasanna (Tata McGraw Hill Publishing Co. Ltd.)
2.   Securities Analysis & Portfolio Mgmt., V A Avadhani ,Himalaya Publications
3.   Security Analysis and Portfolio Management, S. Kevin, PHI Learning Pvt. Ltd.
4.   Investment Analysis & Portfolio Management, Ranganathan&Madhumathi ,Pearson Education Pvt. Ltd.

Suggested Reference Books:
1.   Security Analysis and Portfolio Management, Fischer DE & Jordan R J, Prentice Hall.
2.   Portfolio Management, Barua, S. K.; Raghunathan V; Varma, J R ,Tata McGraw Hill Publishing Co. Ltd.
3.   Investment Analysis and Portfolio Management, Frank K. Reilly and Keith C. Brown ,Thomson Learning
4.   Modern Investments and Security Analysis, Fuller R J; Farrel JL ,McGraw Hill
5.   Investment Management, V.K. Bhalla ,S.Chand& Co.
6.   Security Analysis & Portfolio Management, S.Bhat, Excel Books
7.   Security Analysis and Portfolio Management, Punithavathy P., Vikas Publishing
8.   Security Analysis and Portfolio Management, A.P. Dash,I.K. International

Semester II		218FIN: Futures & Options
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Financial Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO218FIN.1	REMEMBERING	DESCRIBE the basic concepts related to Derivatives, Types of Derivative products and Risk Management
CO218FIN.2	UNDERSTANDING	EXPLAIN in detail the terminology used in the Futures and Options segment of finance domain
CO218FIN.3	APPLYING	UNDERSTAND and DIFFERENTIATE between Options and Futures pricing and apply the understanding in the simulated virtual trading platform.
CO218FIN.4	ANALYSING	ANALYZE and offer optimum solutions in the cases of risk management through hedging with futures and options.
CO218FIN.5	EVALUATING	EVALUATE the various derivative strategies for their application in different situations.

1. **Introduction:** Definition of Derivative, Brief History of Derivatives, Participants in Derivative Market, Economic functions of derivative market, Evolution of Commodity, Currency, Stocks and Interest Rate Derivatives, Structure of Derivative Market - Forwards, Futures, Options, Swaps, etc. Reasons for Trading: Risk Management, Speculation and Arbitrage. **(5+1)**

2. **Market Characteristics:** Futures and Options Contract Specifications, Underlying Asset, Contract Size, and Delivery Specifications. Mark to Market using Margin Accounts, Familiarizing with Market Quotes, Trading Strategies involving Options and Futures, Interest Rate Derivatives, Contractual Specifications - Floating and Fixed Rate, Valuation of Interest Rate Derivatives. **(5+1)**

3. **Derivatives Pricing Theory:** Option Pricing: Option Payoffs, Black-Scholes formula for Option Pricing, Futures Pricing: Pricing by Arbitrage: Relationship between Futures and Spot Price (cost of carry and reverse cost of carry), Difference between Futures and Forward Price. **(5+1)**

4. **Risk Analysis and Management:** Risk Measurement and Management Framework. Delta/Theta/Vega & Gamma risks of options, Hedging with Futures. **(5+1)**

5. **Options and Futures Applications in India:** Structure of Indian Stock Markets and the Operational Efficiency of Options and Futures, Determination of the Fair Value of Futures and Options Prices, Interactions between Spot Equity Trading and Trading in Derivatives. Index Options and Futures, Constructing an Index, Methodology of Construction, Trading an Index. Conditions necessary to Improve the Market Structure in India and Policy Interventions. **(5+1)**

Suggested Text Books:
1. Futures & Options, A.N.Sridhar
2. Financial Derivatives, S.L.Gupta
3. Financial Derivatives, S.S. Kumar
4. Options, Futures & Other Derivatives, John C. Hull
5. Option Volatility & Pricing, Sheldon Naten Berg
6. The New Options Market, Max Ansbacher

Suggested Reference Books:
1. Futures & Options, ND Vohra, B.R.Bagr
2. Derivatives & Risk Management Basics, Don. M. Chance, Robert Brooks.
3. Derivatives & Risk Management, Jayanth Rama Varma

Semester II		219FIN: Direct Taxation
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Financial Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO219FIN.1	REMEMBERING	UNDERSTAND various basic concepts/ terminologies related Direct Taxation

CO219FIN.2	UNDERSTANDING	EXPLAIN how tax planning can be done.
CO219FIN.3	UNDERSTANDING	ILLUSTRATE how online filling of various forms and returns can be done.
CO219FIN.4	APPLYING	CALCULATE Gross Total Income and Income Tax Liability of an individual assessee.
CO219FIN.5	ANALYSING	ANALYZE and DISCOVER intrinsic value of a security.
	EVALUATING	DESIGN/ DEVELOP / CREATE tax saving plan.

1. **Introduction:** Introduction of Income Tax Act, 1961, Basic definitions and concepts – Direct Tax, Indirect Tax, Person, Assessee, Deemed Assessee, Assessment Year, Previous Year, Residential Status of an individual assessee and company, Income exempt from Tax– Gratuity, Leave Travel Concession, Encashment of Unutilized Earned Leave on Retirement, Pension, Voluntary Retirement Receipts, Retrenchment Compensation, Receipts from Life Insurance Corporation, HRA, Payment from NPS Trust to an assesseeon closure of his account/ Opting out of the pension scheme and Payment from NPS Trust to an employee on partial withdrawal, Agriculture Income. **(3+2)**

2. **Income under the Head "Salaries"& "Income from House Property":** Meaning of salary, Basis of charge of salary income, different forms of salary, different forms of allowances, perquisites, permissible deductions from salary income, tax treatment of provident fund, Basis of charge, property income not charged to tax, computation of income from let out house property and self-occupied property. **(8+2)**

3. **Income under the Head "Profits and Gains of Business and Profession":** Computation of profit or gain from business and profession (expenses expressly allowed as deduction; general deductions; expenses specifically disallowed) basis of charge; chargeable incomes; specific deductions; amount not deductible **(8+2)**

4. **Income under the Head "Capital Gain" and "Other Sources": Capital Gain"**- Meaning- Capital Gain, Basis of charge, important definitions like Capital Asset, Short Term Capital Asset, Long Term Capital Asset, Transfer of Capital Asset, Short Term Capital Gain and Long term Capital Gainand their computation. **"Other Sources"** - Incomes Chargeable Under the head "Other Sources" (Section 56), Deductions Allowable (Sec. 57), Deductions Not Allowable (Sec 58), Bond Washing Transactions and Dividend Stripping (Sec 94). **(8+2)**

5. **Net Taxable Income and Certain other Points:** Computation of net total income based on 5 heads, carry forward and set-off of losses and deductions under Sec. 80, Computation of Income Tax Liability, Advanced Payment of Tax, TDS, Tax Planning & Tax Evasion, Income Tax Returns, E-filling of ITR **(8+2)**

Suggested Text Books:
1. Direct Taxes, Ravi Kishore
2. Direct Taxes, J.P. Jakhotiya
3. Direct Taxes, Dr. Girish Ahuja & Dr. Ravi Gupta
4. Direct Taxation, Dr. Pradip Kumar Sinha

Suggested Reference Books:
1. Students Guide to Income Tax, Dr. Vinod Singhania (Taxmann)
2. Income Tax Law and Practices, V.P. Gaur, D.B. Narang, Puja Ghai& Rajiv Puri (Kalyani Publication)
3. Students' Hand Book on Income Tax, T.N. Manoharan& G.R. Hari

Semester II		220FIN: Financial Reporting
2 Credits	LTP: 2:1:1	Subject Elective (SE) Course – Financial Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO219FIN.1	REMEMBERING	Describe the basic concepts related to Financial Reporting taught through the syllabus.
CO219FIN.2	UNDERSTANDING	Explain, in detail, all the theoretical concepts taught through the syllabus.
CO219FIN.3	APPLYING	Do all the necessary calculations pertaining to financial reporting.
CO219FIN.4	ANALYSING	Analyze the situation and decide the key elements of financial reporting through the financial statements.
CO219FIN.5	EVALUATING	Evaluate the compliance and quality of financial reporting.

1. **Financial Statements Preparation Framework:** Purpose and Scope of Financial Statements, Users of Financial Statements, Underlying Assumptions – Going Concern, Consistency and Accrual, Qualitative Aspects of Financial

Statements – Understandability, Materiality, Faithful Representation, Substance Over Form, Neutrality, Prudence, Completeness.

2.   **Preparation of Corporate Financial Statements:** Division II of Schedule III of the Companies (Amendment) Act, 2015 – Part I: Balance Sheet and Statement of Changes in Equity, Part II – Statement of Profit and Loss and Notes to Financial Statements.

3.   **Presentation of Items in Financial Statements and Revenue Recognition using relevant Indian Accounting Standards (AS):** Ind AS 1 "Presentation of Financial Statements", Ind AS 7 - "Statement of Cash Flows", Ind AS 8 "Accounting Policies, Changes in Accounting Estimates and Errors" and Ind AS 34 – "Interim Financial Reporting", Ind AS 115 – "Revenue From Contract With Customers".

4.   **Reporting of Assets, Liabilities and Disclosures in Financial Statements using relevant Indian Accounting Standards (AS):** Ind AS 2 "Inventories", Ind AS 16 "Property, Plant and Equipment", Ind AS 23 "Borrowing Costs", Ind AS 36 "Impairment of Assets", Ind AS 38 "Intangible Assets", Ind AS 19 "Employee Benefits", Ind AS 37 "Provisions, Contingent Liabilities and Contingent Assets", Ind AS 33 "Earnings Per Share" and Ind AS 108 "Operating Segments".

5.   **Miscellaneous Issues in Financial Reporting:** Reporting of Financial Instruments, Value Added Statements, Corporate Social Responsibility Reporting.

Suggested Text Books:
1.   Advanced Accountancy, ShuklaGrewal, S. Sultan Chand & Co.
2.   Financial Accounting: Reporting and Analysis, Stice
3.   Financial Reporting and Management Accounting, Bruns
4.   Financial Management, Prasanna Chandra
5.   Indian Accounting Standards& GAAP, Dolphy D'Souza , Snow White Publications
6.   Financial Management, Khan and Jain
7.   Corporation Finance, S.C.Kuchhal

Semester II		221FIN: Securities Analysis & Portfolio Management
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Financial Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO221FIN.1	REMEMBERING	Remember and describe the key concepts covered in the syllabus.
CO221FIN.2	UNDERSTANDING	Explain in detail the Retail Credit Evaluation, Lending and Recovery Process as well as other relevant concepts covered in the syllabus
CO221FIN.3	APPLYING	Calculate the loan eligibility of the retail borrower and the amount to be classified as NPA.
CO221FIN.4	ANALYSING	Determine the key elements of retail lending and recovery process and documentation therein.
CO221FIN.5	EVALUATING	Design the Retail Lending and Recovery Process for a Bank & NBFC.

1.   **Retail Credit**: Introduction, Basic features of retail credit sector, Multiple Products and Multiple channels of Retail sector**(Retail Banking and NBFC),** Credit Information companies in India (CIBIL and others) Credit history and Credit Score, General Guidelines –Processing applications, Terms and Conditions, Disbursement, Banking Codes and Standard Board of India(BCSBI) **(5 +1)**

2.   **Banking Retail credit products and Procedures**: Personal Loans, Home loans, Home loans for NRI, Auto loans, Consumer loans for durable goods, Educational loans, Gold loan (Eligibility, Purpose, Maximum Loanable Amount, Margin of Safety, Security Against Loan, Pre-Payment/Foreclosure),Credit cards(Eligibility, Security, Billing Cycles, Credit Points, Credit Transfer), Priority sector Advances(Targets,sub targets,recent developments) **(5 +1)**

3.   **Non Banking Financial companies Retail credit products and procedures:** Introduction of NBFC, Role of NBFC in India, Personal finance, Gold loan, consumer durables, two wheeler loans, education loans, Difference between retail credit sector in banking & NBFC. **(5 +1)**

4.   **Non-Performing Assets**: Present NPA norms, Features of special accounts, willful defaulters, recovery measures. **(5 +1)**

5.   **Debt Recovery Management** -Legal and non-legal measures, Consumer Protection in retail credit, Strategies of banks, OTS Agreement, Critical issues on recovery of bad loan, Insolvency and Bankruptcy Code. **(5 +1)**

Suggested Text Books:
1. Basics of Banking and Finance, Dr.K., Bhattacharya ,O.P.Agarwal
2. Principles & Practices of Banking, Indian Institute of Banking and Finance
3. Banking Theory & Practices, KC Shekhar,Lekshmy Shekhar
4. Banking Reforms and Lead Bank Scheme, Uday Kumar Lal Das
5. Essentials of Banking and Finance, Gautam Majumdar
6. Credit Monitoring, Legal Aspects & Recovery of Bank loan, V.Rajaraman

Suggested Reference Books:
1. Master circulars of RBI
2. The Economic Times

Semester II		222FIN: Banking Laws & Regulations
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Financial Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO222FIN.1	REMEMBERING	REMEMBER various concepts taught in the syllabus.
CO222FIN.2	UNDERSTANDING	EXPLAIN the Regulatory Framework in the Indian Banking system.
CO222FIN.3	UNDERSTANDING	DESCRIBE the various legal aspects which need to be followed during daily banking operations.
CO222FIN.4	UNDERSTANDING	DISCUSS the various laws related to banking.
CO222FIN.5	APPLYING	APPLY the various commercial laws for the smooth functioning of banking operations.

1. **Regulatory Framework:** Business of Banking, RBI Act 1934, Banking Regulation Act 1949, Role of RBI, Government as a regulator, Control over Organization of banks, Control over co-operative banks, Regulation by other authorities. **(4+1)**
2. **Compliances of Regulations by Banks: O**pening of new banks, Branch Licensing, Board of Directors and their rights, Rights of Banks shareholder, Monetary and Credit policy, Annual statements of accounts, Audit and Inspection, submission of returns to RBI. **(4+1)**
3. **Legal Aspects of Banking Operations:** Types of borrowers, Types of Credit Facilities (secured, unsecured, fund based, non-fund based), Laws relating to Bill Finance, Securities and Modes of charges (Mortgage, Lien, Pledge, Hypothecation, etc), Creation and satisfaction of charge. **(5+1)**
4. **Laws related to Banking:** DRT Act 1993, SARFAESI Act, Banking Ombudsman Scheme, Bankers Books Evidence Act 1891, CERSAI, Consumer Protection Act 1986, Negotiable Instruments Act 1881, Payments & Settlement systems Act 2007. **(6+1)**
5. **Commercial Laws relating to Banking Operations:** The Indian Contract Act 1872, The Sale of Goods Act 1930, The Companies Act1956, Transfer of Property Act 1882, Foreign Exchange Management Act 1999, The Prevention of Money Laundering Act 2002,Information Technology Act2000, The Right to Information Act 2005. **(6+1)**

Suggested Text Books:
1. All Publications of IIBF and NIBM
2. All Bare Acts mentioned in the syllabus

Semester II		223FIN: Fundamentals of Life Insurance – Products and Underwriting
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Financial Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO223FIN.1	REMEMBERING	RECALL all the concepts pertaining to Life Insurance covered in the course syllabus.
CO223FIN.2	UNDERSTANDING	Explain all the concepts pertaining to Life Insurance covered in the course syllabus.

CO223FIN.3	UNDERSTANDING	DETERMINE the key elements of the Life Insurance Products and Services.
CO223FIN.4	UNDERSTANDING	APPLY the life insurance product knowledge to suit to the clients' needs.
CO223FIN.5	APPLYING	DESIGN the life insurance cover strategy for clients.

1. **Life Insurance** - Introduction: History and evolution, Functions of Insurance, Advantages of Life insurance, Terminologies in Life Insurance. (4+2)
2. **Life Insurance Market in India** –Structure of Indian Life Insurance Market, Risks, Types of Risks and Characteristics of Insurable Risks, Perils, Hazards and Life Insurance. (4+2)
3. **Life Insurance Products** –Term Insurance, Endowment Policy, Whole-Life Policy, Child Policy, Unit Linked Insurance Policy and other relevant products. (4+2)
4. **Underwriting** – Meaning of Underwriting, Underwriting Process, Underwriting Considerations, Renewals, Lapse and Claims. (4+2)
5. **Regulatory Aspects and Ethics** –IRDA and its role, Ethics in the Insurance Industry and their importance. (4+2)

Suggested Text Books:
1. Insurance and Risk Management, P.K.Gupta, Himalaya Publishing House
2. Insurance, Principles and Practice, S.N.Mishra, S.B.Mishra, S Chand
3. Principles of Insurance Management, Neelam Gulati, Excel Books
4. Legal & Regulatory Aspects of Insurance by NIA
5. Elements of Actuarial Science by NIA
6. Insurance Business Environment & Insurance Company Operations by NIA
7. Financial Management & Insurance Accounting by NIA

Suggested Reference Books:
1. Principles of Risk Management and Insurance, George Rejda, Pearson Education
2. Risk Management and Insurance by Trieschmann

Semester II		224FIN: General Insurance – Health and Vehicle
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Financial Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO224FIN.1	REMEMBERING	DESCRIBE the various terms related to General insurance and Health Insurance.
CO224FIN.2	UNDERSTANDING	UNDERSTAND General insurance, Health Insurance (including travel insurance) and Motor / Vehicle Insurance
CO224FIN.3	ANALYSING	COMPARE and CONTRAST insurance plans
CO224FIN.4	ANALYSING	ANALYZE and USE risk management techniques
CO224FIN.5	EVALUATING	FACILITATE the development of an insurance claim.
CO224FIN.6	EVALUATING	FACILITATE the compliance required for acquiring the policy and settlement of claims.

1. **General Insurance**: Introduction: History and evolution, How General insurance works, Advantages of General insurance, Principles of Insurance, Insurable interest, Subrogation and Contribution, Types of General Insurance, General Insurance Products in India, Specialized Insurances i.e.Oil & Energy Risks insurance – Satellite insurance. **Risk Management Techniques**: Risk avoidance - Risk retention - Risk reduction and control - Risk financing, Difference between Insurance and Assurance, Roll of the actuary. **Insurance Contract:**Meaning andFundamental principles of insurance contract, Types of insurance contract, Valid insurance contract, Features of insurance contracts, **Reinsurance:** foundation of reinsurance – forms of reinsurance, (**5+1**)

2. Claims Procedure: Meaning of claim and Importance of settling claims,limitations or notice of loss, Claims Settlement process, Investigation and assessment – Surveyors and loss assessors – Claim forms – Loss assessment and claim settlement - Important Aspects in an insurance claims – categories of claim – Discharge vouchers – Post settlement action – Selvage – Recoveries – Disputes related to claims – Other disputes resolution mechanisms.

Grievance Redressal Mechanism: Consumer courts, Ombudsman - Integrated Grievance Management System (IGMS) - The Insurance Ombudsman. **(5+1)**

3.   **Introduction to Health Insurance:**Definition of Health and Determinants of Health, Factors affecting the health systems in India, Evolution of health insurance in India, Types of Health Insurance *Schemes / Policies* in India, difference between Health Insurance and Mediclaim Insurance, Health insurance regulations of IRDAI. Health Insurance Products, Classification of health insurance products - IRDA guidelines on standardization in health insurance. Documentation forobtaining Health Insurance Policy. **(5+1)**

4.   **Health Insurance Underwriting:**Underwriting concepts - definition, meaning and need, Basic Principles of Insurance and tools for underwriting - Underwriting process - Underwriting of overseas travel insurance - Underwriting of personal accident insurance. **Management of Health Insurance Claims:**stakeholders in claim process, Challenges in health insurance – claims process in health insurance - Documentation of health insurance claims – Claims reserving, Personal Accident – Overseas Travel Insurance. **(5+1)**

5.   **Motor or Vehicle Insurance:** Meaning and Definition, Types of motor vehicle insurance, Advantages of Motor insurance, what motor insurance covers, Types of Motor Policies,India Motor Tariff – 2018. Third party Insurance, Legal aspects of Third party claims, Frauds in Motor Insurance, No claim Bonus and claim settlement process. Underwriting in motor insurance – Indian Motor Insurance market – Model wise Risk assessment – Motor Underwriting. **(5+1)**

Suggested Text Books:
1.   Principles of Insurance Management, Neelam Gulati, Excel Books.
2.   Insurance, Principles and Practice, S.N.Mishra, S.B.Mishra, S Chand Publication.
3.   Principles of Risk Management and Insurance, George Rejda, Pearson Publication.

Suggested Reference Books:
1.   General Insurance Guide, Dr. L.P.GUPTA.
2.   Indian Insurance Industry, Transition and Prospects, D.C. Srivastava, Shashank Srivastava, New Century Publications.
3.   Insurance and Risk Management, P.K.Gupta,Himalaya Publishing House.

Subject Core (SC) Courses - Semester II
Specialization: Human Resource Management

Semester II		205HRM: Competency Based Human Resource Management System
3 Credits	LTP: 2:1:1	Subject Core (SC) Course – Human Resource Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO205HRM.1	REMEMBERING	DEFINE the key terms related to performance management and competency development.
CO205HRM.2	UNDERSTANDING	EXPLAIN various models of competency development.
CO205HRM.3	APPLYING	PRACTICE competency mapping.
CO205HRM.4	ANALYSING	ANALYSE competencies required for present and potential future job roles at various levels and across variety of organizations.
CO205HRM.5	EVALUATING	DESIGN and MAP their own competency and plan better and appropriate career for themselves.
CO205HRM.6	CREATING	DEVELOP a customized competency model in accordance with the corporate requirements.

1.   **Performance Management System**: Introduction of PMS-Definition, Scope, Importance, Performance Planning – Individual Goal Setting, Linking individual goals to Organization goals, Performance Coaching- Identification of Training Needs- Job Specification, Identify the Performance Gap, Training Specification, Choose appropriate training module, Counselling for Better Performance, Feedback Mechanism in Organization. (6+3)

2.   **Introduction to Competency**: Definition and History of Competency, Basic Components of Competency(Knowledge(K),Skill(S), Attitude(A)), Performance Vs Competency, Difference between Competence and Competency, Type of Competency- Generic Vs Key Competency, Functional and Technical Competency, Leadership and

managerial Competency, Need for Competency Framework, Limitation and Learning from Competency Framework, Myth about Competency(6+3)

3. **Competency Development & its Models**: Need and Importance of Competency Development, Stages in developing Competency Model, Types of Competency Model – Core/Generic, Job Specific, Managerial/Leadership, Custom, Development of Personnel Competency Framework – Lancaster Model of Competency.(5+3)

4. **Competency Mapping**: Procedures/Steps-Determining objectives and Scope, clarifying implementation goals and standards, create an action plan, define competency based performance effectiveness (Key Result Area (KRA) & Key Performance Indicators(KPI)), tools for data collection, data analysis, validating competency model, mapping future jobs and single incumbent jobs, using competency profile in HR decisions, Mapping Competency for Recruitment and Selection, Training and Development, Performance and Compensation. (7+3)

5. **Competency Driven Career and Culture**: Role of Competency in Career Progression - Transactional Competency, Tradition Competency and Transformational Competency, Evaluation of Career through KSA (Knowledge, Skill and Attitude) Competency based Succession and Career planning, Corporate Competency driven Culture. (6+3)

Suggested Text Books:
1. Competency based HRM, Ganesh Shermon, Tata Mc Graw Hill Publishing
2. The handbook of Competency Mapping: Understanding, Designing and Implementing Competency Models in Organizations, Seema Sanghi, Sage Publication Inc

Suggested Reference Books:
1. Human Capital Measurement: An Introduction, K Sangeetha ICFAI University
2. Competency Mapping, R K Sahu
3. Competency Study: Mapping the Future, Paul R Bernthal, ASTD Press
4. Human resource Management, K Ashwathappa
5. Human Resource Management, L M Prasad
6. Human Resource Management, Gary Dessler

Semester II		206HRM: Employee Relations and Labour Legislations
3 Credits	LTP: 2:1:1	Subject Core (SC) Course – Human Resource Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO206HRM.1	REMEMBERING	SHOW awareness of important and critical issues in Employee Relations
CO206HRM.2	UNDERSTANDING	INTERPRET and relate legislations governing employee relations.
CO206HRM.3	APPLYING	DEMONSTRATE an understanding of legislations relating to working environment.
CO206HRM.4	ANALYSING	OUTLINE the role of government, society and trade union in ER.
CO206HRM.5	EVALUATING	EXPLAIN aspects of collective bargaining and grievance handling.
CO206HRM.6	CREATING	DISCUSS the relevant provisions of various Labour Legislations.

1. **Introduction**: Background of Employee Relations, Concept, definition, scope, objectives, factors, participants&importance of ER, Approaches to employee relations – The Dunlop's approach, The Social Action Approach, The Human Relations Approach and The Gandhian Approach, Labour policies, role of ILO and its influence on legislation in India. **(5+3)**

2. **Mechanism for harmonious ER**: Collective bargaining - definition, meaning, nature, essential conditions, functions and importance, process and its implementation, Workers participation in management& Problem solving attitude, Grievance,meaning and forms, sources, approaches, procedures, model grievance procedure and grievance handling committees. **(6+3)**

3. **Legislations governing Employee Relations:** The Industrial Disputes Act 1947 – Definition of industry, workmen and industrial dispute, authorities under the act, procedure, powers and duties of authorities, strikes and lockouts, layoff, retrenchment and closure, The Contract Labour (Regulation and Abolition) Act 1970 – Advisory boards, registration of establishment, Licensing of Contractors, Welfare and health of contract labour, registers and other records to be maintained. **(6+3)**

4.   **Legislation governing Unions and wages:** The Trade Union Act 1926- Formation and registration of Trade Unions, Principle privileges of a registered trade union, rights of recognised trade unions, types and structure of trade unions, impact of globalisation on trade union movement, Maharashtra Recognition of Trade Union and Prevention of Unfair Labour   Practices Act 1971 – Unfair labour practices on the part of Employers and Employees, authorities and punishments under the act, Minimum Wages Act 1948 – Definition of wages, fixation and revision of minimum wages, advisory boards and committees, fixing hours for a normal working day, wages for worker who works for less than normal working day, maintenance of registers and records. **(6+3)**

5.   **Legislation governing working environment:** The Factories Act 1948 – Definitions of factory, manufacturing process, worker, occupier; provisions under health, safety and welfare, working hours, annual leave with wages, prohibition of employment of young children, Maharashtra Shops & Establishment (Regulation of Employment and Conditions of Service) Act, 2017 – Scope, Registration of establishments, opening and closing hours, hours of work, interval for rest, spread over, wages for overtime and weekly off, leave with pay and payment of wages and welfare provisions, offences and penalties, Maternity benefit Act, 1961 – Entire Act and latest amendment, The Sexual harassment of women at workplace(Prevention, prohibition and Redressal) Act, 2013 – Definitions of sexual harassment, employee, workplace, complaints committee, complaint mechanism, Aggrieved Woman, Chairperson; Constitution of Internal Complaints Committee, Complaint, Inquiry into complaint, duties of employer. **(7+3)**

Suggested Text Books:
1.   Personnel Management, C B Mamoria
2.   Dynamics of Personnel Administration, Rudrabaswaraj
3.   Personnel Management, Edwin Flippo
4.   Industrial and Labour Laws, S. P. Jain

Suggested Reference Books:
1.   Guide on Labour Management forms and precedents (Law, Practice and Procedure), S D Puri, Snow white publication
2.   Introduction of Labour and Industrial Laws, Avatar Singh
3.   Elements of Mercantile Law, N. D. Kapoor, Sultan Chand
4.   Bare Acts

Subject Elective (SE) Courses - Semester II
Specialization: Human Resource Management

Semester II		217HRM: Labour Welfare
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Human Resource Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO217HRM.1	REMEMBERING	ENUMERATE the key concepts of the subject matter.
CO217HRM.2	UNDERSTANDING	DESCRIBE the key aspects of the labour policy regulation in the country.
CO217HRM.3	APPLYING	IDENTIFY the applicability of various legislations to variety of real world organizations.
CO217HRM.4	ANALYSING	EXAMINE the traditional concept of labour welfare in the industry.
CO217HRM.5	EVALUATING	EXPLAIN the conditions of labour and their welfare and social security needs in the country.
CO217HRM.6	CREATING	ELABORATE upon the perspective of labour problems and remedial measures in the country.

1.   **Introduction - Evolution of Labor Welfare :** Origin and evolution of Labour Welfare-objectives of Labour Welfare need and importance of L.W, Classification of Labour Welfare,Work agencies of Labour Welfare, Scope of Labour Welfare, Concepts, philosophy and principles of labour welfare, Plans and labour policy in India and Labour Welfare in India. (4+2)

2.   **Labour Legislations in India:** Statutory Welfare Amenities – as per Factories Act, 1948, Plantation Act, 1951, Motor Act 1952, Motor Transport Act. Non-statutory welfare Agencies – Role of Trade Unions, NGOs and Local-self Govt., National Commission on Labour and Labour Welfare, Labour Laws of the Elimination of Child Labour(4+2)

3.   **Agencies of Labour welfare:** Agencies of Labour welfare in India (Central Govt. , State Govt., Employers & Trade-Unions), Labour Welfare Officer: Role, Qualifications, Functions, Duties, Labour Administration in India (4+2)

4.   **Industrial Hygiene & Occupational Health:** Working condition and benefits, Working conditions in the factory-safety and accident prevention, Health and hygiene, Canteen organization and management, Organization of credit and consumer co-operative societies-recreational and educational actives-workers education in India, Functions of Labour welfare officers India. (4+2)

5.   **Problems of Indian labour:** Problems of Women Labour, Problems of Unorganized labour, Problems of Workers education (4+2)

Suggested Text Books:
1.   Labour Problem and Social Welfare in India, Memoria, C. B., Kitab Mahal Allahabad
2.   Labour Welfare, Trade Unionism and Industrial Relation, Punekar, S. D. , Himalaya Publishing House, Bombay.
3.   Labour Welfare and Social security, Kohli, A. S. and Sarma S. R., Anmol Publications Pvt. Ltd., New Delhi.
4.   Child Labour in India, Misra, L., Oxford University Press, New Delhi.
5.   Personnel Problems and Labour Welfare, Mathur D. C., Mittal Publication. New Delhi.

Suggested Reference Books:
1.   Female Labour in India, Sharma Usha, Mittal Publication New Delhi
2.   Aspects of Labour Welfare and Social Security, A.M.Sharma
3.   Labour Problems and Social Welfare, R.C. Saxena
4.   Labour economics and social welfare, Dr. B.P. Tyag

Semester II		218HRM: Lab in Recruitment and Selection
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Human Resource Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO218HRM.1	REMEMBERING	DESCRIBE the key concepts such as Job Specification, Job description, Recruitment and Selection.
CO218HRM.2	UNDERSTANDING	COMPARE and CONTRAST various methods of Recruitment and Selection.
CO218HRM.3	APPLYING	DEVELOP Job Specifications and Job descriptions in a variety of context.
CO218HRM.4	ANALYSING	ANALYZE various Personality types.
CO218HRM.5	EVALUATING	EXPLAIN the profiling techniques used to test Personality, Aptitude, Competency.
CO218HRM.6	CREATING	COMPILE a list of questions for Recruitment and Selection interviews.

1.   **Comparative study of 10 recruitment advertisements** (5 from Newspaper & 5 from job portals) & analysis of the same in the light of : Job Specification/ description, Mode of selection, Other details - Documentation for Recruitment
2.   **Profiling Techniques :** Personality, Aptitude, Competency
3.   **Interviewing:** Study of Interview modes, List of questions for interviewers, Personal, Telephonic.

Suggested Text Books:
1.   Human Resource and Personnel Management, K Aswathappa, Tata McGraw Hill
2.   Effective Recruitment and Selection Practices, Alan Nankervis, Robert Compton, Bill Morrissey.
3.   Recruitment and Selection (Developing Practice), Chartered Institute of Personnel and Development
4.   Successful Interviewing and Recruitment, Rob Yeung, Kogan ,Page Publishers

Semester II		219HRM: Learning & Development
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Human Resource Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO219HRM.1	REMEMBERING	DESCRIBE the key concepts associated with Learning & Development
CO219HRM.2	UNDERSTANDING	EXPLAIN the training process and the various methods of training for various categories of employees in a variety of organizational contexts.
CO219HRM.3	APPLYING	IDENTIFY training needs of various categories of employees in a variety of organizational contexts.
CO219HRM.4	ANALYSING	EXAMINE the impact of training on various organizational and HR aspects.
CO219HRM.5	EVALUATING	EVALUATE the training process of various categories of employees in a variety of organizational contexts.
CO219HRM.6	CREATING	DESIGN a training programme for various categories of employees in a variety of organizational contexts.

1.   **Learning:** Nature of learning, Learning-its influence on employee behavior, Learning Process, Learning and HRD, Learning styles, elements and Profile, Types of Learning, Adult Learning, Androgogy, Implementing Learning/HRD needs. Introduction to Training: Definition, Concept, Meaning, Nature, Need for Training and Development, Types of Training, Effective Learning and Training. **(4+2)**

2.   **Process of Training:** Identification of job competencies, Training Need Analysis and Assessment, Training for Performance, Steps in Training, Role and Responsibilities of HRD and Training Specialist. **(4+2)**

3.   **Designing and Implementation of Training Plan:** Objectives of Designing Training Plan, Budgeting of Training,Trainer and Trainee Identification, Designing Module, Designing and Conducting Specific Training and Development Programme. Methods of Training: Methods & Technique of Training, On Job Training, and Competency based training, Online Training, E-Learning, Multimedia Training, Management Development Program, New Employee Training. **(4+2)**

4.   **Evaluation of Training Program:** Introduction, concept & principles, Evaluating Training and Results- Kirkpatrick Model of Evaluation, CIRO of Training, ROT of Training, Cost-Benefit analysis. **(4+2)**

5.   **Management Development:** Training and Coaching, Mentoring, Training Practices, Train the trainer, Training for Diversity, Impact of Training on HRD. **(4+2)**

Suggested Text Books:

1.   Employee Training & Development, Raymond Noe
2.   Training and Development, S K Bhatia
3.   The ASTD Training and Development Handbook: A Guide to Human Resource Development, Robert Craig, McGraw-Hill.
4.   Creative Training Techniques Handbook, Robert W. Pike, CSP

Semester II		220HRM: Public Relations & Corporate Communications
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Human Resource Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO220HRM.1	REMEMBERING	DESCRIBE the various forms of Corporate Communications from a HR perspective.
CO220HRM.2	UNDERSTANDING	EXPLAIN the role of Public Relations & Corporate Communications in HRM.
CO220HRM.3	APPLYING	PLAN and EXECUTE a PR activity.
CO220HRM.4	ANALYSING	EXAMINE the PR campaign & strategies of real world organizations.
CO220HRM.5	EVALUATING	DEVELOP a strategic communication plan for a real life Corporate communication issue.
CO220HRM.6	CREATING	COMPLIE an analytical report on the PR activities and communication strategies designed & practiced by the organizations and IMPROVE on it.

1.   **Public Relations & Corporate Communication :** Introduction to corporate communication, Public relations writing-writing to inform, writing to persuade, Design & lay out, Online public relations (4+1)

2.   **Media Relations:** Building maintaining relationship with credibility with media, Developing methodologies for successful practice of media relations (5+1)

3.   **Public Relations: C**oncept, theory, history & practice of public relations, Importance of PR for HR professionals, PR campaign & strategies for PR, Evaluating PR activities (5+1)

4.   **Communication Management** : Presentation skills, Developing strategic communication plan, Synthesizing internal & external initiatives, Event Management (4+1)

5.   **Field Study/ Desk Research:** Student along with faculty are expected to study PR activities and communication strategies designed & practiced by the organizations in the area & prepare a report. (7+1)

Suggested Text Books:
1.   Public Relations, Phillip Henslowe, Chartered Institute of PR

Suggested Reference Books:
1.   Public Affairs in Practice, Stuart Thomson & Stevee John, Chartered Institute of PR
2.   Develop your PR Skills, Neil Richardson& Lucy Laville, The Sunday Times,
3.   Creativity in PR, Andy Green, Chartered Institute of PR
4.   Running a PR Department, Mike Beard, Chartered Institute of PR

Semester II		221HRM: HR Analytics
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Human Resource Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO221HRM.1	REMEMBERING	ENUMERATE the key concepts related to the subject matter.
CO221HRM.2	UNDERSTANDING	DEMONSTRATE experimentation and innovation.
CO221HRM.3	APPLYING	USE thinking & decision making ability beyond the existing capabilities and present environment.
CO221HRM.4	ANALYSING	ANALYSE the behavioral Patterns of an individual & Map the competency- the audit Perspective.
CO221HRM.5	EVALUATING	EXPLAIN the innovative and formulate strategies which enhance innovative skills and Promote Innovation.
CO221HRM.6	CREATING	FORMULATE the linkage between HR Analytics and Business Analytics.

1.   **Introduction & Concept:** Disruptive Technological Era: Evolution of Industry Revolution 4.0 and aspect of HR, Big data in HR, understanding of Machine Learning, sensors and cloud computing, Business Intelligence in HR. **(4+2)**

2.   **Importance of HR Analytics:** Role and Responsibilities of HR Analytics, Framework of contemporary HR Analytics,- Predictive tools and Applications in solving problems using HR analytics. Gartners Analytics Maturity Model.**(4+2)**

3.   **Innovation:** Concept of innovation, Kinds of Innovation, Developing Innovative culture in an organization. HR analytics linkage to business outcomes, Measuring use of HR analytics impact on business outcome **(4+2)**

4.   **Strategy Formulation:** Redefining HR Policies and Practices, Robust competency mapping, understanding future of work and workplace, Decision framework. Use of HR analytics in workforce planning: talent acquisition, talent development, talent compensation, talent engagement and retention **(4+2)**

5.   **Learning from Analysis:** Case studies and best practices in use of HR Analytics in industry (5 cases) **(4+2)**

Suggested Text Books:
1.   Winning on HR analytics: Leveraging data for competitive advantage, Ramesh Soundararajan and Kuldeep Singh, Sage Publication
2.   The Practical Guide to HR Analytics: Using Data to Inform, Transform, and Empower HR Decisions Paperback, Shonna D. Waters , Valerie N. Streets , Lindsay Mcfarlane , Rachael Johnson-murray
3.   Human Capital Analytics: How to Harness the Potential of Your Organization's Greatest Asset, Boyce Byerly, Gene Pease, and Jac Fitz-enz
4.   Doing HR Analytics: A Practitioner's Handbook with R Examples, Lyndon, Mr. Sundmar, Createspace Independent Pub

5. The Power of People: Learn How Successful Organizations Use Workforce Analytics to Improve Business Performance, Guenole Nigel, Ferrar Jonathan, Feinzig Sheri, Pearson Publication

Semester II		**222HRM: Conflict & Negotiation Management**
2 Credits	LTP: 0:3:1	**Subject Elective (SE) Course – Human Resource Management**

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO222HRM.1	REMEMBERING	DEFINE the key concepts of the subject matter.
CO222HRM.2	UNDERSTANDING	EXPLAIN the negotiation process, Zone of possible agreement (ZOPA) and Best alternative to a negotiated agreement (BATNA)
CO222HRM.3	APPLYING	APPLY the negotiation process, Zone of possible agreement (ZOPA) and Best alternative to a negotiated agreement (BATNA) for successful negotiations.
CO222HRM.4	ANALYSING	APPRAISE the importance of in business negotiations and managing conflicts.
CO222HRM.5	EVALUATING	DEVELOP the logical thinking, communication skills and other prerequisite for successful business negotiations and handling organizational conflict.
CO222HRM.6	CREATING	COMBINE the theoretical concepts practical methods of managing and resolving organizational conflict and negotiation styles in the organizational context.

1. **Fundamentals of Negotiation:** definition: Introduction to the importance of negotiation, its importance andNature of negotiation, negotiation Vs other interactions, Dimensions of Negotiation, Structure and the prerequisites of successful negotiation, types of negotiation , Strategy & planning of negotiation, four stage model of negotiation. **(4+2)**

2. **Negotiation Process:** Perception & Preparation for the negotiations, goal setting for the negotiation , options and criteria for negotiation, role of Communication& Influence in the negotiation process , Identifying BATNA (Best alternative to a negotiated agreement) and ZOPA (zone of possible agreement) in the negotiation process , Ethics in negotiation, Agreement **(4+2)**

3. **Negotiation styles:** Leigh Thompson's 5 negotiation mental models, importance of establishing trust and building a Relationship in negotiation , Win-Win Negotiation, use of creativity and problem Solving in Negotiations, application of Transactional analysis for negotiations.**(4+2)**

4. **Conflict Management:** Introducing the concept of conflict management,Definition, importance and Models of conflict (Process & Structural), Sources of conflict, analyze the relationship between conflict & performance in team, Advantages & Disadvantages of Conflict. Creating conducing climate to resolve the conflict, apply the fundamentals of conflict management to build teams in the organizations, design the process for conflict management and create the situations to minimize the conflicts in an organizations. **(4+2)**

5. **Types of Conflicts:** understanding the importance of developing mechanism to manage conflicts in the organizations, managing interpersonal and intra personal conflict, and conflict resolution, dealing with difficult subordinates, boss & colleagues, evaluate the organization conflict, analyze the techniques to resolve team conflict, creating the strategies tomanage organizational conflict, understand the concept of third party conflict resolution (ADR), demonstrate the use of third party conflict resolution (ADR). Simulation: Case study on best business negotiations and conflict management, Role Play**. (4+2)**

Suggested Text Books:
1. Negotiation: Communication For Diverse Settings, Spangle, Michael L. ; Isenhart, Myra Warren : Sage Publications
2. The Negotiation Field book Simple Strategies to Help you negating everything, Grande, Lum. New Delhi : TATA MCGRAW HILL Publishing Company Limited
3. Negotiation / Harvard Business Essentials. U S A, Harvard Business Publishing Corporation
4. How to Conduct Effective Negotiations, Forsyth, Patrick Jaico Publishing House
5. Managing Workplace Conflicts, Subbulakshmi,V., Hyderabad : ICFAI University Press
6. The Power of Positive Confrontation : The Skills You Need To Know To Handle Conflicts At Work, At Home And In Life, Pachter, Barbara . Magna Publishing Co. Ltd.

Suggested Reference Books:

1. Getting to Yes: Negotiating Agreement without Giving In, Roger Fisher, WilliamUry, Bruce Patton
2. Bargaining for Advantage: Negotiation Strategies for Reasonable People, G. Richard Shell
3. Secrets of Power Negotiating: Inside Secrets from a Master Negotiator, Roger Dawson

Subject Core (SC) Courses - Semester II Specialization: Operations & Supply Chain Management

Semester II		205OSCM: Service Operations Management – I
3 Credits	LTP: 2:1:1	Subject Core (SC) Course – Operations & Supply Chain Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO205OSCM.1	REMEMBERING	DESCRIBE the nature and CHARACTERISTICS of services and the services economy.
CO205OSCM .2	UNDERSTANDING	DESRCIBE the service design elements of variety of services.
CO205OSCM .3	APPLYING	USE service blueprinting for mapping variety of real life service processes.
CO205OSCM .4	ANALYSING	ANALYSE alternative locations and sites for variety of service facilities.
CO205OSCM .5	EVALUATING	JUDGE and EXPLAIN the service orientation at variety of service facilities / organizations.
CO205OSCM .6	CREATING	CREATE flow process layouts for variety of services.

1. **Understanding Services:** The Service Economy, Service Definitions, Facilitating Role of Services in an Economy, Economic Evolution, Stages of Economic Development, Nature of the Service Sector, The Experience Economy, Consumer Service Experience, Business Service Experience, Service-Dominant Logic, Distinctive Characteristics of Service Operations - Customer Participation, Simultaneity. Perishability, Intangibility, Heterogeneity, Non-transferrable Ownership. The Service Package, Grouping Services by Delivery Process, Open-Systems View of Service Operations Management. **(7+2)**

2. **Designing the Service Enterprise:** New Service Development, Sources of Service Sector Growth, Information Technology, The Internet as a Service Enabler, Innovation, Changing Demographics, Innovation in Services, New Service Development, Technology in Service Innovation, Challenges of Adopting New Technology in Services, Readiness to Embrace New Technology, Service Design Elements, Customer Value Equation, Strategic Positioning through Process Structure, Service Blueprinting, Taxonomy for Service Process Design, Degree of Divergence, Object of the Service Process, Type of Customer Contact, Generic Approaches to Service System Design, Production-Line Approach, Customer as Co-producer, Customer Contact Approach, Information Empowerment, Intellectual Property. **(7+2)**

3. **The Service Encounter:** Concept of the Service Encounter, Role of Technology , The Emergence of Self-Service, The Service Encounter Triad, Encounter Dominated by the Service Organization, Contact Personnel-Dominated Encounter, Customer-Dominated Encounter, The Service Organization, Culture, Empowerment, Control Systems, Customer Relationship Management, Contact Personnel - Selection & Training , Creating an Ethical Climate. The Customer Expectations and Attitudes, The Role of Scripts in Coproduction, Creating a Customer Service Orientation, Service Profit Chain. **(7+2)**

4. **Service Facility Location:** Strategic Location Considerations, Competitive Clustering, Saturation Marketing, Marketing Intermediaries, Substitution of Communication for Travel, Separation of Front from Back Office, Impact of the Internet on Service Location, Site Considerations, Geographic Information Systems, Facility Location Modeling Considerations, Geographic Representation, Number of Facilities, Optimization Criteria, Facility Location Techniques, Cross-Median Approach for a Single Facility, Huff Model for a Retail Outlet, Location Set Covering for Multiple Facilities, Regression Analysis in Location Decisions. **(7+2)**

5. **Service Facility and Process Flows:** Environmental Psychology and Orientation, Servicescapes , Behaviors in Servicescapes, Environmental Dimensions of Servicescapes, Facility Design, Nature and Objectives of Service Organizations, Land Availability and Space Requirements, Flexibility, Security, Aesthetic Factors, The Community and Environment. Process Analysis, Types of Processes, Flowcharting, Gantt Chart, Process Terminology, Facility Layout, Flow Process Layout and the Work Allocation Problem, Job Shop Process Layout and the Relative Location Problem. **(7+2)**

Suggested Text Books:
1. Successful Service Operations Management, Metter, King–Metters, Pulliman& Walton, Thomson India
2. Service Management, Fitzsimmons and Fitzsimmons, Irwin/McGraw-Hill
3. Services Marketing Operations and Management, Vinnie J Juhari, Kirti Dutta, Oxford University Press
4. Services Sector Management An Indian Perspective, C. Bhattacharjee
5. Services Business Management, Dr. Abhay Kulkarni, Himalaya Publication.

Suggested Reference Books:
1. Service operations management - Improving service delivery, Robert Johnston, Graham Clark, Pearson Publication
2. Baldrige – Just What the Doctor Ordered, Quality Progress, Nelson

Semester II		206OSCM: Supply Chain Management
3 Credits	LTP: 2:1:1	Subject Core (SC) Course – Operations & Supply Chain Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO206OSCM.1	REMEMBERING	DESCRIBE the key concepts of Supply Chain Management and the – driving forces in contemporary Supply Chain Management.
CO206OSCM.2	UNDERSTANDING	EXPLAIN the structure of modern day supply chains.
CO206OSCM.3	APPLYING	IDENTIFY the various flows in real world supply chains.
CO206OSCM.4	ANALYSING	COMPARE and CONTRAST push and pull strategies in Supply Chain Management.
CO206OSCM.5	EVALUATING	EXPLAIN the key Operational Aspects in Supply Chain Management.
CO206OSCM.6	CREATING	DISCUSS the relationship between Customer Value and Supply Chain Management.

1. **Supply Chain Structure:** Shift from enterprise to network, Structure of a SC, Push based SC, Pull based SC, Tradeoff between Push & Pull, Identifying appropriate Push & Pull Strategy for SC, Commodity & cost centric SC, Agile SC **(7+2)**
2. **Flows in SC:** Forward & Reverse SC, Product, Services, Information, Funds, Demand, Forecast flows in Upstream & Downstream direction **(7+2)**
3. **Total SCM:** Changing business landscape – driving forces: Shift from Operations to Services, Impact of globalization & technological revolution, Shift from linear SC to collaborative networks, power shifts in the SC- demands for flexibility of partnerships, core competencies, growth in outsourcing, Increased complexity of processes **(7+2)**
4. **SCM Building Blocks**: Overview of customer focus & demand, resources & capacity management, procurement & supplier focus, inventory management, operations management, distribution management in SCM**.** Key Operational Aspects in SC**:** Creating the Lean SC – JIT Purchasing, JIT Transportation and JIT Production. Kanban, VMI. **(7+2)**
5. **Customer Value:** Empowered consumer, Customer focused Marketing & SC service outputs, customer service – availability, operational performance, reliability. Customer satisfaction – customer expectations, enhancing customer satisfactions, limitations of customer satisfaction. Customer success – achieving customer success, value added services, customer value requirement mapping, CRM. **(7+2)**

Suggested Text Books:
1. Supply Chain & Logistics Management, Bowersox, Closs & Cooper, Tata McGraw Hill
2. Designing & Managing the SC – Concepts, Strategies & Case studies, Levi, Kaminsky et. al., Tata McGraw Hill
3. Supply Chain Management: Strategy Planning & Operations, Sunil Chopra, Peter Meindl, Pearson

Suggested Reference Books:
1. Supply Chain Management Process, System & Practice, N.Chadrasekaran, Oxford
2. Total Supply Chain Management, Basu & Wright, Elsevier
3. Logistics Management & Strategy, Harrison and van Hoek, Prentice Hall
4. Supply Chain Management, Mentzer, Response Books.
5. Logistics Management: The Supply Chain Imperative, Vindo Sople, Pearson Education.

Subject Elective (SE) Courses - Semester II	
Specialization: Operations & Supply Chain Management	

Semester II		217OSCM: Planning & Control of Operations
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Operations & Supply Chain Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO217OSCM.1	REMEMBERING	DESCRIBE the building blocks of Planning & Control of Operations.
CO217OSCM.2	UNDERSTANDING	EXPLAIN the need for aggregate planning and the steps in aggregate planning.
CO217OSCM.3	APPLYING	MAKE USE OF the various forecasting approaches in the context of operations planning process.
CO217OSCM.4	ANALYSING	ILLUSTRATE how capacity planning is done in organizations and its relationship with MRP.
CO217OSCM.5	EVALUATING	EXPLAIN the importance of scheduling in operations management.
CO217OSCM.6	CREATING	CREATE a Bill of Materials.

1. **Planning & Control of Operations:** Need, Functions - Routing, Scheduling, shop loading and dispatch, follow up. Relations with other departments, Routing-Process layout indicating flow Chart of material from machine to machine. Dispatch in production control-documentation. **(5+1)**
2. **Demand Forecasting:** Forecasting as a planning tool, Why do we forecast, Forecasting time horizon, Design of forecasting systems, Developing the logic of forecasting, Sources of data, Models for forecasting, Extrapolative methods using time series, Causal methods of forecasting, Accuracy of forecasts, Using the forecasting system. **(5+1)**
3. **Aggregate Production Planning:** Planning Hierarchies in operations, Aggregate Production planning, Need for Aggregate Production planning, Alternatives for managing demand, Alternatives for managing supply, Basic strategies for aggregate production planning, Aggregate production planning methods, Master Production Scheduling. **(5+1)**
4. **Resources Planning:** Dependent Demand Attributes, Planning a framework – the basic building blocks: Multiple levels in products, Product Structure, The Bill of Materials, Time phasing of the requirements, Determining the Lot Size, Incorporating Lead time information, Establishing the planning premises. MRP Logic, Using the MRP system, Capacity Requirements planning, Manufacturing Resources Planning (MRP II), Enterprise Resource Planning (ERP), Resource Planning in services. **(5+1)**
5. **Scheduling of Operations:** Need for Scheduling, Scheduling – Alternative terms, Loading of machines, Scheduling Context, Scheduling of Flow Shops, Scheduling of Job Shops, Input-Output Control, Operational Control Issues in Mass production systems. **(5+1)**

Suggested Text Books:
1. Operations Management: Theory and Practice, B Mahadevan, Pearson.
2. Operations Management, Terry Hill, Palgrave
3. The Fundamentals of Production Planning and Control, Stephen Chapman, Pearson
4. Operations Now, Byron Fitch, TMGH.

Semester II		218OSCM: Productivity Management
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Operations & Supply Chain Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO218OSCM.1	REMEMBERING	DEFINE various types of productivity and measures of productivity.
CO218OSCM.2	UNDERSTANDING	DEMONSTRATE the linkages between various measures of productivity.
CO218OSCM.3	APPLYING	APPLY Value Analysis and Value Engineering principles to simple situations related to operations management.
CO218OSCM.4	ANALYSING	APPLY various types of charts and diagrams to carry out work study and method study.
CO218OSCM.5	EVALUATING	DETERMINE the Standard Time using Techniques of Work Measurement.

CO218OSCM.6	CREATING	ELABORATE upon the concepts of JIT, Lean, 5S, TPM, BPR, Six Sigma, World Class manufacturing.

1. **Introduction**: Importance and significance of productivity, Productivity concepts – Macro and Micro factors of productivity, productivity from product and service perspective, different inputs and productivity measures, Various ratios related to finance, material and service. **(3+1)**
2. **Value Analysis and Value Engineering:** Concept of Cost, Price and Value, Role in Productivity, Procedure – Application and productivity benefit model. **(3+1)**
3. **Work Study**: Importance of work study – Method Study and Work Measurement – Pioneers of Performance Measurement. **Method Study**: Need for Method Study – Procedure of Method Study –Process Flow charts, Man machine diagrams ,Principles of Motion Economy. **(6+1)**
4. **Work Measurement:** Techniques of Work Measurement including Estimating, Stopwatch Time Study, Predetermined Time Standards, Synthetic Estimates of Work, Times, Activity Sampling. Computation of Standard Time – Elements – Types of Elements – Performance Rating – Allowances – Need for Allowances – Types of Allowances. **(8+1)**
5. **Advanced Methods of Productivity and service level enhancements**: Overview of JIT, Lean, 5S, TPM, BPR, Six Sigma, World Class manufacturing, Use of Technology in productivity and service enhancements: ITeS, CAD, CAM, CIM, CMMI. **(5+1)**

Suggested Text Books:

1. Productivity Measurement for Business Excellence, Prem Vrat, G.D. Sardana, B.S. Sahay, Narosa Publishing House.
2. Operations Management for Competitive Advantage, Richard B Chase, Jacobs, Aquilano, Agarwal,
3. Introduction to Work Study, Editor - Geirge Kanawaty, Universal Publishing
4. Production and Operations Management, S.N.Chary, TMGH

Semester II		219OSCM: Inventory Management
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Operations & Supply Chain Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO219OSCM.1	REMEMBERING	DEFINE the key terms associated with Inventory Management.
CO219OSCM.2	UNDERSTANDING	CLASSIFY various types of inventory, and inventory costs.
CO219OSCM.3	APPLYING	CALCULATE Economic Order Quantity and stock levels under various conditions.
CO219OSCM.4	ANALYSING	COMPARE and CONTRAST various methods of inventory control.
CO219OSCM.5	EVALUATING	ASSESS various factors influencing Make or Buy decisions.
CO219OSCM.6	CREATING	SOLVE problems based on ABC classification of inventory.

1. **Elements of Inventory Management:** Inventory concepts, Pressures for Low Inventory, Pressures for High Inventory, Role of inventory in Operations, Types of inventory – seasonal, decoupling, cyclic, pipeline, Safety stock. Inventory costs – carrying costs, ordering costs, shortage costs. **(5+1)**
2. **Inventory Control systems:** Continuous Review (Q) systems, Periodic Review (P) systems, ABC Classification system, Issues in the P and Q systems of inventory control. **(5+1)**
3. **Economic Order Quantity Models:** The Basic EOQ Model, Production Quantity Model, Computer Solution of EOQ model with MS Excel, Quantity Discounts, Computer Solution of Quantity Discounts model with MS Excel, Reorder Point, Safety Stocks, Service Level, Reorder point with variable demand, Computer Solution of Reorder point with MS Excel, Order quantity for periodic inventory system, Order quantity with variable demand, Computer Solution of fixed period model with MS Excel. **(5+1)**
4. **Just-In-Time:** Principles of just-in-time, Core logic of JIT, Main features for stocks, Achieving just-in-time operations, Other effects of JIT, Benefits and disadvantages of JIT, Comparison with other methods of inventory management. KANBAN as a control tool. Vendor managed inventory. **(5+1)**
5. **Make Or Buy Decisions:** Factors influencing Make Or Buy Decisions-cost, quality, capacity core v/s noncore, management strategy. Evaluation of performance of Materials function: cost, delivery, quality, methodology of evaluation, Use of ratios - inventory ratios, inventory analysis like ABC, FSN: Fast slow, Nonmoving, HML-High Medium, Low, XYZ. Materials Management In JIT Environment. **(5+1)**

Suggested Text Books:
1. Operations Management: Theory and Practice, B Mahadevan, Pearson.
2. Operations Management-Process and Value Chains, Krajewski, Ritzman, Malhotra, Pearson.
3. Operations Management: Quality and Competitiveness in a Global Environment, Russell and Taylor, Wiley India.

Suggested Reference Books:
1. Introduction to Materials Management, J.R.Tony and Arnold.
2. Inventory Control and Management, Donald Waters, Wiley Student Edition.
3. Just-in-Time Manufacturing, Korgaonker, Macmillan
4. Essentials of Inventory Management, Max Muller, JAICO Publishing

Semester II		220OSCM: Theory of Constraints
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Operations & Supply Chain Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO220OSCM.1	REMEMBERING	DEFINE the key concepts of TOC.
CO220OSCM.2	UNDERSTANDING	DEMONSTRATE knowledge & understanding of the fundamentals of TOC.
CO220OSCM.3	APPLYING	IDENTIFY and mitigate both real constraints and managerial constraints.
CO220OSCM.4	ANALYSING	ILLUSTRATE the tools and techniques that help in managing constraints to improve organizational performance.
CO220OSCM.5	EVALUATING	EXPLAIN the benefits an organization may reap through the successful implementation of the TOC.
CO220OSCM.6	CREATING	DEVELOP solutions to common problems in Project Management, Operations Management and Supply Chain Management using TOC principles and methods.

1.   **Thinking Process:** Introduction to Theory of Constraints (TOC), Tools of TOC, Where is TOC applicable? What is a constraint, TOC's thinking process and Human Being, Terminology used in the thinking process, Steps to implement in the thinking process, Current Reality Tree, Conflict Resolution Diagram, Future Reality Tree, Prerequisite Tree, Transition Tree, Three Cloud Method. **(5+1)**
2.   **Finance and Measures:** Economic Decisions, TOC and Product Costing, Economic Decisions using TOC Costing. **(5+1)**
3.   **Project Management:** Phases of Project Management, Common problems in Project Environment, Critical Chain project Management – A TOC approach. **(5+1)**
4.   **Drum-Buffer-Rope Solution:** Introduction, The Drum – The MPS of the Capacity Constraint Resource, Implementing Drum-Buffer-Rope, Implementing Drum-Buffer-Rope on the shop floor, MPS using Drum-Buffer-Rope Scheduling method. **(5+1)**
5.   **Theory of Constraints in Supply Chain Management:** Introduction, TOC in distribution Solution, Drum-Buffer-Rope in distribution. **(5+1)**

Suggested Text Books:
1. Theory of Constraints by S K Mukhopadhyay, Jaico Books.
2. The Goal by E M Goldratt and Cox J, Great Barrington, North River

Suggested Reference Books:
1. What is the thing called Theory of Constraints? by E M Goldratt, Great Barrington, North River
2. It's Not Luck by E M Goldratt, Great Barrington, North River
3. Essays on Theory of Constraints by E M Goldratt, Great Barrington, North River
4. Critical Chain by E M Goldratt, Great Barrington, North River

Semester II		221OSCM: Quality Management Standards
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Operations & Supply Chain Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO221OSCM.1	REMEMBERING	DESCRIBE the concepts of Quality and importance of the Quality Management Principles.
CO221OSCM.2	UNDERSTANDING	INTERPRET the requirements of ISO 9001:2015 standard.
CO221OSCM.3	APPLYING	APPLY process based thinking and risk based thinking for managing and improving the functioning of an organization.
CO221OSCM.4	ANALYSING	TAKE PART IN planning, conducting and follow-up of QMS audits directed towards maintenance and continual improvements of the QMS.
CO221OSCM.5	EVALUATING	DEVELOP skills for Corrective Action Management and Continual Improvement Project management.
CO221OSCM.6	CREATING	BUILD stakeholder confidence by managing processes in line with the latest requirements.

1.   **Quality Management Systems:** Quality, Quality Concepts, Concepts and Characteristics of Quality as a Business Imperative, Quality Management Systems Map, Advantages of the Quality Management Systems, Process approach, Seven Quality Management Principles, Organization and it's Context, Needs and Expectations of Interested Parties. Need for Quality Management System, Management System Standards (MSS), High Level Structure (HLS), Integrated Management Systems, Risk Management, How processes affect each other, The Plan – Do – Check (Study) – Act Cycle (PDCA) and terminology; PDCA and its relation in business processes , Quality Policy and Objectives at all functions and levels. **(5+1)**

2.   **ISO Standards:** QMS: ISO 9001 Useful Terms, ISO Supporting Standards, Understanding the terms and definitions of the ISO 9001: 2015 standard, Broad overview of the requirements of ISO 9001: 2015, The principles, structure and language of ISO 9000 and ISO 9001, Applying the ISO 9001: 2015 standard when developing and implementing a QMS. **(5+1)**

3.   **Documentation and Implementation Planning:** Phased Approach Method and Tools, Executive and Management Overview, Planning, Gap Assessment and Planning, Documentation, Implementation and Training, Internal Assessment and Management Review, 3rd Party Registration Assessment, Sustain and Continual Improvement. **(5+1)**

4.   **Risk Assessment:** Concept and principles of Risk Assessment, Risk Based Thinking and Management Responsibility within an effective QMS, Applying the Framework of Risk Assesment, Understand the differences between the different techniques - Root Causal Analysis, Failure Modes and Effects Analysis (FMEA), Hazard Analysis and Critical Control Points (HACCP), Capability Index. **(5+1)**

5.   **Internal Audit :** Understanding and application of Internal Audit Process requirements, Planning the Audit, Scheduling the Audit, Preparing the Audit, Conducting the Audit, Documenting Audit Findings, Reporting Audit Findings, Corrective Action Follow-up, Auditing practices and techniques ,Role plays and/or scenarios to relevant field, The personal and interpersonal skills and competencies required for auditing. **(5+1)**

Suggested Text Books:
1. Mastering ISO 9001:2015: A Step-By-Step Guide To The World's Most Popular Management Standard, Gregory Peckford
2. Understanding ISO 9001: 2015 Quality Management System, Virendra Kumar Gupta
3. ISO 9001: 2015 - A Complete Guide to Quality Management Systems, Itay Abuhav
4. Operations Management: An Integrated Approach, Danny Samson and Prakash Singh, Cambridge University Press.
5. Managing Quality, Barrie G Dale, Ton van der Wiele and Jos van Iwaarden (Editors),Blackwell Publishing
6. ISO 9001:2015 Standard

Semester II		222OSCM: Service Value Management
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Operations & Supply Chain Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO222OSCM.1	REMEMBERING	DEFINE the core concepts related to Service Value Chain, Service Profit Chain, Innovation, CRM, networks.
CO222OSCM.2	UNDERSTANDING	ILLUSTRATE managing the service process through service value chain.

CO222OSCM.3	APPLYING	IDENTIFY factors influencing Innovation and service organizational design.
CO222OSCM.4	ANALYSING	EXAMINE the inter-relationships between the Focal firm, Supplier Networks, Distribution Networks, etc.
CO222OSCM.5	EVALUATING	EVALUATE the role of Business Networks as partners in value creation.
CO222OSCM.6	CREATING	DEVELOP strategies built on Principles of Service Value Chain & Service Profit Chain for various types of organizations.

1. **Basic Concepts, Value, Value Processes,** Creating service value, Defining the benefit part of service value- the service product, Value creation by services marketing, Evaluating internal customer value leading to external customer satisfaction, Costing of Services- Defining the cost part of service value: service pricing, Delivering service value - Managing service delivery. **(5+1)**

2. **Service Value Chain** & **Service Profit Chain:** Introduction, Definitions, Significance, Managing the service process through service value chain, service value chain and service profit chain, Key elements of service profit chain – customer loyalty and satisfaction, understanding value from customer perspective, dream team cycle. **(5+1)**

3. **Value Chain Service Innovations:** Introduction, Components, Types, Models, Processes of Innovation, Evolution and Characteristics of Innovation Management, Key drivers, Factors influencing Innovation, Organizing for Innovation, Factors influencing service organizational design, Developing Innovation Strategy. **(5+1)**

4. **Managing Networks:** What is a Network? Business Networks, Network Position, Concept of Focal firm, Business Networks and CRM, Supplier Networks, Distribution Networks, Management of Networks, Supplier Relationships, Product Development, Supplier Accreditation Programmes, Process Alignment, E Procurement, Partners in Value Creation, Alliance between non-competing firms, Alliance between competing firms, Benchmarking Partners, Customer Advocacy groups, Sponsors, Partners in Value Delivery. IT Enabled Customer Services - Call Centre Operations and Management, Web-enabled Services, ERP enabled Field and Technical Support Services, Tele marketing and servicing. **(5+1)**

5. Case Studies related to Service Value Chain in Banking & Insurance, Hospital and Health Care, Travel & Tourism, Hotel & Catering, Retail and Contractual Services. **(5+1)**

Suggested Text Books:
1. Service Profit Chain: How Leading Companies Link Profit and Growth to Loyalty, Satisfaction and Value, W. Earl Sasser , Leonard A. Schlesinger, James L. Heskett
2. Competitive Advantage, Porter, Michael E, The Free Press. New York.
3. Strategic Management: a Methodological Approach, Rowe, Mason, Dickel, Mann, Mockler; Addison-Wesley

Semester II		223OSCM: Industry 4.0
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Operations & Supply Chain Management

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO223OSCM.1	REMEMBERING	DESCRIBE the drivers, enablers and compelling forces for Industry 4.0's advancement.
CO223OSCM.2	UNDERSTANDING	UNDERSTAND the power of Cloud Computing in a networked economy.
CO223OSCM.3	APPLYING	IDENTIFY the opportunities, challenges brought about by Industry 4.0.
CO223OSCM.4	ANALYSING	OUTLINE the various systems used in a manufacturing plant and their role in an Industry 4.0 paradigm.
CO223OSCM.5	EVALUATING	APPRAISE the smartness in Smart Factories, Smart cities, smart products and smart services.
CO223OSCM.6	CREATING	PREDICT how organizations and individuals should prepare to reap the benefits.

1. **Introduction to Industry 4.0:** Overview of the Various Industrial Revolutions, Digitization and the Networked Economy, Industry 4.0 Paradigm, Industry 4.0 characteristics – Interoperability, Virtualization, Decentralization, Real-time capability, Service orientation , Modularity, Convergence, Cost reduction and efficiency, Mass customization. Drivers, Enablers, Compelling Forces and Challenges for Industry 4.0 , Evolution in USA, Europe, China and other

countries, Comparison of Industry 4.0 Factory and Today's Factory, Trends of Industrial Big Data and Predictive Analytics for Smart Business Transformation. **(7+1)**

2. **Key Building Blocks:** Internet of Things (IoT), Industrial Internet of Things (IIoT), Internet of Services, Smart Manufacturing, Smart Devices and Products, Smart Logistics, Smart Cities, Predictive Analytics. **(4+1)**

3. **Technological Ecosystem:** Technologies for enabling Industry 4.0, Cyberphysical Systems, Robotic Automation and Collaborative Robots, Support System for Industry 4.0, Mobile Computing, Related Disciplines, Issues of Cyber Security. **(4+1)**

4. **Data as a resource:** Role of data, information, knowledge and collaboration in future organizations, Resource-based view of a firm, Data as a new resource for organizations, Harnessing and sharing knowledge in organizations, Cloud Computing Basics, Cloud Computing and Industry 4.0 **(5+1)**

5. **Applications and the way ahead:** Automotive, Agriculture, Retail, Healthcare, Fintech, Manufacturing, Applications and Case Studies: Industry 4.0 laboratories , IIoT case studies, Business issues in Industry 4.0 - Opportunities and Challenges, Future of Works and Skills for Workers in the Industry 4.0 Era, Strategies for competing in an Industry 4.0 world. **(5+1)**

Suggested Text Books:
1. Industry 4.0: Managing The Digital Transformation, Ustundag, Alp, Cevikcan, Emre, Springer.
2. Hands-On Industrial Internet of Things: Create a powerful Industrial IoT infrastructure using Industry 4.0 , Giacomo Veneri.
3. Internet of Things: A Hands-On Approach , Arsheep Bahga.
4. Industry 4.0: The Industrial Internet of Things Paperback, Alasdair Gilchrist.

Subject Core (SC) Courses - Semester II Specialization: Business Analytics

Semester II		205BA: Basic Business Analytics using R
3 Credits	LTP: 2:1:1	Subject Core (SC) Course – Business Analytics

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO205BA.1	REMEMBERING	IDENTIFY opportunities for creating value using business analytics and DESCRIBE the basic concepts in Business Analytics, DATA Science and Business Intelligence.
CO205BA.2	UNDERSTANDING	EXPLAIN the applications of Business Analytics in multiple business domains and scenarios.
CO205BA.3	APPLYING	DEVELOP a thought process to think like a data scientist/business analyst.
CO205BA.4	ANALYSING	ANALYZE data graphically by creating a variety of plots using the appropriate visualization tools of R.
CO205BA.5	EVALUATING	SELECT the right functions of R for the given analytics task.
CO205BA.6	CREATING	COMBINE various tools and functions of R programming language and use them in live analytical projects in multiple business domains and scenarios.

1. **Business Analytics Basics:** Definition of analytics, Evolution of analytics, Need of Analytics, Business analytics vs business analysis, Business intelligence vs Data Science, Data Analyst Vs Business Analyst, Types of Analytics, Tools for Analytics. Concept of insights. Importance of data in business analytics, Differences between data, information and knowledge, various stages of an organization in terms of data maturity, Options for organizations in the absence of good quality data. **(5+1)**

2. **Analytical decision-making:** Analytical decision-making process, characteristics of the analytical decision-making process. Breaking down a business problem into key questions that can be answered through analytics, Characteristics of good questions, Skills of a good business analyst, Overview of Business analytics applications in - Marketing Analytics, HR Analytics, Supply Chain Analytics, Retail Industry, Sales Analytics, Web & Social Media Analytics, Healthcare Industry, Energy Analytics, Transportation Analytics, Lending Analytics, Sports Analytics. Future of Business Analytics. **(5+1)**

3. **Fundamentals of R:** R environment, Downloading and Installing R, Using command line in R, Help, File operations in R -Reading from and Writing to a file, Writing your first code in R, Importing data from spreadsheets, text

files, SAS, SPSS, Connect to RDBMS from R using ODBC, basic SQL queries in R, Exploration and transformation activities, basics of Web Scraping. **(6+1)**

4. **Data types & Data Structures in R:** Data types in R and its appropriate uses, Program Structure in R, Flow Control: For loop, If condition, While conditions and repeat loop, Debugging tools, Concatenation of Data, Combining Vars , cbind, rbind, Sapply, apply, tapply functions, Built-in functions in R like: seq(), cbind (), rbind(), merge(), knowledge on the various subsetting methods, summarize data by using functions like: str(), class(), length(), nrow(), ncol(), use of functions like head(), tail(), for inspecting data, summarize data, SQL join in R. Introduction to Data Structure in R, Vectors, Lists, Scalars, Data Frames, Matrices, Arrays, Factors, Use of data structures in different conditions, Advantage of using a particular approach. **(10+3)**

5. **Data Visualization:** Concept of Data Visualization, Popular Data Visualization tools, Exploratory Data Analysis(EDA), Data Cleaning, Data Inspection, uses of the functions like grepl(), grep(), sub(), summarize(), llist(), Using graphical functions in R for data visualization, Line Plots, Bar Plots, Bar Plots for Population, Pie chart, tableplot, histogram, Plotting with base graphics, Plotting with Lattice graphics, Plotting and coloring in R. Customizing Graphical Parameters to improvise plots, understanding GUIs like Deducer and R Commander, introduction to Spatial Analysis. **(10+3)**

Suggested Text Books:
1. R for Business Analytics, A Ohri
2. Data Analytics using R, Seema Acharya, TMGH
3. Data mining and business analytics with R, Johannes Ledolter. New Jersey: John Wiley & Sons.
4. Data Mining for Business Intelligence, Concepts, Techniques and Applications,Shmueli, Patel,and Bruce: Wiley

Suggested Reference Books:
1. Statistical data analysis explained: applied environmental statistics with R, Clemens Reimann. Chichester: John Wiley and Sons
2. Data science in R: a case studies approach to computational reasoning and problem solving, Deborah Nolan. Boca Raton: CRC Press
3. The analytics revolution: how to improve your business by making analytics operational in the big data era, Bill Franks. Hoboken: Wiley
4. Taming the big data tidal wave: finding opportunities in huge data streams with advanced analytics, Bill Franks. Hoboken: John Wiley & Sons.
5. Big data, big analytics: emerging business intelligence and analytic trends for today's business, Michael Minelli. Hoboken: John Wiley & Sons

Semester II		206BA: Data Mining
3 Credits	LTP: 2:1:1	Subject Core (SC) Course – Business Analytics

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO206BA.1	REMEMBERING	DEFINE the key terms associated with Data Mining
CO206BA.2	UNDERSTANDING	EXPLAIN the various aspects of Data
CO206BA.3	APPLYING	APPLY classification models
CO206BA.4	ANALYSING	ANALYSE using clustering models
CO206BA.5	EVALUATING	SELECT appropriate association analysis and anomaly detection tools.
CO206BA.6	CREATING	COMBINE various data mining tools and use them in live analytical projects in business scenarios.

1. **Basic Concepts:** Concept, Definitions and Need of Big Data, Data Mining, Business Intelligence. Data Mining Process, relation to Business Intelligence techniques. Introduction to Data Mining Tasks (Classification, Clustering, Association Analysis, Anomaly Detection). Concept, Definitions of model, descriptive models, predictive modeling, basic terminology.Real-world data mining applications - Big Data Analytics in Mobile Environments, Fraud Detection and Prevention with Data Mining Techniques, Big Data Analytics in Business Environments. **(6+1)**

2. **Data and Preprocessing:** Understanding of Data, what is data? Types of attributes, properties of attribute values, types of data, data quality, Sampling, Data Normalization, Data Cleaning, Similarity Measures, Feature Selection/Instance Selection, the importance of feature selection/instance selection in various big data scenarios. **(7+1)**

3.   **Classification:** Decision-Tree Based Approach, Rule-based Approach, Instance-based classifiers , Support Vector Machines, Ensemble Learning, Classification Model Selection and Evaluation, Applications: B2B customer buying stage prediction, Recommender Systems. **(9+1)**

4.   **Clustering:** Partitional and Hierarchical Clustering Methods, Graph-based Methods, Density-based Methods, Cluster Validation, Applications: Customer Profiling, Market Segmentation. **(9+1)**

5.   **Association Analysis:** Apriori Algorithm and its Extensions, Association Pattern Evaluation, Sequential Patterns and Frequent Subgraph Mining, Applications: B2B Customer Buying Path Analysis, Medical Informatics, Telecommunication alarm diagnosis. **Anomaly Detection:** Statistical-based and Density-based Methods , Ethics of data mining, privacy, what can/do firms know? **(9+1)**

Suggested Text Books:
1.   Data Mining: The Textbook by Charu C. Aggarwal
2.   Data Science for Business by Foster Provost and Tom Fawcett, O'Reilly
3.   Introduction to Data Mining by Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Addison Wesley
4.   Data Mining and Analysis: Fundamental Concepts and Algorithms by Mohammed J. Zaki and Wagner Meira

Subject Elective (SE) Courses - Semester II
Specialization: Business Analytics

Semester II		217BA: Marketing Analytics
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Business Analytics

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO217BA.1	REMEMBERING	DESCRIBE the use of Voice of the Customer data in making data driven marketing decisions.
CO217BA.2	UNDERSTANDING	DEMONSTRATE an understanding of utility theory to measure customer preferences and choices.
CO217BA.3	APPLYING	IDENTIFY what customers' value in a product, and assess what they are willing to pay for it.
CO217BA.4	ANALYSING	ILLUSTRATE the use of various tools and frameworks to solve strategic marketing problems using marketing data.
CO217BA.5	EVALUATING	DETERMINE the most effective target markets.
CO217BA.6	CREATING	DESIGN a study that incorporates the key tools of Marketing Analytics.

1.   **Segmentation Analytics:** Market Segmentation Variables, Market Segmentation Types, Marketing Data Landscape, Data for Segmentation, Analytics for Need Based Segmentation - Voice of the Customer, Managing "Voice of the Customer" Data, Customer Co-Creation, RFM Analysis, Life Cycle Segmentation, Cross Tabulation Segmentation, Regression based segmentation, Clustering, Conjoint Analysis Segmentation, The Cluster Analysis + Discriminant Analysis Approach, **(5+1)**

2.   **Approaches to Choosing Target Segment/s:** Rationale for Segment Targeting, Analytics for Perceptual Mapping and Product Positioning, Product Positioning, Multi Dimensional Scaling (MDS) and Factor Analysis, Relevance of Mapping for Product Positioning, Preference Mapping, Incorporating Preferences in Perceptual Mapping. **(5+1)**

3.   **Analytics for Product/Service Design**: The Relevance of Trade-off Approaches, Conjoint Analysis, Approaches to Conjoint Analysis, Interpreting Conjoint Results, Optimizing Design using Conjoint Results. **(5+1)**

4.   **Analytics for Tracking Customer Growth:** Rationale for Customer Analytics, Customer acquisition cost, Customer Churn, Customer Attrition models, Customer lifetime value, Net promoter score, Calculating the number of new customers, Calculating average customer age & Days to convert, Calculating customer acquisition cost & Average purchases, Calculating touch points & Lead conversion, Analyzing age demographics, First contact with customer, Customer satisfaction, Understanding customer engagement, Diffusion Models - The Bass Model. **(5+1)**

5.   **Modeling New Marketing Initiatives:** Introduction to modeling, Evaluating new ad channels, Modeling tips and best practices, Projecting ad revenue, Projecting organic follower revenue, Projecting expenses, Calculating net profit and breakeven, Understanding ROI, Calculating returns, Creating a single-variable sensitivity table, Creating a multi-variable sensitivity table. **(5+1)**

Suggested Text Books:
1. Marketing Analytics: Data-Driven Techniques with Microsoft Excel, Wayne L. Winston
2. Marketing Analytics: Strategic Models and Metrics, Stephan Sorger
3. Marketing Analytics: A Practical Guide to Improving Consumer Insights Using Data Techniques, Mike Grigsby
4. Cutting-edge Marketing Analytics: Real World Cases and Data Sets for Hands on Learning, Paul Farris, Rajkumar Venkatesan, and Ronald T. Wilcox

Semester II		218BA: Retailing Analytics
2 Credits	LTP: 1:1:1	Subject Elective (SE) Course – Business Analytics

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO2018BA.1	REMEMBERING	ENUMERATE the characteristics, opportunities and challenges of New Age Retailing and Digital Consumers.
CO2018BA.2	UNDERSTANDING	UNDERSTAND Consumer Buying Behavior and Trends in new age retailing.
CO2018BA.3	APPLYING	USE various kinds of data for performing Retailing Analytics.
CO2018BA.4	ANALYSING	ILLUSTRATE the use of various tools and frameworks for predictive retail analytics.
CO2018BA.5	EVALUATING	DERIVE a variety of metrics and quantify key outcomes in multiple areas of Retail.
CO2018BA.6	CREATING	BUILD value for Retail and Marketing by deriving Marketing ROI metrics..

1. **Retailing in the Digital Era:** New Age Retailing, Digital Consumers Characteristics – interconnected , involved, interconnected, co-creation, collaboration, Customer Data – Big Data, Business Analytics, Customer Insights, Data Characteristics - Variety, Volume, Velocity, Veracity. Critical issues in Modern day Retail, The Digital organization, Retail analytics for decision making, Informed and Risk-Aware Decisions , Benefits of Retail Analytics – Informed Decisions, Risk mitigation, Gaining visibility , Retail Analytics for Strategic – Tactical and Operational decisions. **(3)**
2. **Marketing in a Consumer-Driven Era:** Understanding Consumer Buying Behavior and Trends , Leveraging customer data, Putting information in context, Clicking with consumer communities, Keeping content in mind, From personalization to commerce. **(3)**
3. **Key Questions:** What they are buying, Who they are, How they are buying, Where else they are buying? **(3)**
4. **Data sources:** Customer, Retailer, Supplier, Market, Web, Mobile, Social, Call Centres,. **(3)**
5. **Looking at Unstructured Data:** The unstructured data challenge, Recognizing the untapped analytics opportunity, Customer-Driven Decision Making, Content Analytics in Action, Understanding Affinities between Products and Customers, Advanced affinity analysis, Market basket analysis, Understanding customer preferences , Anticipating the customer's next move, Improving Retail Promotions. **(3)**
6. **Merchandising Analytics:** Assortment planning , GeoSpatial Analytics, Product placement, Space Optimisation, Product adjacency, Aligning store-level assortment with demand, Category Intelligence, Developing dynamic retail assortments, Prioritization of Product categories. **(3)**
7. **Marketing Analytics:** Marketing Mix ROI, Promotions – Promotional Maturity Curves, Pricing – Price per segment, Margin, Profitability, Personalisation, Campaigns, Marketing Return Curves, Scenario Analysis, Driving better P&L analyses, Managing Incentive Compensation. **(3)**
8. **Supply Chain Analytics:** Creating a Demand-Driven Supply Chain, Gaining Visibility across the Supply Chain, Resolving Operations Problems Premptively , Logistics, Inventory, Supplier performance, Demand forecasting, Vendor Intelligence, Vendor Rankings, Fulfillment Intelligence, Inventory Diagnostics, Shrinkage, Optimization opportunities. **(3)**
9. **Store operations analytics :** Using Analytics to Optimize Staffing Plans, Drilling into HR analytics, Customer Traffic, Store Performance Dashboards, Local Market Analytics, Online Offline Analytics, Sales Trends, Brand Performance, Account Performance Forecasts. **(3)**
10. **Customer View:** Customer Insights, Omni channel insights, Personalization, merchandise Data sources, including operations and supplier. **(3)**

Suggested Text Books:
1. Retail Analytics – The Secret Weapon, Emmett Cox
2. Behaviour Analytics in Retail, Ronny Max

3. The Little Book on Big Data: Understand Retail Analytics Through Use Cases and Optimize Your Business, Mahogany Beckford
4. The New Science of Retailing: How Analytics are Transforming the Supply Chain and Improving Performance, Fisher and Raman
5. The Strategy and Tactics of Pricing: A Guide to Growing More Profitably, Nagle, Hogan and Zale, Prentice-Hall
6. Competing on Analytics, Davenport, Harris
7. The New Rules of Retail: Competing in the World's Toughest Marketplace, Lewis and Dart
8. Sales Promotions, Neslin, Marketing Science Institute

Semester II			219BA: Workforce Analytics
2 Credits	LTP: 1:1:1		Subject Elective (SE) Course – Business Analytics

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO2019BA.1	REMEMBERING	ENUMERATE the use of Workforce Analytics.
CO2019BA.2	UNDERSTANDING	UNDERSTAND the process of creating and using HR analytics
CO2019BA.3	APPLYING	USE dashboards, pivot tables for data driven decision making in HR.
CO2019BA.4	ANALYSING	ILLUSTRATE the use of various tools and frameworks for predictive analytics.
CO2019BA.5	EVALUATING	DERIVE a variety of metrics and quantify key outcomes in multiple areas of HR.
CO2019BA.6	CREATING	BUILD value for HR departments by showing clear links between HR and Business outcomes.

1.   **Workforce Analytics – Overview:** Workforce Analytics: definition, evolution, function of Workforce analytics, Use of Workforce / People / HR metrics to measure results in HR - Process vs Outcome , Efficiency vs Effectiveness, Lead vs Lag, challenges in measuring human capital, HR Business Framework, Concept of Balanced Score Card, Identifying key workforce questions, Strategic Case for Workforce Analytics, Data Sources, Power of combining data sources, Good, Important & Key Metrics. **(3)**
2.   **Recruitment Metrics:** Fill-up ratio, Time to hire, Cost per hire, Early turnover, Termination during probation, Channel efficiency mix in terms of Direct hires, Employee referral hires, Agency hires & Lateral hires, Offer reject and renege, Fulfilment ratio, Quality of hire, Recruitment to HR cost. **(3)**
3.   **Diversity Metrics:** Workforce diversity index, Gender mix, Differently abled index, Implementation challenges. **(3)**
4.   **Talent Metrics:** Retention index, Voluntary and involuntary turnover, Turnover by department, grades, performance, and service tenure, Internal hired index. **(3)**
5.   **Learning & Development Metrics:** Training need identification, Make or Buy Model, Training effectiveness evaluation, Percentage of employee trained, Internally and externally trained, Training hours and cost per employee, ROI calculation. **(3)**
6.   **Internal Mobility Metrics:** Career Progression Indices - Promotion index, Rotation index, Career path index, Level wise succession readiness index. **(3)**
7.   **People Deployment Metrics:** Employees per manager, Employee service profiling, Workforce age profiling, Workforce service profiling, Churn index, Separation clearance time. **(3)**
8.   **HR Cost Metrics:** Revenue per employee, Operating cost per employee, PBT per employee, HR cost per employee, HR to operating cost, Compensation to HR cost, HR budget variance, HR ROI. **(3)**
9.   **HR KPI Dashboard:** Calculating HR KPI, Scorecard based on recruitment, training and development, Calculating HR KPI, Scorecard based on employee retention, and turnover. **(3)**
10.   **HR Predictive Analytics:** Regional and country level differences in turnover data, Predicting individual and team turnovers, Turnover costs for business implications, Selection decisions from previous performance data, Predictive modelling of individual and team performance, Identifying flight-risk candidates, Report generation. **(3)**

Suggested Text Books:

1. The Practical Guide to HR Analytics: Using Data to Inform, Transform, and Empower HR Decisions, Shonna D. Waters, Valerie N. Streets, Lindsay Mcfarlane, Rachael Johnson-Murray
2. HR Analytics: Understanding Theories and Applications , Dipak Kumar Bhattacharyya
3. Doing HR Analytics - A Practitioner's Handbook With R Examples Lyndon Sundmark

Semester II		220BA: Tableau
2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Business Analytics

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO221BA.1	REMEMBERING	DEFINE Tableau terminology and SHOW how to Connect to your data, Edit and save a data source.
CO221BA.2	UNDERSTANDING	ILLUSTRATE the use of the Tableau interface to effectively create powerful visualizations and charts.
CO221BA.3	APPLYING	MAKE USE OF statistical techniques to analyze your data, parameters and input controls to give users control over certain values.
CO221BA.4	ANALYSING	INTEGRATE data sources using data blending and Combine data from multiple tables in the same data source using joins.
CO221BA.5	EVALUATING	CREATE basic calculations including basic arithmetic calculations, custom aggregations and ratios, date math, and quick table calculations.
CO221BA.6	CREATING	BUILD spatial visualizations of non-geographic data by using advanced geographic mapping techniques and custom images and geocoding.

1. **Data Connections:** Tableau terminology, Tableau interface/paradigm, Create and save data connections, Create a live connection to a data source, Explain the differences between using live connections versus extracts, Create an extract, Save metadata properties in a .TDS, Modify data connections, Add a join, Add a blend, Add a union, Manage data properties, Rename a data field, Assign an alias to a data value, Assign a geographic role to a data field, Change data type for a data field (number, date, string, boolean, etc.), Change default properties for a data field (number format, aggregation, color, date format, etc.) **(5+1)**
2. **Organizing & Simplifying Data:** Organize data and apply filters, Filter data, Sort data, Build groups, Build hierarchies, Build sets, Add a filter to the view, Add a context filter, Add a date filter, Apply analytics to a worksheet, Add a manual or a computed sort, Add a reference line or trend line, Use a table calculation. **(5+1)**
3. **Field & Chart Types :** discrete v. continuous, Measure Names and Measure Values, Generated Fields, Use bins and histograms, Heat maps, Tree maps, Bullet graphs, bar chart, line chart, stacked bar, Combined Axis Charts, Dual Axis Charts, Scatter Plots, Data Highlighter, Cross tabs, Motion charts, Bar in bar charts, Box plots, Gantt Bar Charts, Paretos, Sparklines, geocoding , spatial visualizations of non-geographic data, Using titles, captions and tooltips, Editing axes, Mark labels and annotations. **(5+1)**
4. **Calculations:** Manipulating string and date calculations, Create quick table calculations, Use LOD calculations; types of LOD calculations, Use Ad-hoc calculations, Work with aggregation options, Build logic statements, Build arithmetic calculations, Build grand totals and sub-totals, Use calculations in join clauses, Create a calculated field (e.g. string, date, simple arithmetic), Add a parameter. **(5+1)**
5. **Sharing Insights:** Format view for presentation, Use color, Use bolding, Use shapes, Change size of marks, Select fonts, Create and modify a dashboard, Create a dashboard layout, Add interactive or explanatory elements, Add dashboard actions, Modify existing dashboard layout for mobile devices, Create a story using dashboards or views, Share a twbx as a PDF, Share a twbx as an image. **(5+1)**

Suggested Text Books:
1. Mastering Tableau, David Baldwin
2. Communicating Data with Tableau: Designing, Developing, and Delivering Data Visualizations, Ben Jones
3. Learning Tableau, Joshua N. Milligan
4. Practical Tableau: 100 Tips, Tutorials, and Strategies from a Tableau Zen Master, Ryan Sleeper

Semester II		221BA: Data Warehousing Project Life Cycle Management

2 Credits	LTP: 0:3:1	Subject Elective (SE) Course – Business Analytics

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO221BA.1	REMEMBERING	DESCRIBE various stages in Data Warehouse development process.
CO221BA.2	UNDERSTANDING	EXPLAIN the significance of and Project Management issues to be considered in the Data warehouse and Business Intelligence projects and the practicality of each phase.
CO221BA.3	APPLYING	MAKE USE OF the Data warehouse Lifecycle.
CO221BA.4	ANALYSING	FORMULATE Requirements Definition using requirements gathering methods.
CO221BA.5	EVALUATING	DETERMINE users of information and SELECT appropriate Information Delivery Tools, OLAP models and Data Mining Techniques.
CO221BA.6	CREATING	CREATE an Implementation Plan for a Data warehouse Project.

1. **Data Warehousing Project Life Cycle Management - Planning And Requirements**: Data to Information Lifecycle, Brief History of Accessing, Reporting And Analyzing Data, Business Intelligence (BI) defined, Data Warehousing (DW) defined, Data Mining defined, Data Stores and Data Marts defined, Uses of BI & DW, Business Drivers For BI, Business and IT Drivers For DW, Applications that use BI And DW, Data Shadow Systems, Industry terminology, Planning the Data Warehouse Project, The Project Team, Project Management Considerations, Defining the Business Requirements, Dimensional Analysis, Information Packages, Requirements Gathering Methods, Requirements Definition: Scope and Content, Requirements as the Driving Force for Data Warehousing, Data Design, The Architectural Plan, Data Storage Specifications, Information Delivery Strategy. **(5+1)**

2. **Data Warehousing Project Life Cycle Management - Architecture And Infrastructure**: The Architectural Components, Understanding Data Warehouse Architecture, Distinguishing Characteristics, Architectural Framework, Technical Architecture, Infrastructure as the Foundation for Data Warehousing, Infrastructure Supporting Architecture, Infrastructure Supporting Architecture, Database Software, Collection of Tools, The Significant Role of Metadata, Why Metadata is Important, Metadata Types by Functional Areas, Business Metadata, Technical Metadata, How to Provide Metadata. **(5+1)**

3. **Data Warehousing Project Life Cycle Management - Data Design And Data Preparation**: Principles of Dimensional Modeling, From Requirements to Data Design, The STAR Schema, STAR Schema Keys, Advantages of the STAR Schema, Updates to the Dimension Tables, Miscellaneous Dimensions, The Snowflake, Schema, Aggregate Fact Tables, Families of STARS, Data Extraction, Transformation, and Loading, Data Extraction, Data Transformation, Data Loading, ETL Summary, Why is Data Quality Critical?, Data Quality Challenges, Data Quality Tools, Data Quality Initiative. **(5+1)**

4. **Data Warehousing Project Life Cycle Management - Information Access And Delivery**: Matching Information to the Classes of Users. Information from the Data Warehouse, Users of the Information, Information Delivery, Information Delivery Tools, Demand for Online Analytical Processing, Major Features and Functions, OLAP Models, OLAP Implementation Considerations, Data Warehousing and the Web, Web-Enabled Data Warehouse, Web-Based Information Delivery, OLAP and the Web, Building a Web-Enabled Data Warehouse, Data Mining, Major Data Mining Techniques, Data Mining Applications. **(5+1)**

5. **Data Warehousing Project Life Cycle Management - Testing , Implementation And Maintenance**: Unit, IT, ST, Data volume, ETL and other test techniques, The Physical Design Process, Physical Design Steps, Physical Design, Considerations, Physical Storage, Indexing the Data Warehouse, Performance Enhancement Techniques, Data Warehouse Deployment, Major Deployment Activities, Considerations for a Pilot, Security, Backup and Recovery, Growth and Maintenance, Monitoring the Data Warehouse, User Training and Support, Managing the Data Warehouse, Scoping, Estimation, proposal writing and Risk planning. **(5+1)**

Suggested Text Books:
1. The Data Warehouse Lifecycle Toolkit, Ralph Kimball
2. Data Warehouse Project Management , Sid Adelman, Larissa T. Moss
3. The Data Warehouse Lab: A step-by-step guide using SSIS and SSAS, Amin Jalali
4. Data Warehouse for Project Managers, Laura Reeves
5. The Profit Impact of Business Intelligence, Steve Williams , Nancy Williams

Savitribai Phule Pune University, Pune

Faculty of Commerce and Management

Master of Computer Applications (MCA)

Programme Curriculum (Sem. I & II)
(2020-2022)

Preamble:

1. The name of the programme shall be Masters of Computer Applications (M.C.A)
2. The revised MCA Curriculum 2020 builds on the implementation of the Choice Based Credit System (CBCS) and Grading System initiated in the AY 2015. The curriculum takes the MCA programme to the next level in terms of implementing Outcome Based Education along with the Choice Based Credit System (CBCS) and Grading System.
3. The Institutes should organize placement programme for M.C.A. students by interacting with Industries and software consultancy.
4. At the end of each semester, appearing for various certifications is possible for each student enabling them to make their resume rich.
5. With the rapidly changing scenario industry and academia should identify possible areas of collaboration and work together. Institute's placement cell should focus on identifying industrial expectations and institutional preparation for meeting industrial needs.

Introduction:

1. **Definition: Outcome Based Education:**

1.1 **Outcome Based Education (OBE) Approach:** Outcomes are about performance, and this implies:

    1.1.1   There must be a performer – the student (learner), not only the teacher
    1.1.2   There must be something performable (thus demonstrable or assessable) to perform
    1.1.3   The focus is on the performance, not the activity or task to be performed

1.2 **Programme Educational Objectives (PEOs):** Programme educational objectives are broad statements that describe the career and professional accomplishments that the programme is preparing graduates to achieve. Programme Educational Objectives are a set of broad future focused learner's performance outcomes that explicitly identify what learners will be able to do with what they have learned, and what they will be like after they leave institution and are living full and productive lives. Thus, PEOs are what the programme is preparing graduates for in their career and professional life (to attain within a few years after graduation).

1.3 Programme Outcomes (POs): Programme Outcomes are a set of narrow statements that describes what students (learners) of the programme are expected to know and be able to perform or attain by the time of graduation.

1.4 Course Outcomes (COs): Course Outcomes are narrower statements that describe what students are expected to know and be able to do at the end of each course. These relate to the skills, knowledge, and behavior that students acquire in their matriculation through the course.

1.5 Learning Outcomes: A learning outcome is what a student CAN DO because of a learning experience. It describes a specific task that he/she can perform at a given level of competence under a certain situation. The three broad types of learning outcomes are: a) Disciplinary knowledge and skills b) Generic skills c) Attitudes and values

1.6 Teaching and Learning Activities (TLAs): The set of pedagogical tools and techniques or the teaching and learning activities that aim to help students to attain the intended learning outcomes and engage them in these learning activities through the teaching process.

1.7 Assessment and Evaluation: Assessment is one or more processes, carried out by the institution, that identify, collect, and prepare data to evaluate the achievement of programme educational objectives and programme outcomes. Evaluation is one or more processes, done by the evaluation team, for interpreting the data and evidence accumulated through assessment practices. Evaluation

1.8 determines the extent to which programme educational objectives or programme outcomes are being achieved, and results in decisions and actions to improve the programme.

2. MCA Programme Focus:

The basic objective of the Master of Computer Applications (MCA) is to provide a steady stream of necessary knowledge, skills and foundation for acquiring a wide range of rewarding careers into rapidly expanding world of Information Technology

2.1 Programme Educational Objectives: PEOs are defined by institution. Following are the guidelines for defining PEOs

2.1.1	PEOs should be assessable and realistic within the context of the committed resources.
2.1.2	The PEOs should be consistent with the mission of the institution.
2.1.3	All the stakeholders should participate in the process of framing PEOs.
2.1.4	The number of PEOs should be manageable.
2.1.5	It should be based on the needs of the stakeholders.
2.1.6	It should be achievable by the programme.
2.1.7	It should be specific to the programme and not too broad.
2.1.8	It should not be too narrow and similar to the POs.

2.2 MCA Programme Outcomes (POs): At the end of the MCA programme the learner will possess the following Program Outcome:

PO1: Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

PO2: Identify, formulate, research literature, and solve *complex* Computing problems reaching substantiated conclusions using fundamental principles of Mathematics, Computing sciences, and relevant domain disciplines.

PO3: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

PO4: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

PO6: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice.

PO7: Recognize the need, and have the ability, to engage in independent learning for continual development as a Computing professional.

PO8: Demonstrate knowledge and understanding of computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO9: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

PO10: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.

PO11: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

PO12: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

3. Admission Details:

3.1 Eligibility for Admission: The eligibility criteria for admission for the MCA course will be as decided by the All Indian Council of Technical Education (AICTE), New Delhi and Directorate of Technical Education (DTE), Government of Maharashtra. It will be published on their respective websites time to time.

3.2 Reservation of Seat: The percentage of seat reserved for candidates belonging to backward classes only from Maharashtra State in all the Government Aided, Un-aided Institutions/Colleges and University Departments is as per the norms given by Government of Maharashtra, time to time.

3.3 Selection Basis: The selection would be done as per the guidelines given by the Director of Technical Education, Maharashtra State, time to time.

4. Lecture-Practical/Project-Tutorial (L-P-T)

A course shall have either or all the three components, i.e. a course may have only lecture component, or only practical/project component or a combination of any two/three components

4.1 Lecture(L): Classroom sessions delivered by faculty in an interactive mode. It should be conducted as per the scheme of lectures indicated in respective course.

4.2 Practical/Project(P): Practical / Project Work consisting of Hands-on experience /Field Studies / Case studies that equip students to acquire the much-required skill component. Besides separate Practical/Project course, three courses in each semester include few practical assignments and it will be evaluated under internal evaluation

4.3 Tutorial(T): Session consisting of participatory discussion/ self-study/ desk work/ brief seminar presentations by students and such other novel methods that make a student to absorb and assimilate more effectively the contents delivered in the Lecture sessions

4.4 A Mini project is an assignment that the student needs to complete at the end of every semester in order to strengthen the understanding of fundamentals through effective application of the courses learnt. The details guidelines have been given in the course structure.

4.5 The Project Work to be conducted in the FINAL Semester and evaluated at the end of the semester. The detail guidelines have been in the respective course structure.

4.6 The teaching / learning as well as evaluation are to be interpreted in a broader perspective as follows:
   i)   Teaching – Learning Processes: Classroom sessions, Group Exercises, Seminars, Small Group Projects, Self-study, etc.
   ii) Evaluation: Tutorials, Class Tests, Presentations, Field work, Assignments, competency-based Activity, Research papers, Term papers, etc.

The MCA programme is a combination of:

   a. Three-Credit Courses (75 Marks each): 3 Credits each
   b. Two-Credit Courses (50 Marks each): 2 Credits each
   c. One-Credit Courses (25 Marks each) : 1 Credits each

Following are the session details per credit for each of L-P-T model

   1) **Every <u>ONE-hour session per week</u> of Lecture(L) amounts to <u>1 credit</u> per semester,**
   2) **Minimum of <u>TWO hours per week</u> of Practical(P) amounts to <u>1 credit</u> per semester,**
   3) **Minimum of <u>ONE hours per week</u> of Tutorial(T) amounts to <u>1 credit</u> per semester**

5. Open Courses (OC):

Institute has to offer two open courses of 1 credit each per semester to the students from Semester I to Semester III. The motive behind keeping an open course is to make students aware of current/upcoming trends in Information Technology and other domains. Full autonomy is given to the Institute to plan and execute the open courses. It is expected to extend the autonomy to the student

also. Care must be taken to consider credit points and necessary contact hours assigned to it while finalizing any open course for the given semester. In each semester total 2 credits are reserved for open courses.

Suggestive List of OPEN Courses

FOR SEMESTER I		FOR SEMESTER II		FOR SEMESTER III	
1	Data Privacy and Protection	1	Software Agent	1	Speech Recognition
2	Linux system administration	2	Aptitude building -1	2	Sentiment Analysis
3	social media listening	3	Basics of Tableau	3	R Programming
4	Research Methodology	4	Fraud detection	4	Gesture recognition
5	Applied Statistical Methods	5	Ruby Basics	5	Aptitude building-2
6	Digital Marketing	6	LaTeX	6	Digital Image processing
7	G-Suite	7	Big data Analytics	7	Network Security
8	Joomla	8	Game Programming in Unity	8	big data Technologies
9	e-trading	9	Block Chain Technology	9	AWS Fundamentals
10	Scratch and MIT App Inventor Programming	10	Business Intelligence - be specific	10	Edge Computing
11	Random Forest using MS Excel	11	Design Thinking & Problem-solving skills		
12	WordPress	12	Green Computing		
13	MS-OFFICE	13	IoT		
14	Code ignitor				

6. Extra Reading and Certification:

Each Chapter in the course is added with the extra reading part which gives extra pointer to gain In-depth knowledge apart from basic knowledge imparted in the syllabus. Learners should be encouraged to complete this extra reading portion as regular practice. Also, each course (Where ever applicable) includes suggested certification which help learners to enrich themselves as per industry demands and requirements.

7. Evaluation and Assessment:

In total 112 credits represent the workload of a year for MCA program.

Semester	Credit	IE	UE
Semester I	28	350	350
Semester II	28	350	350
Semester III	28	350	350
Semester IV	28	350	350
Total	112	1400	1400
			2800

The final total assessment of the candidate is made in terms of an internal (concurrent) evaluation and an external (university) examination for each course. In total the internal (concurrent) to external (university) marks ratio is maintained 50:50.

In general

1) For each course, 25 will be based on evaluation and 50 marks for semester end examination conducted by University, unless otherwise stated.
2) The internal evaluation of 25 marks further divided into Written Examination (Assignments/Unit test/written examination etc.), Practicals and Tutorials. The details have been specified in each course.
3) There will be one Practical course and one Mini Project course in each semester with 75 marks allotted for internal evaluation and 50 marks allotted for University examination. External assessment will be done by university appointed examiner. During external examination, examiner should ask the programs/practical ONLY from the work book of the students.
4) The internal marks will be communicated to the University at the end of each semester, but before the semester-end examinations. These marks will be considered for the declaration of the results.

Guidelines to conduct Mini-Project evaluation for Semester I, Semester II and Semester III of MCA – 2020 pattern

For Internal Evaluation

1. Internal evaluation will be of 75 Marks. It will be distributed as follows

Description	Marks
Project Report	35
Viva	15
Working Demo	25
Total	**75**

2. Project Report (including Project Diary) should be evaluated only during INTERNAL evaluation. Textual chapters should be given 10 marks while diagrams, test cases/validations, screen designs should be evaluated for 20 marks and 5 Marks should be given for Project Diary. Thus, totaling up to 35 marks.

For External Evaluation

1. Evaluation will be conducted by one Internal (Appointed by Institute) and one External examiner (Appointed by university).
2. External evaluation will be of 50 Marks. It will be distributed as follows

Description	Marks
Viva	15
Working Demo	35
Total	**50**

For Internal Evaluation and External Evaluation

1. VIVA should be conducted based on project domain and technologies used for developing the project. Every team member's individual contribution to the project may vary. Hence VIVA should be based on individual contribution pertaining to the project.
2. Working Demo is given maximum weightage to make sure that each group submits executable version of their project.
3. Examiners should evaluate efforts and contribution of every individual in the team (in case of group project).
4. Examiner may review code of the project while evaluating its working demo and modules.

Examination: Examinations shall be conducted at the end of the semester i.e. during November and in April/May. However supplementary examinations will also be held in November and April/May.

Concurrent Evaluation: A continuous assessment system in semester system (also known as internal assessment/comprehensive assessment) is spread through the duration of course and is done by the teacher teaching the course. The continuous assessment provides a feedback on teaching learning process. The feedback after being analyzed is passed on to the concerned student for implementation and subsequent improvement. As a part of concurrent evaluation, the learners shall be evaluated on a continuous basis by the Institute to ensure that student learning takes place in a graded manner. Concurrent evaluation components should be designed in such a way that the faculty can monitor the student learning & development and intervene wherever required. The faculty must share the outcome of each concurrent evaluation component with the students, soon after the evaluation, and guide the students for betterment Individual faculty member shall have the flexibility to design the concurrent evaluation components in a manner so as to give a balanced assessment of student capabilities across Knowledge, Skills & Attitude (KSA) dimensions based on variety of assessment tools.

Suggested components for Concurrent Evaluation (CE) are:

1. Case Study / Situation Analysis – (Group Activity or Individual Activity)
2. Class Test
3. Open Book Test
4. Field Visit / Study tour and report of the same
5. Small Group Project & Internal Viva-Voce
6. Learning Diary
7. Scrap Book
8. Group Discussion
9. Role Play / Story Telling
10. Individual Term Paper / Thematic Presentation
11. Written Home Assignment
12. Industry Analysis – (Group Activity or Individual Activity)
13. Literature Review / Book Review
14. Model Development / Simulation Exercises – (Group Activity or Individual Activity)
15. In-depth Viva
16. Quiz

Institute can decide the type, method and frequency of Concurrent Evaluation for each course and execute accordingly. Detailed record of the Concurrent Evaluation shall be maintained by the Institute. The same shall be made available to the University, on demand.

8. Choice based Credit System (CBCS) and Grading:

The detail document about Choice based Credit System for PG Programme is available on university website. The Grading methodology is also available on university website. University reserves rights to revise CBCS and grading system time to time.

9. Medium of Instruction:

The medium of Instruction will be English.

10. Clarification of Syllabus:

It may be necessary to clarify certain points regarding the course. The BOS should meet to study and clarify any difficulties from the Institutes, as and when required.

11. Revision of Syllabus:

As the computer technology is changing very fast, revision of the syllabus should be considered every 2 years.

12. Attendance:

The student must meet the requirement of 75% attendance per semester per course for grant of the term. The Director shall have the right to withhold the student from appearing for examination of a specific course if the above requirement is not fulfilled. Since the emphasis is on continuous learning and concurrent evaluation, it is expected that the student's study all-round the semester. Therefore, there shall not be any preparatory leave before the University examinations.

13. ATKT Rules:

The ATKT rules mention in CBCS handbook (available on university website) is application to MCA Programme.

14. Maximum Duration for completion of the Programme:

The candidates shall complete the MCA Programme WITHIN 5 YEARS from the date of admission, by earning the requisite credits. The student will be finally declared as failed if she/he does not pass in all credits within a total period of four years. After that, such students will have to seek fresh admission as per the admission rules prevailing at that time.

15. Structure of the Programme and detail syllabus of each course:

Semester I					
Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Java Programming	IT11	3	50	25
2	Data Structure and Algorithms	IT12	3	50	25
3	Object Oriented Software Engineering	IT13	3	50	25
4	Operating System Concepts	IT14	3	50	25
5	Network Technologies	IT15	3	50	25
6	Open Course 1	OC11	1		25
7	Open Course 2	OC12	1		25
	* Practicals				
8	Practical	IT11L	5	50	75
9	Mini Project	ITC11	5	50	75
	Soft Skills				
10	Soft Skills - I	SS11	1		25
			28	350	350

Semester II					
Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Python Programming	IT21	3	50	25
2	Software Project Management	IT22	3	50	25
3	Optimization Techniques	MT21	3	50	25
4	Advanced Internet Technologies	IT23	3	50	25
5	Advanced DBMS	IT24	3	50	25
6	Open Course 3	OC21	1		25
7	Open Course 4	OC22	1		25
	* Practicals				
8	Practical	IT21L	5	50	75
9	Mini Project	ITC21	5	50	75
	Soft Skills				
10	Soft Skills - II	SS21	1		25
			28	350	350

Semester III					
Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Mobile Application Development	IT31	3	50	25
2	Data Warehousing and Data Mining	IT32	3	50	25
3	Software Testing and Quality Assurance	IT33	3	50	25
4	Knowledge Representation & Artificial Intelligence - ML, DL	IT34	3	50	25
5	Cloud Computing	IT35	3	50	25
6	Open Course 5	OC31	1		25
7	Open Course 6	OC32	1		25
	* Practicals				
8	Practical	IT31L	5	50	75
9	Mini Project	ITC31	5	50	75
	Soft Skills				
10	Soft Skills- III	SS31	1		25
			28	350	350

Semester IV					
Sr. No.	Course Title	Course Code	CP	EXT	INT
1	DevOps	IT41	3	50	25
2	PPM and OB	BM41	3	50	25
2	Project	ITC41	22	250	300
			28	350	350

Semester	Credit	IE	UE
Semester I	28	350	350
Semester II	28	350	350
Semester III	28	350	350
Semester IV	28	350	350
Total	112	1400	1400
			2800

Semester I

Course Code: IT-11
Course Name: Java Programming

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	25	-	-	50	75

Course Description:

Prerequisite:
> Knowledge of programming structures like decision flows, loops, etc.

Course Objectives:
1. To familiarize students with the concepts of OOPs.
2. To enable the students to understand the core principles of the Java Language and use AWT tools to produce well designed, effective applications.
3. Students will be able to develop server-side applications with database handling using servlets, JSP, JDBC

Course Outcomes:
Student will be able to
> CO1 Understand Basic Concepts of OOPs, Java, Inheritance, Package. (Understand)
> CO2: Understand Exception handling, arrays and Strings and multi-threading in Java (Understand.)
> CO3: Understand collection framework (Understand)
> CO4: Develop GUI using Abstract Windows Toolkit (AWT) and event handling (Apply)
> CO5: Develop Web application using JSP and Servlet, JDBC (Apply)

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions
1	1. **Introduction -** 1.1 About Java 1.2 Flavours of Java 1.3 Java Installation 1.4 Java Program Development Environment **Extra reading**: docs oracle docs	3	2

2	**2. Object Oriented Programming** 2.1 Class Fundamentals 2.2 Object & Object reference 2.3 Object Life time & Garbage Collection 2.4 Creating and Operating Objects 2.5 Constructor & initialization code block 2.6 Access Control, Modifiers, Use of Modifiers with Classes & Methods. 2.7 Nested, Inner Class & Anonymous Classes, Abstract Class & Interfaces 2.8 Methods, Defining Methods, Argument Passing Mechanism, Method Overloading, Recursion, Dealing with Static Members, Finalize () Method, Native Method. 2.9 Use of "this "reference, 2.10 Design of Accessors and Mutator Methods 2.11 Cloning Objects, shallow and deep cloning 2.12 Generic Class Types. **Extra Reading** : OCA Java Programmer :I Exam Kathy Sierra	8	3
3	**3. Extending Classes and Inheritance** 3.1 Use and Benefits of Inheritance in OOP 3.2 Types of Inheritance in Java 3.3 Inheriting Data members and Methods 3.4 Role of Constructors in inheritance 3.5 Overriding Super Class Methods, Use of "super" 3.6 Polymorphism in inheritance 3.7 Type Compatibility and Conversion 3.8 Implementing interfaces **Extra Reading**: Understanding and practicing above concept in depth - OCA Java Programmer: I Exam Kathy Sierra	6	3
4	**4. Package** 4.1 Organizing Classes and Interfaces in Packages 4.2 Package as Access Protection 4.3 Defining Package 4.4 CLASSPATH Setting for Packages 4.5 Making JAR Files for Library Packages 4.6 Import and Static Import 4.7 Naming Convention for Packages. **Extra Reading**: Oracle Java tutorial	3	2
5	**5. Exception Handling**	6	3

	5.1 The Idea behind Exception 5.2 Exceptions & Errors 5.3 Types of Exception 5.4 Control Flow in Exceptions 5.5 JVM reaction to Exceptions 5.6 Use of try, catch, finally, throw, throws in Exception Handling 5.7 In-built and User Defined Exceptions Checked and Un-Checked Exceptions **Extra Reading**: Oracle Java tutorial		
6	6. **Array & String**: 6.1 Defining an Array 6.2 Initializing & Accessing Array 6.3 Multi –Dimensional Array 6.4 Operation on String, Mutable & Immutable String 6.5 Using Collection Bases Loop for String, Tokenizing a String 6.6 Creating Strings using StringBuffer, String Builder Extra Reading : Java arrays, tokenizer applications– Jenkov Tutorials	4	2
7	7. **Thread** 7.1 Understanding Threads 7.2 Needs of Multi-Threaded Programming 7.3 Thread Life-Cycle 7.4 Thread Priorities 7.5 Synchronizing Threads 7.6 Inter Communication of Threads 7.7 Critical Factor in Thread –Deadlock Extra Reading : Animation Using Thread	6	3

8	8. **A Collection of Useful Classes**
	8.1 Utility Methods for Arrays
	8.2 Observable and Observer Objects,
	8.3 Date & Times,
	8.4 Using Scanner
	8.5 Regular Expression,
	8.6 Input/output Operation in Java (java.io Package)
	8.7 Streams and the new I/O Capabilities
	    8.7.1 Understanding Streams
	    8.7.2 The Classes for Input and Output
	    8.7.3 The Standard Streams
	8.8 Working with File Object
	    8.8.1 File I/O Basics,
	    8.8.2 Reading and Writing to Files
		6	3

	8.8.3 Buffer and Buffer Management **8.8.4** Read/Write Operations with File Channel 8.9 Serializing Objects Extra Reading : regex – Pattern matching, split examples, reading and writing Character Stream, Byte stream and Objects in java files.		
9.	**9. UI Programming** **9.1** Designing Graphical User Interfaces in Java, 9.2 Components and Containers, 9.3 Basics of Components 9.4 Using Containers 9.5 Layout Managers, 9.6 AWT Components 9.7 Adding a Menu to Window 9.8 Extending GUI Features Using Swing Components Extra Reading : Using Swing toolkit GUI –oracle java tutorial	12	5
10	**10. Event Handling** 10.1 Event-Driven Programming in Java 10.2 Event- Handling Process 10.3 Event Handling Mechanism 10.4 The Delegation Model of Event Handling 10.5 Event Classes, Event Sources, Event Listeners 10.6 Adapter Classes as Helper Classes in Event Handling. Extra Reading : Hierarchy of Event Classes, Event Sources, Event Listeners- Oracle java docs	10	4
11	**11. The Collection Framework** 11.1 Introduction to Java Frameworks 11.2 Collections of Objects 11.3 Collection Types, Sets, Sequence, Map 11.4 Understanding Hashing 11.5 Use of ArrayList & Vector 11.6 Java Utilities (java.util Package) Extra Reading : searching, sorting, insertion, manipulation, deletion of data using Java Collections	10	4
12	**12. Database Programming using JDBC** 12.1 Introduction to JDBC 12.2 JDBC Drivers & Architecture 12.3 CURD operation Using JDBC 12.4 Connecting to non-conventional databases	10	4

	Extra Reading: List of JDBC Drivers and Jars, Statement, Prepared Statement and Callable Statement.			

13	**13. Java Server Technologies**
	    13.1 Servlet Web Application Basics,
	    13.2 Architecture and challenges of Web
	             Application
	    13.3 Introduction to servlet
	    13.4 Introduction to JSP
	    13.5 Servlet life cycle
	    13.6 Developing and Deploying Servlets,
	             Exploring Deployment Descriptor
	    (web.xml)
	    13.7 Handling Request and Response.
	
	 Extra Reading : Session handling 4 methods, Request Dispatcher ,JSP Tags, JSP Implicit objects, Generic Servlet
		16	7

	Total:	**100**	**45**

Course References:

Recommended Books:

Text Books:
1. Java Complete Reference Schildt Herbert, TMH.
2. Java Fundamentals (SIE), Schildt Herbert, TMH
3. The Complete Reference JSP, Phil Hanna, TMH
4. JDBC, Servlet and JSP, Black Book, Santosh Kumar K. Dremtech publication

Reference Books:
1. Head First Servlets and JSP, 2nd Edition by Bert Bates, Bryan Basham, Kathy Sierra
2. OCJP Oracle Certified Programmer for Java Study Guide by Kathy Sierra and Bert Bates.
3. A Programmer's Guide to Java OCJP Certification (A Comprehensive Primer) by Khalid A. Mughal and Rolf W. Rasmussen.
4. Java Server Programming Java Ee&(J2EE 1.7), Black Book, Wiley publications

Recommended Learning Material:
1. www.javatpoint.com
2. www.oracle.com
3. www.tutorialspoint.com
4. www.geeksforgeeks.org/java

Recommended Certification:
1. OCA- Oracle Certified Associate
2. OCP- Oracle Certified Professional

Course Code: IT-12
Course Name: Data Structure and Algorithms

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	25	-	-	50	75

Course Description:

Prerequisite

Loops*,* Functions, Pointers, Arrays, Memory Allocation, Recursion

Course Objectives:

1. To understand basics data structure and algorithms
2. To solve problems using data structures such as linked lists, stacks, queues, hash tables, trees, heaps and graphs
3. To understand various programming techniques such as brute force, greedy, dynamic programming, divide-conquer and backtracking

Course Outcomes:

Student will be able to

CO1: demonstrate linear data structures linked list, stack and queue (apply)
CO2: implement tree, graph, hash table and heap data structures (apply)
CO3: apply brute force and backtracking techniques (apply)
CO4: demonstrate greedy and divide-conquer approaches (apply)
CO5: implement dynamic programming technique (apply)

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions
1	**Linked List** 1.1 Singly Linked List 1.2 Doubly Linked List Extra Reading: Circular Linked list and Circular doubly linked list	8	2
2	**Stack and Queues** 2.1 Linked List implementation of Stack 2.2 Linked List implementation of Queue 2.3 Circular Queue 2.4 Priority Queue	10	4

	Extra Reading: Dqueue, Application of Stack		

3	**Tree**
	    3.1 Tree
	    3.2 Binary Search Tree
	    3.3 AVL Tree
	    3.4 Red-Black Tree
	    3.5 Segment Tree - with min/max/sum range queries
	        examples
	            3.6 Fenwick Tree (Binary Indexed Tree)
	
	Extra Reading: Application of Tree, B* tree
		12	5

4	**Graph**
	    4.1 Directed and Undirected Graph
	    4.2 Graph Representations
	        4.2.1 Adjacency Matrix
	        4.2.2 Adjacency List
	     4.3 Graph Traversals
	         4.3.1 BFS
	         4.3.2 DFS
	Extra Reading: Application of Graph in Maps
		8	2

5	**Hash Table and Heaps**
	    5.1 Hash Table
	        5.1.1 Hash Function
	         5.1.2 Hash function approaches
	        5.1.3 Handling the collisions
	     5.2 Heap
	         5.2.1 Min heap and Max heap
	
	Extra Reading: Hashing used in File handling
		7	2

6	**Brute Force**
	    6.1 Linear Search
	    6.2 Rain Terraces
	    6.3 Recursive Staircase
	    6.4 Maximum Subarray
	    6.5 Travelling Salesman Problem
	    6.6 Discrete Fourier Transform
	
	Extra Reading: Application in Cryptography
		10	5

7	**Greedy**
	
	    7.1 Jump Game
	    7.2 Unbound Knapsack Problem
	    7.3 Dijkstra Algorithm
	    7.4 Prim's Algorithm
	    7.5 Kruskal's Algorithm
		10	5

	Extra Reading: Huffman's Tree		
8	**Divide and Conquer** 8.1 Binary Search 8.2 Tower of Hanoi 8.3 Pascal's Triangle 8.4 Euclidean Algorithm 8.5 Merge Sort 8.6 Quicksort 8.7 Fast Powering Extra Reading: Cooley–Tukey Fast Fourier Transform (FFT) algorithm	10	8
9	**Dynamic Programming** 9.1 Fibonacci Number 9.2 Unique Paths 9.3 Longest Common Subsequence (LCS) 9.4 Longest Common Substring 9.5 Longest Increasing Subsequence 9.6 Shortest Common Super sequence 9.7 0/1 Knapsack Problem 9.8 Integer Partition 9.9 Regular Expression Matching Extra Reading: Painting Fence Algorithm, Moser-de Bruijn Sequence, Newman-Conway Sequence	15	7
10	**Backtracking** 10.1 Power Set 10.2 Hamiltonian Cycle 10.3 N-Queens Problem 10.4 Knight's Tour 10.5 Combination Sum Extra Reading: Word Break Problem using Backtracking	10	5
Total:		100	45
Note: Course should be taught independent of any programming language.			

Course References:

Recommended Books:

Text Books

1. Jean Paul Tremblay, Paul G. Sorensons, "AN Introduction to Data Structures with Application", McGraw Hall Publication (INDIAN edition)
2. A. V. Aho and J.D. Ullman, "Design and Analysis of Algorithms", Addison Wesley
3. Thomas H Cormen and Charles E.L Leiserson, "Introduction to Algorithm" PHI

Reference Books

1. Lipschutz Schaum's, "Data Structure", Outline Series, MH
2. D. Samanta, "Classical Data Structure", PHI,
3. Practical Approach to Data Structures by Hanumanthappa.
4. Data Structure and Algorithms in C++ by Joshi Brijendra Kumar
5. Data Structures with C++: Schaum's Outlines by Hubbard JohnBressard,
6. Horowitz/Sahani, Fundamental of Algorithm. PHI, Galgotia.
7. Magnifying Data Structures, Arpita Gopal, PHI Publications

Course Code: IT-13
Course Name: Object Oriented Software Engineering

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	10	10	5	50	75

Course Description:

Prerequisite:

Basic System Analysis and Design Concept

Course Objectives:
1. To study basic concepts of software engineering
2. To study phases of SDLC and different process models
3. To learn & understand the Requirement analysis and system Design.
4. To get acquainted with the agile software development methodology

Course Outcomes:

Student will be able to

CO1: Distinguish different process model for a software development. (Understand)

CO2: Design software requirements specification solution for a given problem definitions of a software system. (Analyze)

CO3: Apply software engineering analysis/design knowledge to suggest solutions for simulated problems (Analyze)

CO4: Design user interface layout for different types of applications (Apply)

CO5: Recognize and describe current trends in software engineering (Understand)

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions

1	1. **Introduction to development approach SSAD and OOAD**
	1.1. Overview of Software Development with SSAD
	  1.1.1. Basic System Development Life Cycle with different users and their role in SDLC.
	  1.1.2. Different Approaches and Models for System Development.
	    1.1.2.1. Waterfall Model
	    1.1.2.2. Spiral Model
	    1.1.2.3. Prototyping Model
	    1.1.2.4. RAD
		10	4

	1.1.2.5. Rational Unified Process Extra Reading: Object oriented concepts		

	2. Requirement Engineering
	   2.1. Types of Requirements – Functional and Non-functional
	   2.2. Four Phases of Requirement Engineering
	   2.3. Software requirement Specification (SRS)
	     2.3.1. Structure and contents of SRS
	     2.3.2. IEEE standard format for SRS
	
	Note: Case studies based on SRS
	
	Extra Reading: Fact finding techniques, Feasibility study and reports
		20	9

	3. Use-case Driven Object-Oriented Analysis
	   3.1. Introduction to oops concepts
	     3.1.1. Class and object
	     3.1.2. Abstraction and encapsulation
	     3.1.3. Method and messages
	     3.1.4. Interface, Inheritance and polymorphism
	     3.1.5. Structural Diagram - Class Diagram and Object diagram
	     3.1.6. Associations and links
	     3.1.7. Aggregation, Composition and containment
	     3.1.8. Inheritance, Sub Types and IS-A hierarchy
	
	   3.2. Behavioral Diagram
	     3.2.1. Use case Diagram
	       3.2.1.1. Identify Actors
	       3.2.1.2. Identify Use cases: describing how the user will use the system
	       3.2.1.3. Develop use-case Model
	       3.2.1.4. Description of Use case Diagram.
	
	     3.2.2. Activity Diagram
	     3.2.3. Sequence diagram
	     3.2.4. Collaboration Diagram.
	     3.2.5. State Transition Diagram
	
	Note: Case studies should be covered on the above topic
	
	Extra Readings: UML diagram drawing tools such as draw.io, Star UML, etc. , Documentation associated with UML diagrams
		40	20

	4. User Interface Design 4.1. Elements of good design 4.2. Eight golden rules for design 4.3. Features of modern GUI, Menus, Scroll bars, windows, buttons, icons, panels, error messages etc. Note: Case studies should be covered on the above topic Extra Readings: UI/UX software, Interactive UI design	10	4

	5. Current trends in Software Engineering
	5.1. Introduction to Web Engineering
	5.2. Agile Process
	    5.2.1. Agile Process Models
	        5.2.1.1. Extreme Programming (XP)
	        5.2.1.2. Adaptive Software Development (ASD)
	        5.2.1.3. Dynamic Systems Development Method (DSDM)
	        5.2.1.4. Scrum
	        5.2.1.5. Crystal
	        5.2.1.6. Feature Driven Development (FDD)
	
	Extra Readings: Comparative analysis of traditional process models and agile, Agile methodology in testing
		20	8

	Total:	**100**	**45**

List of Practical (if any)

Case studies will be given to the student as a part of tutorial. The same diagram should be drawn using UML diagram drawing tool as practical.

Course References:

Recommended Books:

Text Books:
1. Software Engineering by Roger Pressman (6th edition)
2. Object-Oriented Software Engineering: A Use Case Driven Approach by Ivan Jacobson
3. Software Engineering by Sommerville, Pearson,8th Ed
4. Analysis & Design of Information System James Senn, TMH, 2nd Ed
5. Object Oriented System Development - Ali Bahrami McGraw-Hill International Edition
6. Object-Oriented Software Engineering - Ivar Jacobson Pearson Education INC
7. Agile Software Engineering with visual studio by Sam Guckenheimer, Neno Loje.
8. UML Instant – Thomas A Pendar – Wiley Publication

9. UML in Nutshell, O'reilly Pub

Reference Books:

1. Software Requirements by Karl Wiegers
2. Object Oriented Modeling and Design with UML by James Rumbaugh, Michael Blaha
3. Object Oriented Systems and Techniques with UML & Java by Udit Agarwal
4. Software Engineering by Chandramouli Subramanian, Saikat Dutt
5. Object Oriented Systems Analysis and Design using UML by Simon Bennett
6. UML 2 Bible by Tom Pender
7. The Unified Modeling Language user guide by Grady Booch, James Rumbaugh, Ivar Jacobson

Recommended Learning Material:

5. https://www.mooc-list.com/course/object-oriented-design-coursera
6. https://nptel.ac.in/courses/106101061/

Course Code: IT-14
Course Name: Operating Systems Concepts

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	15	10	-	50	75

Course Description:

Prerequisite:

  Basics of Operating System

Course Objectives:

1. To learn the fundamentals of Operating Systems and handle processes and threads and their communication
2. To learn the mechanisms involved in memory management in contemporary OS
3. To know the functionality of Multiprocessor OS and Mobile OS.
4. To gain knowledge on distributed operating system concepts.
5. To learn about Basics of Linux.
6. To learn programmatically to implement Linux OS mechanisms.

Course Outcomes:

Student will be able to

CO1: Understand structure of OS, process management and synchronization. (Understand)
CO2: Understand multicore and multiprocessing OS. (Understand)
CO3: explain Realtime and embedded OS (Understand)
CO4: understand Windows and Linux OS fundamentals and administration. (Understand)
CO5: solve shell scripting problems (Apply)

Course Structure:

Serial No.	Topics Details	Weightage in %	No of Sessions

1	**1. Overview**
	   1.1. Overview of operating systems
	   1.2 Functionalities and Characteristics of OS
	   1.3 Hardware concepts related to OS
	   1.4 CPU states
	   1.5 I/O channels
	   1.6 Memory Management
	      1.6.1 Memory Management Techniques
	      1.6.2 Contiguous & Non-Contiguous allocation
	      1.6.3 Logical & Physical Memory –
		15	7

	Conversion of Logical to Physical address
	1.7 Paging
	    1.7.1 Demand Paging
	    1.7.2 Page Replacement Concept
	1.8 Segmentation - Segment with paging
	1.9 Virtual Memory Concept
	1.10 Thrashing
	
	Extra Reading: Type of OS, Batch OS, Time Sharing OS, Network OS, Multiprogramming OS, Multiprocessing OS, Evolution of Operating System., Computer System Organization Operating System Structure and Operations- System Calls, System Programs, OS Generation and System Boot		

2	2. Process Management and Synchronization
	    2.1 PCB
	    2.2 Job and processor scheduling
	    2.3 Scheduling Concept
	    2.4 Process hierarchies
	    2.5 Problems of concurrent processes
	    2.6 Critical sections
	    2.7 Mutual exclusion
	    2.8 Synchronization
	    2.9 Deadlock
	    2.10 Device and File Management
	        2.10.1 Overview
	        2.10.2 Techniques
	        2.10.3 File Systems
	
	Extra Reading: Threads- Overview, Multithreading models, Threading issues, Process Synchronization – The critical-section problem, Synchronization hardware, Mutex locks, Semaphores, Classic problems of synchronization, Critical regions, Monitors; Deadlock – System model, Deadlock characterization, Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance, Deadlock detection, Recovery from deadlock., Banker's Algorithms
		17	8

3	3. Multiprocessor and Multicore Operating Systems
	    3.1 Introduction
	        3.1.1 Advantages and Disadvantages
	        3.1.2 Multicore System Vs. Multiprocessor System.
	    3.2 Types of Multiprocessors
	        3.2.1 Symmetric Multiprocessors
	        3.2.2 Asymmetric Multiprocessors
	    3.3 Basic Multicore Concepts: Memory Sharing Styles
		17	8

	3.3.1 Uniform Memory Access (UMA)
	3.3.2 Non-Uniform Memory Access (NUMA)
	3.3.3 No Remote Memory Access (NORMA)
	3.4 Cache Coherence, Inter-Process (and inter-core) Communication:
	    3.4.1 Shared Memory
	    3.4.2 Message Passing
	3.5 Mobile Operating Systems
	    3.5.1 Concept Need and Features
	    3.5.2 Types of Mobile OS
	    3.5.3 Overview of Android OS
	    3.5.4 Applications of Mobile OS
	3.6 Distributed Operating Systems
	    3.6.1 Concept Need and Features
	    3.6.2 Examples of Distributed OS with brief introduction
	    3.6.3 Applications of Distributed OS
	
	Extra Reading: Virtual Machine, Cache Memory and Catching Concept, Multi-Processor and Distributed Operating System: – Introduction, – Architecture, – Organization, – Resource sharing, – Load Balancing, – Availability and Fault Tolerance, – Design and Development Challenges, – Inter-process Communication		

4	4. Real Time OS
	  4.1 Introduction and use of RTOS
	    4.1.2 Components of RTOS
	    4.1.3 Types of RTOS
	    4.1.4 Features of RTOS
	    4.1.5 Factors for selecting in RTOS
	    4.1.6 Applications of RTOS
	    4.1.7 Disadvantages of RTOS
	  4.2 Embedded OS
	    4.2.1 Concept Need and Features of embedded OS
	    4.2.2 Examples of embedded OS with brief introduction
	    4.2.3 Applications of embedded OS
	
	Extra Reading: Real Time and Embedded Operating Systems: – Introduction, – Hardware Elements, – Structure Interrupt Driven, Interrupt Driven, Nanokernel, Nanokernel, Microkernel and Microkernel and Monolithic kernel-based models. Monolithic kernel-based models. – Scheduling – Periodic, Periodic, Aperiodic and Aperiodic and Sporadic Tasks, Sporadic
		10	4

	Tasks, – Introduction to Energy Aware CPU Scheduling.			

5	5.Windows OS and Windows Server Architecture
	
	  5.1 Windows OS
	    5.1.1 Introduction
	    5.1.2 Windows OS Installation
	    5.1.3 Process Management
	    5.1.4 Control Panel Overview
	    5.1.5 Users, Security and Privacy Settings
	    5.1.6 Identify Accessibility Settings
	
	    5.1.7 Service Management
	    5.1.8 Syncing Devices and File Sharing
	    5.1.9Windows Utilities (Accessories, Disk Management, Resource Monitor, Backup and Recovery), Basic Troubleshooting (Networking, Security, Device Driver).
	  5.2 Introduction to Ubuntu
	    5.2.1 Introduction
	    5.2.2 Overview of Kernel
	    5.2.3 Installation of Ubuntu
	    5.2.4 File system
	    5.2.5 Basic Commands of Linux
	    5.2.6 Managing Processes in Linux
	    5.2.7 Installing and deleting software packages
	    5.2.8 User Management
	    5.2.9 File and Device Management
	    5.2.10 Backup and recovery
	    5.2.11 Introduction to Graphical Environment (GNOME), Ubuntu Utilities (VirtualBox, Evolution, Gimp, Bleach Bit, Unity Tweak Tool etc.), SAMBA Overview
	
	Extra Reading: Deploying and Managing Windows Server 2012 and 2016, Introduction to Active Directory Domain Services, Managing Active Directory Domain Services Objects, Automating Active Directory Domain Services Administration, Implementing IPv4, Implementing DHCP, Implementing DNS, Implementing Local Storage, Implementing File and Print Services, Implementing Group Policy.
		25	12	

6	6. Linux Shell Scripting
	    6.1 Introduction
	    6.2 Variables
	    6.3 Flow Controls
	    6.4 Loops
	    6.5 Functions
		16	6	

	6.6 Lists 6.7 Manipulating Strings 6.8 Reading and Writing Files 6.9 Positional Parameters 6.10 Case statement 6.11Real time scripts for different system administration activities Extra Reading: Shell Script Programming Concepts, Sequential Flow and Components of Shell Scripting, Decision Structures, Decision-Structure Theory, Statements & Operators, Looping Structures, Loop Theory & Statements, Functions and Arrays, Functions Parts/Libraries & Arrays, Advanced Shell Programming, File Access, Sorts & Techniques, Advanced Tech & Tools , Awk &Sed ,Script Design and Management Issues		
	Total:	**100**	**45**

List of Practicals (if any)

Minimum 5 Practicals to be conducted based on Shell Scripting

Course References:

Recommended Books:

Text Books:

1. "Operating System Concepts", Abraham Silberschatz; Peter Baer Galvin; Greg Gagne, Seventh Edition, John Wiley & Sons, 2004.
2. "Advanced Concepts in Operating Systems– Distributed, Database, and Multiprocessor Operating Systems", Mukesh Singhal and Niranjan G. Shivaratri, Tata McGraw-Hill, 2001.
3. "Understanding the Linux kernel", 3rd edition, Daniel P Bovet and Marco Cesati, O'Reilly, 2005.
4. "Real-Time Systems: Theory and Practice", Rajib Mall, Pearson Education India, 2006.
5. "iPhone iOS 4 Development Essentials – Xcode", Neil Smyth, Fourth Edition, Payload
6. media, 2011.
7. "Microsoft Windows Server Administration Essentials", Tom Carpenter
8. "The Official Ubuntu Book" Eighth Edition, Matthew Helmke, Elizabeth K. Joseph, José Antonio, Rey Philip Ballew, With Benjamin Mako Hill

Reference Books:

1. " Operating Systems: Internals and Design Principles" by William Stallings.
2. " Operating Systems: A Concept-Based Approach" by D M Dhamdhere.
3. System Concepts, 9th Edition, John Wiley & Sons, Inc. by Avi Silberschatz, Peter Baer Galvin, Greg Gagne,
4. D.M Dhamdhere: Operating systems - A concept-based Approach, 3rd Edition, Tata McGraw- Hill, 2012.
5. Operating Systems: Internals and Design Principles, 8th edition Pearson Education Limited, 2014 by William Stallings.
6. Modern Operating system by Andrew Tenenbaum.
7. Distributed Operating System by Andrew Tanenbaum
8. P.C.P. Bhatt: Introduction to Operating Systems Concepts and Practice, 3rd Edition, PHI, 2010.
9. Harvey M Deital: Operating systems, 3rd Edition, Pearson Education, 2011

Recommended Certification:

Windows Server certifications

1. Entry level: IT Infrastructure: Microsoft Technology Associate (MTA) certification.
2. Associate level: Windows Server 2016: Microsoft Certified Solutions Associate (MCSA): Windows Server 2016 certification.
3. Associate level: Windows Server 2012: Microsoft Certified Solutions Associate (MCSA): Windows Server 2012 certification.
4. Expert level: Server infrastructure: Microsoft Certified Solutions Expert (MCSE): Server Infrastructure certification.

Linux Certifications

1. LINUX+ CompTIA
2. RHCE- RED HAT CERTIFIED ENGINEER
3. GCUX: GIAC CERTIFIED UNIX SECURITY ADMINISTRATOR
4. ORACLE LINUX OCA & OCP
5. LPI (LINUX PROFESSIONAL INSTITUTE) CERTIFICATIONS

       LPIC- 1: Linux Administrator
       LPIC- 2: Linux Engineer
       LPIC- 3: Linux Enterprise Professional Certification

Course Code: IT-15
Course Name: Network Technologies

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	10	10	5	50	75

Course Description:

Prerequisite:

Students should have fundamental knowledge of computer network.

Course Objectives:

1. To understand various computer networks and technologies behind networks
2. To study TCP/IP protocol suite, IP addressing schemes and link layer communication
3. To study routing concept along with Routing protocols
4. To study application layer protocols
5. To understand basics of cryptography and socket programming

Course Outcomes:

Student will be able to

CO1: Understand the basic concepts of Computer Network, and principle of layering (Understand)

CO2: Apply the error detection and correction techniques used in data transmission (Apply)

CO3: Apply IP addressing schemes and sub netting (Apply)

CO4: Understand the concept of routing protocols, Application layer protocols and Network Security (Understand)

CO5: Apply the socket programming basics to create a simple chat application (Apply)

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions

1	1. **Introduction to Data Communication and Computer Networks**
	1.1. Internet basics and network components. [Transmission Media-Guided, Unguided, Network Devices]
	1.2. Various types of Networks (only overview)
	    1.2.1. Connection Oriented N/Ws Vs Connectionless N/Ws,
	    1.2.2. Ethernet- Ethernet standards ZigBee, WiFi, Access Technique -CSMA-CD, Negotiation technique Overview
		6	3

	1.2.3. Wireless Network 1.3 Unified Communication –VOIP Extra Reading: Switching Techniques, CSMA/CA, CSMA/CD, Unified Communication		
2	**2. Principle of Layering concept** 2.1 Need for layering 2.2 ISO-OSI 7 Layer Model 2.3 TCP/IP model 2.4 OSI Model vs TCP/IP mode Extra Reading: Data Encapsulation, PDU Formation, network devices	12	8
3	**3. Link Layer Communication** 3.1 Error detection and correction techniques 3.2 Framing and its types 3.3 Flow and error control 3.4 HDLC protocol 3.5 P2P Protocol Note: Examples based on 3.1 to be covered Extra Readings: DLL protocol examples, IEEE 802.2 MAC protocol	25	10
4	**4. IP Addressing** 4.1 Internet Protocol and IPv4 Packet format, 4.2 Addressing, Physical Addresses, Logical Addresses Port Addresses, Specific Addresses 4.3 IP Address- Network Part and Host Part 4.4 Network Masks, Network Addresses and, Broadcast Addresses, Loop Back Address 4.5 Address Classes 4.6 TCP and UDP Connections 4.7 TCP Performance in wireless network 4.8 Overview of IPv6 4.9 IP Routing - Types of routing protocol, Border Gateway Protocol (BGP), Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Routing Table concept Notes: Examples based on IP addressing and sub netting to be covered Extra Reading: Network Monitoring Tools –Open NMS, Putty, Wireshark, Nagios core, Cacti	25	10

5	5. **Application Layer Protocols**
	  5.1 DHCP – DHCP Client, DHCP server, DHCP scope
	  5.2 DNS – Resolution process, Resource Records, DNS protocol structure
	  5.3 HTTP – WWW architecture, HTTP: Request and Response Message
	  5.4 Email protocols – SMTP, POP3, IMAP4 & MIME
	  5.5 FTP, Telnet
	
	Extra Reading: Practical on FTP, Telnet, DNS, Putty
		15	6

6	6. **Network Security**
	  6.1Active and Passive attacks
	  6.2Cryptography (Symmetric and Asymmetric)
	  6.3Firewall
	
	Extra Reading: Examples on symmetric and asymmetric algorithms
		5	2

7	7. **Socket Programming**
	  7.1 Introduction
	  7.2 Berkeley Sockets
	  7.3 Specifying A Protocol Interface
	  7.4 The Socket Abstraction
	      7.4.1 System Data Structures for Sockets
	  7.5 Specifying an Endpoint Address
	  7.6 A Generic Address Structure
	  7.7 Major System Calls Used with Sockets
	  7.8 Utility Routines for Integer Conversion
	  7.9 Using Socket Calls in A Program
	(The socket can be created in any language)
	
	Extra Reading: Client-Server Architecture and its implementation using Socket programming
		12	6

	Total:	100	45

List of Practical assignments (Socket Programming):

1. Write the client and server programs for establishing termination of connection between client and server using TCP. Assume the server can handle only one client.
2. Write the client and server programs for simple data (hello) transfer between client and server using UDP. Client will send hello server message to the server program. In its reply the server will send hello client message. The server and client programs should reside on different computers in a network.
3. Write the client and server programs for connectionless communication between two different computers in the same TCP/IP network. The server process receives a byte from the client process should and send back an should acknowledgement to the client process.
4. Write program for implementing the sliding window protocol of window size 5.
5. Write the client and server program for implementing the broadcasting in the local network.

Course References:

Recommended Books:

Text Books:

1. Network Essential Notes GSW MCSE Study Notes
2. Internetworking Technology Handbook CISCO System
3. Data and Computer Communication 8th Edition – William Stallings
4. Official Certification guide CCNA 200-301
5. TCP/IP Sockets in JAVA, Practical Guide for Programmers, Kenneth L Calvert, Michael J Donahoo

Reference Books:
1. Data Communication and Networking Behroz A.Forouzan, TMH, 4th Edition
2. Computer Networks and Internets with Internet Applications Douglas Comer
3. Cryptography and Network Security Atul Kahate, TMH 2nd Edition
4. Internetworking With TCP/IP Vol III: Client-Server Programming and Applications BSD Socket Version Second Edition

Recommended Learning Material:

1. https://docs.oracle.com.javase/tutorial/networkingindex.html
2. https://docs.oracle.com/javase/tutorial/networking/overview/networking.html

Recommended Certifications:

1. CISCO Networking Basics Specialization (Coursera) -
2. Network Protocols and Architecture (Coursera)
3. Data Communications and Network Services (Coursera)
4. Computer Networking-Digital Network Security (www.alison.com/course)
5. CCNA (200-301)
6. CCNP Enterprise (300-401 ENCOR)
7. CCNP Security (300-700 SCOR +concentration exam)
8. CCIE Enterprise Infrastructure(300-401 ENCOR + Infrastructure lab v1.0)
9. CCIE Enterprise Wireless CCIE +(300-401 ENCOR +wireless lab v1.0)
10. Microsoft Networking Fundamentals (98-366)
11. Microsoft Security Fundamentals (98-367)

Course Code: IT-11L
Course Name: Practicals

Credit Scheme			Evaluation Scheme				
Lecture	Practical	Credit	Internal			External	Total
			Written	Practical	Tutorial		
-	10 Hrs./Week	5	-	75	-	50	125

Course Description:

This Practical course contains 3 sections. –

1. JavaScript Syllabus
2. GITHUB Syllabus (Not for Evaluation)
3. List of Practicals – Java Programming
4. List of Practicals – Data Structure and Algorithm

Course Outcomes:
Student will be able to

CO1: Demonstrate Collection framework (Apply)
CO2: Develop GUI using awt and swing (Apply)
CO3: Develop Web application using JSP and Servlet, JDBC (Apply)
CO4: Apply Data Structure to solve problems using JavaScript (Apply)

Course Structure:

Syllabus for JavaScript

Sr. No.	Topics Details
1	**Introduction to JavaScript -** History, Features, Application of JavaScript, JavaScript Basics –Data Types, Variables, Identifiers, Constants, Comments, Operators in JavaScript
2	Control and looping structure
3	Array – Concept, Types and Methods
4	Java Script Objects – Object ,Date ,String, Array , Math, Number, Boolean
5	Event handling-Mouse, Keyboard, Form, Window
6	JavaScript BOM –Browser object, Window, Location, Navigator, History Object
7	JavaScript DOM –Document Object and its Methods
8	Form Validations in JavaScript
9	Exception Handling in JavaScript using JavaScript

<u>Syllabus for GIT/GITHUB</u>

Sr. No.	Topics Details
1	Introduction to versioning systems
2	creating repositories [local & cloud based]
3	git commands
4	branching & merging
5	conflict resolution (3-way merge)
6	rebasing
7	version control [tagging]

Session on GIT/GITHUB is not for evaluation. It may be conducted by using Demonstration method. The objective of these sessions is "*Students must able to submit their mini-project on GITHUB as project repositories*"

<u>List of Practicals – Java Programing</u>

1. Installation of jdk enviorment & following utilities. What is javac , javap and javadoc.
2. Design an application by using array.
3. Implementation of package, Interface and abstract class
4. Design application using String, StringBuilder, StringTokenizer
5. Test any five of standard exception and user Defined Custom Exceptions in java
6. Threads creation and design applications by using Extending the Thread class/ Implementing the Runnable Interface. Application of multithreading in java.
7. Design java application using Collection in java such as Array List, Link List
8. Design GUI based java application using AWT, Swing with Event Handling.
9. Design a and implement JDBC applications.
10. Design and implement servlet applications.
11. Design and implement JSP applications

<u>List of Practicals – Data Structure and Algorithm Practicals</u>

<u>Following practical must be implemented using JavaScript</u>

1. Demonstrate singly and doubly linked list
2. STACK implementation using Array with PUSH, POP operations
3. Reverse a string using stack
4. Check for balanced parentheses by using Stacks
5. Implement Stack using Linked List
6. Demonstration of Linear Queue, Circular Queue, Priority Queue
7. Reverse stack using queue
8. Practical based on binary search tree implementation with its operations
9. Graph implementation and graph traversals
10. Implementation of Hashing
11. Practical based on Brute Force technique
12. Practical based on Greedy Algorithm-Prim's/Kruskal's algorithm

13. Practical based on Divide and Conquer Technique-Binary Search, Tower of Hanoi
14. Implementation of Dynamic Programming- LCS, Regular Expression Matching
15. Practical based on backtracking- N Queen's problems

Course Code: ITC11
Course Name: Mini Project

Credit Scheme			Evaluation Scheme				
Lecture	Practical	Credit	Internal			External	Total
			Written	Practical	Tutorial		
-	10 Hrs./Week	5	-	75	-	50	125

Course Description:

A mini project is an assignment that the student needs to complete at the end of every semester to strengthen the understanding of fundamentals through effective application of the subjects learnt.

Course Outcomes:
Student will be able to

CO1: Create working project using tools and techniques learnt in this semester (Create)

Course Structure:

Guidelines for Mini Project

1. Students are expected to undertake one mini project starting from first semester till third semester.
2. The student may take up the mini project in first semester based on the courses learnt in that semester and for every next semester the mini project may be based on the courses learnt in the current semester along with all the subjects learnt in earlier semesters.
3. The student may take up the project individually or in group. However, if project is done in group, each student must be given a responsibility for distinct modules.
4. Selected project/module must have relevant scope as per the marks assigned and must be carried out in the Institute.
5. Internal guide should monitor and evaluate the progress of the project on individual basis through handwritten workbook (Project Diary) maintained by students containing various project milestones with learnings and remarks from internal guide for concurrent evaluation.
6. The Project Synopsis should contain an Introduction to Project clearly stating the project scope in detail justifying enough scope for 125 marks. The project work will carry 75 marks for internal assessment and 50 marks for external assessment.
7. Students are expected to show working demo of the project during final evaluation.
8. **Students are expected to upload mini-project on GITHUB as project repository of the institution.**
9. Students are expected to submit the soft copy of mini project report as a part of final submission.

10. The project will be assessed internally as well as externally by the examiners appointed by University. University may appoint Industry Experts as an external examiner

Semester II

Course Code: IT-21
Course Name: Python Programming

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	25	-	-	50	75

Course Description:

Prerequisite:

> Object oriented Concepts.

Course Objectives:

1. To understand and use the basic of python.
2. To understand advance concepts of python and able to apply it for solving the complex problems.
3. To understand the reading and writing data through file handling.
4. To understand basic database concepts in python.
5. To develop the critical thinking and analytical approach by using python libraries.

Course Outcomes:

Student will be able to

> CO1: Understand Demonstrate the concepts of python and modular programming. (Understand)
>
> CO2: Apply the concepts of concurrency control in python (Apply)
>
> CO3: Solve the real-life problems using object-oriented concepts and python libraries (Apply)
>
> CO4: Demonstrate the concept of IO, Exception Handling, database (Apply)
>
> CO5: Analyze the given dataset and apply the data analysis concepts and data visualization. (Analyze)

Course Structure:

Unit No.	Topics Details	Weightage in %	No of Sessions
1	1. Introduction & Components of Python 1.1. Understanding Python 1.2. Role of Python in AI and Data science 1.3. Installation and Working with Python 1.4. The default graphical development environment for Python - IDLE 1.5. Types and Operation 1.6. Python Object Types-Number, Strings, Lists, Dictionaries, Tuples, Files, User Defined Classes	15	7

	1.7. Understanding python blocks 1.8. Python Program Flow Control 1.9. Conditional blocks using if, else and elif 1.10. Simple for loops in python 1.11. For loop using ranges, string, list and dictionaries 1.12. Use of while loops in python 1.13. Loop manipulation using pass, continue, break and else 1.14. Programming using Python conditional and loops block Extra Reading: Python installation with windows, Linux and MAC OS, creating virtual environment, configuring python on EC2 instance, understanding python IDE –[VSCode, PyCharm, Spyder], Installing Anaconda and setting up environment for python		
2	2. Python Functions, Modules & Packages 2.1. Function Basics-Scope, nested function, non-local statements 2.2. built-in functions 2.3. Arguments Passing, Anonymous Function: lambda 2.4. Decorators and Generators 2.5. Module basic usage, namespaces, reloading modules. – math, random, datetime, etc. 2.6. Package: import basics 2.7. Python namespace packages 2.8. user defined modules and packages Extra Readings: GUI framework in python	15	7
3	3. Python Object Oriented Programming 3.1. Concept of class, object and instances, method call 3.2. Constructor, class attributes and destructors 3.3. Real time use of class in live projects 3.4. Inheritance, super class and overloading operators, 3.5. Static and class methods 3.6. Adding and retrieving dynamic attributes of classes 3.7. Programming using OOPS 3.8. Deligation and container Extra Readings: Integrating GUI framework with OOP	15	6
4	4. Python Regular Expression 4.1. Powerful pattern matching and searching 4.2. Power of pattern searching using regex in python 4.3. Real time parsing of data using regex 4.4. Password, email, URL validation using regular expression 4.5. Pattern finding programs using regular expression	10	4

	Extra Readings: Web scrapping and pattern matching with regex		

5	5. Python Multithreading and Exception Handling
	   5.1. Exception Handling
	   5.2. Avoiding code break using exception handling
	   5.3. Safe guarding file operation using exception handling
	   5.4. Handling and helping developer with error code
	   5.5. Programming using Exception handling
	   5.6. Multithreading
	   5.7. Understanding threads
	   5.8. Synchronizing the threads
	   5.9. Programming using multithreading
	
	Extra Readings: Multiprocessing, deadlock, synchronization, monitors and messaging queue
		10	5

6	6. Python File Operation
	   6.1. Reading config files in python
	   6.2. Writing log files in python
	   6.3. Understanding read functions, read(), readline() and readlines()
	   6.4. Understanding write
	   6.5. functions write() and writelines()
	   6.6. Manipulating file pointer using seek
	   6.7. Programming using file operations
	
	Extra Readings: Reading and writing the files on AWS S3 bucket
		5	2

7	7. Python Database Interaction
	   7.1. Introduction to NoSQL database
	   7.2. Advantages of NoSQL database
	   7.3. SQL Vs NoSQL
	   7.4. Introduction to MongoDB with python
	   7.5. Exploring Collections and Documents
	   7.6. Performing basic CRUD operations with MongoDB and python
	
	Extra Readings: Graph database like Neo4j with python
		10	5

8	8. Python for Data Analysis
	   8.1. NumPy:
	   8.2. Introduction to NumPy
	   8.3. Creating arrays, Using arrays and Scalars
	   8.4. Indexing Arrays, Array Transposition
	   8.5. Universal Array Function
	   8.6. Array Input and Output
	   8.7. Pandas:
	   8.8. What are pandas? Where it is used?
	   8.9. Series in pandas, pandas DataFrames, Index objects, ReIndex
		20	9

	8.10. Drop Entry, Selecting Entries 8.11. Data Alignment, Rank and Sort 8.12. Summary Statics, Missing Data, Index Hierarchy 8.13. Matplotlib: 8.14. Python for Data Visualization 8.15. Introduction to Matplotlib 8.16. Visualization Tools Extra Readings: Text analytics with NLP and python		
	Total:	**100**	**45**

Course References:

Recommended Books:

Text Books:

Introduction to Python Programming, By Gowrishankar S, CRC Press

Reference Books:

1. Learning Python 5th ed. by Mark Lutz
2. Python: The Complete Reference by Martin C. Brown
3. Python Data Analytics: With Pandas, NumPy, and Matplotlib 2nd ed. Edition by Fabio Nelli
4. Core Python Programming by Wesley J. Chun Publisher: Prentice Hall
5. Python Programming: A modular approach by Taneja Sheetal, Kumar Naveen
6. Beginner's Guide to Python Programming: Learn Python 3 Fundamentals, Plotting and Tkinter GUI Development Easily by Serhan Yamacli
7. Programming Python, O'reilly, by Mark Lutz
8. Learning Python, O'reilly, Mark Lutz
9. Head First Python, O'reilly, By Paul Barry

Recommended Certifications:

1. Programming, Data Structures and Algorithms Using Python https://swayam.gov.in/nd1_noc19_cs40/preview
2. Data Analytics with Python https://swayam.gov.in/nd1_noc20_cs46/preview

Course Code: IT-22
Course Name: Software Project Management

Credit Scheme			Evaluation Scheme				
Lecture	Practical	Credit	Internal			External	Total
			Written	Practical	Tutorial		
3 Hrs./Week	-	3	10	10	5	50	75

Course Description:

Prerequisite:

Basic Software Engineering process

Course Objectives:

1. To learn process of Software Project Management.
2. To Study role of Project Manager in Project Management.
3. To learn Agile Project Management Framework.
4. To study various role of Agile Team and Tools.
5. To understand project planning and tracking.

Course Outcomes:

Student will be able to

CO1: Understand the process of Software Project Management Framework and Apply estimation techniques. (Apply)

CO2: Learn the philosophy, principles and lifecycle of an agile project. (Understand)

CO3: Demonstrate Agile Teams and Tools and Apply agile project constraints and trade-offs for estimating project size and schedule (Apply)

CO4: Explain Project Tracking and Interpretation of Progress Report (Understand)

CO5: Analyze Problem statement and evaluate User Stories (Analyze)

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions

1	1. Linear Project Management Framework
	    1.1 Overview of project Management
	    1.2 Project management life cycle-IEEE Life Cycle
	    1.3 Project Management Process
	    1.4 Role of Project Manager
	    1.5 Quality Metrics
	    1.6 Risk Management Process (Case Study Based)
	        1.6.1 Risk Identification
	        1.6.2 Risk Analysis
	        1.6.3 Risk Mitigation
	        1.6.4 RMMM
	    1.7 Hands on MS Project Tool– Resource
		15	6

	Allocation, Scheduling, Gannt chart		
	Note: Case studies based on Risk Management, MS Project tool & Gannt Chart		
	Extra Reading: Different software project management, Types of Risk, Risk Information sheet (RIS), CPM and PERT		

2	**2. Linear Software Project Estimation**
	   2.1 Different methods of Cost estimation
	     2.1.1 COCOMO-I & II model (Problem Statement)
	     2.1.2 Delphi cost estimation
	   2.2 Function Point Analysis (Problem Statement)
	   2.3 The SEI Capability Maturity Model CMM
	   2.4 Software Configuration management
	
	Note: Case studies/Numerical Problems based on COCOMO-I and FPA
	
	Extra Reading: KLOC, Rayleigh Curve, Change Management, Configuration management tool - SVN Tool or Redmine
		20	8

3	**3. Agile Project Management Framework**
	   3.1 Introduction and Definition Agile, Agile Project Life Cycle
	   3.2 Agile Manifesto: History of Agile and Agile Principles
	   3.3 Key Agile Concepts:
	     3.3.1 User stories, Story points
	     3.3.2 Product Backlog
	     3.3.3 Sprint Backlog,
	     3.3.4 Sprint Velocity
	     3.3.5 Swim lanes
	     3.3.6 Minimum Viable Product (MVP)
	     3.3.7 Version and Release
	   3.4 Agile Project Management v/s Traditional Project Management
	
	Note: Case studies based on agile vs. traditional project
	
	Extra Reading: Study Scrum Agile Framework, Agile project management delivery & methodology framework, Software project team management and different team structures
		15	10

4	**4 Agile Teams, Size and Schedule** 4.1 Dynamic System Development Method	15	10

	4.2 Value-Driven Development
	4.3 Team and roles of an Agile Team
	    4.3.1 Scrum Master
	    4.3.2 Product Owner
	    4.3.3 Development Team
	4.4 Product Vision and Product Roadmap
	4.5 Project Objective and Key Metrics
	4.6 Introduction to User Stories
	4.7 Estimate the Product Backlog
	4.8 Techniques for estimating Story Points
	4.9 Plan Product Releases
	4.10 Product Prioritization
	
	Note: Case studies based on Estimation of Product backlog & Story points, design your team and Add screenshots with the caption, Design User stories, log efforts and task in detail
	
	Extra Reading: Personnel Management, Release & iteration planning, eXtreme Programming (XP), Values and Principles, Team Dynamics and Collaboration		

5	**5.Tracking Agile Project and Reports**
	5.1 Introduction
	5.2 Plan and Execute Iteration
	5.3 Facilitate Retrospective, Making Team
	   Decisions and Closing out Retrospective
	5.4 Agile Reports
	    5.4.1 Daily Reports
	    5.4.2 Sprint Burn down Chart and Reports
	5.5 Benefits of Agile Project Management
	
	Note: Case studies based on No. of iterations and Project Report, Sprint Chart
	
	Extra Reading: Use of MS Project to track agile project, Agile project management tools, Feature-Driven Development, Agile Metrics
		20	5

6	**6. Implementation with Agile Tools**
	6.1 Introduction of Agile Tools
	6.2 Hands on GitHub
	    6.2.1 Create Project using Kanban
	    6.2.2 Project Repositories
	    6.2.3 Continuous Integration
	    6.2.4 Project Backlog
	    6.2.5 Team Management
	    6.2.6 Progress Tracking
		15	6

	6.2.7 Releases
	6.3 Implementation of Problem statement with Agile Tools- GitHub
	    6.3.1Designing Product Vision, Product Backlog,
	    6.3.2 Sprint Backlog, Estimate Story Points
	    6.3.3 Iteration Release
	
	Note: Case study on design of product vision & backlog with features and user stories, Estimation of story points, Design Iteration Plan, Iteration progress and close iteration in detail
	
	Extra Reading: Agile modeling, Explore various Agile Tools		

	Total:	**100**	**45**

List of Practical's (if any)

1. Design Project Management plan template by using MS-Project tool. (Resource allocation, Scheduling, Cost Calculation and Gantt Chart)
2. Create project plan using agile methodologies for the development of web page of Library Management System as a minimum viable product using 3 resources as per sprint planning.
3. Calculate the effort to execute the task and prioritize the task to execute in the current sprint and keep rest of the task in backlog.
4. Demo of the task developed by the developer in the Sprint.
5. Retrospective to discuss about the short coming and improvement of the design and execution of the Sprint task.
6. Check in the developed code in the GitHub repository.

Course References:

Recommended Books:

    Text Books:
1. Software engineering principles and practice, McGraw-Hill, Waman S. Javadekar
2. Software Engineering by Pressman
3. Agile Project Management for Dummies, 2nd Edition
4. Coaching Agile Teams: A Comparison for ScrumMasters, Agile Coaches, and Project Managers in Transition, Lyssa Adkins
5. Agile Project Management: Creating Innovative Products (2nd Edition) by Jim Highsmith, Addison-Wesley Professional

Reference Books:

1. Mark C. Layton, Steven J. Ostermiller
2. Agile Estimating and Planning by Mike Cohn Robert C Martin Series
3. Introduction to Software Project Management by Adolfo Villafiorita, CRC Press
4. Agile Project Management with Scrumby Ken Schwaber, Microsoft Press © 2004
5. Agile Project Management QuickStart Guide : The Simplified Beginners Guide to Agile Project Management by ClydeBank Business
6. Agile Product Management with Scrum: Creating Products that Customers Love by Roman Pichler.
7. Scrum Mastery: From Good to Great Servant-Leadership by Geoff Watts
8. Agile Project Management for Dummies by Mark C. Layton
9. The Agile Enterprise: Building and Running Agile Organizations by Mario E. Moreira
10. Scrum: The Art of Doing Twice the Work in Half the Time by Jeff Sutherland
11. Essential Scrum: A Practical Guide to the Most Popular Agile Process by Kenneth S. Rubin
12. Agile Project Management with Kanban   By Eric Brechner
13. Agile Constraints: Creating and Managing Successful Projects with Scrum, Multiple authors

Recommended Learning Material:

1. https://learning.tcsionhub.in/
2. https://www.agilealliance.org
3. http://www.pmi.org
4. https://github.com/topics/kanban
5. https://www.opensourcescrum.com/
6. https://www.scrum.org/resources
7. https://www.tutorialspoint.com/agile/index.htm
8. https://www.atlassian.com/agile
9. https://www.javatpoint.com/agile
10. https://www.guru99.com/agile-testing-course.html
11. https://www.visual-paradigm.com/tutorials/agile-tutorial/

Recommended Certifications:

1. Project Management Professional (PMP)
2. PMI-ACP(Agile Certified Practitioner)
3. Associate in Project Management
4. BVOP Certified Project Manager
5. Certified Associate in Project Management (CAPM)
6. Certified Project Director

7. Certified Project Management Practitioner (CPMP)
8. Certified Project Manager (CPM)
9. Certified ScrumMaster (CSM)
10. CompTIA Project+
11. Master Project Manager (MPM)
12. PRINCE2 Foundation/PRINCE2 Practitioner
13. Professional in Project Management (PPM)
14. Project Management in IT Security (PMITS)
15. APMG International
16. Strategyex Certificate (Associate or Master's) in Agile
17. International Consortium for Agile (ICAgile)
18. Agile Certification Institute
19. Scaled Agile Academy
20. Scrum Alliance
21. Certified Agile Project Manager (IAPM)

Course Code: MT-21
Course Name: Optimization Techniques

Credit Scheme			Evaluation Scheme				
Lecture	Practical	Credit	Internal			External	Total
			Written	Practical	Tutorial		
3 Hrs./Week	-	3	10	10	5	50	75

Course Description:

Prerequisite:
>   Basic mathematical knowledge is essentials.

Course Objectives:
1. To understand the role and principles of optimization techniques in business world.
2. To understand the process of problem statement formulation of the business scenario.
3. To understand the implementation of various decision-making techniques in the process of decision making.
4. To gain the techniques and skills on how to use optimization techniques to support the decision making in business world.

Course Outcomes:
Student will be able to
>   CO1: Understand the role and principles of optimization techniques in business world (Understand)
>   CO2: Demonstrate specific optimization technique for effective decision making (Apply)
>   CO3: Apply the optimization techniques in business environments (Apply)
>   CO4: Illustrate and infer for the business scenario (Analyze)
>   CO5: Analyze the optimization techniques in strategic planning for optimal gain. (Analyze)

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions
1	**1. Linear Programming** 1.1. Various definitions, statements of basic theorems and properties, Advantages and Limitations, 1.2. Application areas of Linear programming 1.3. Linear Programming – Concept 1.4. Simplex Method and Problems 1.5. Two Phase Simplex Method and problems, Note: Case study-based problems	20	10

	Extra Readings: Formulation of Linear programming, Solution of LPP using Graphical method		

2	**2. Markov Chains & Simulation Techniques:**
	    2.1 Markov chains: Applications related to technical
	        functional areas,
	    2.2 Steady state Probabilities and its implications,
	    2.3 Decision making based on the inferences
	        Monte Carlo Simulation.
	
	Extra Readings: Application of Markov chain in Queuing theory, Simulation techniques used in Machine learning and bioinformatics
		15	7

3	**3. Sequential model and related Problems**
	    3.1 Processing n jobs through 2 machines
	    3.2 Processing n jobs through 3 machines
	    3.3 Processing n jobs through m machine
	
	Extra Readings: Processing of n jobs through m machines
		15	6

4	**4. PERT & CPM**
	    4.1 Basic differences between PERT and CPM.
	    4.2 Network diagram
	    4.3 Time estimates (Forward Pass Computation,
	        Backward Pass Computation
	    4.4 Critical Path
	    4.5 Probability of meeting scheduled date of
	        completion,
	    4.6 Calculation on CPM network.
	    4.7 Various floats for activities
	    4.8 Event Slack
	    4.9 Calculation on PERT network.
	    4.10 Application of schedule based on cost
	        analysis and crashing
	    4.11 Case study-based problems
	
	Extra Readings: Optimal Cost estimation by crashing the network, Explore the MS Project tool.
		20	10

5	**5. Game Theory**
	    5.1 Introduction
	    5.2 n X m zero sum game with dominance
	    5.3 Solution using Algebraic, Arithmetic and
	        Matrix strategy
	
	Extra Readings: Learn the difference between Sequential and Simultaneous game
		15	6

6	**6. Decision Analysis**	15	6
	6.1 Introduction to Decision Analysis		
	6.2 Types of Decision-making environment		
	6.3 Decision making under uncertainty and under risk		
	6.4 Concept of Decision Tree		
	Extra Readings: Decision models in Econometrics and computer science		
	Total:	**100**	**45**

List of Practicals (if any)

Practicals to be conducted on the following topics. It is expected that, Applications to be covered using Python and /or R.

1. Linear Programming
2. Markov Chain and Simulation Techniques
3. Sequential models and related problems
4. CPM and PERT
5. Game Theory
6. Decision Analysis

Course References:

Recommended Books:

Text Books:
1. Operations Research by Pannerselvam
2. Operations Research   Theory and Application by J. K. Sharma –Mac-Millan Publication
3. Statistical and Quantative   Methods – Mr. Ranjit Chitale

Reference Books:

1. Statistical Methods – S.P.Gupta, Sultan Chand, New Delhi
2. Operation Research by V. k. Kapoor
3. Operations Research by Kanti Swaroop, P. K. Gupta and Man Mohan
4. Introduction to Operations Research by Hiller & Lieberman, Tata Mc Graw Hill
5. Operations Research by H. A. Taha
6. Operation Research by Hira & Gupta
7. What is Game Theory?, David K. Levine, Economics, UCLA
8. Recommended Learning Material:

Research Software:

1. MS Excel Solver
2. TORA
3. Python and / or R programming

Websites:
1. www.orsi.in
2. www.atozoperationalresearch.com

Websites for practical sessions:
1. https://towardsdatascience.com/linear-programming-and-discrete-optimization-with-python-using-pulp-449f3c5f6e99
2. https://github.com/topics/operations-research?l=python
3. https://github.com/Gabeqb/Linear-Programming-With-Python/commit/a61be0d5fc8e66dd38f3d094bb80cef6a9a04152

Journals:
1. International Journal of Operations Research and Management science
2. International Journal of Operations and Quantitative Management
3. Indian Journal of Advance Operations Management.

Recommended Certifications:

1. Data science with Python
2. Data science with R programing
3. Certification in Machine Learning
4. Certification in Tableau

Course Code: IT-23
Course Name: Advanced Internet Technologies

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	25	-	-	50	75

Course Description:

Prerequisite:
　　　　Student must have hands-on working knowledge of HTML, CSS, JavaScript and Angular JS

Course Objectives:
1. To impart the design, development and implementation of Dynamic Web Pages.
2. To implement the Latest properties of CSS3
3. To implement the Concept of NodeJS.
4. To develop programs for Web using Angular and SPA.
5. To design and implement dynamic websites with good sense of designing and latest technical aspects.

Course Outcomes:

Student will be able to
　　　　CO1: Outline the basic concepts of Advance Internet Technologies (Understand)
　　　　CO2: Design appropriate user interfaces and implements webpage based on given problem Statement (Apply)
　　　　CO3: Implement concepts and methods of NodeJS (Apply)
　　　　CO4: Implement concepts and methods of Angular (Apply)
　　　　CO5: Build Dynamic web pages using server-side PHP programming with Database Connectivity (Apply)

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions
1	**1. Introduction to HTML5** 1.1. Basics of HTML5 – Introduction, features, form new elements, attributes and semantics in HTML5 1.2. <canvas>, <video>, <audio>. 1.3. Introduction to Scalable Vector Graphics (SVG) 1.4. Introduction to Version compatibility 1.5. Installation of Apache Tomcat (Xampp/Lampp/MySQL)	10	5

	Extra Reading: Geo location, Drag, Drop, Web Storage		
2	**2. Introduction to CSS3** 2.1. Architecture of CSS 2.2. CSS Modules 2.3. CSS Framework 2.4. Selectors and Pseudo Classes 2.5. Fonts and Text Effects 2.6. Colors, Background Images, and Masks Extra Reading: Transitions, Transforms and Animations Embedding Media, Gradients, Bootstrap	10	5
3	**3. Node JS** **3.1.** introduction and how it works 3.2. installation of node js 3.3. REPL 3.4. NPM 3.5. How modules work 3.6. Webserver Creation 3.7. Events Extra Reading: Node.js with MySQL	25	12
4	**4. Angular (Latest Stable Version)** 4.1. Introduction (Features and Advantage) 4.2. Type Script 4.3. Modules 4.4. Components 4.5. Directives, Expression, Filters 4.6. Dependency Injection 4.7. Services 4.8. Routing 4.9. SPA (Single Page Application) Extra Reading: Data binding, property binding, Event Binding, Two-way data binding, String Interpolation.	25	12
5	**5. PHP** 5.1. Installing and Configuring PHP 5.2. Introduction 5.2.1. PHP and the Web Server Architecture, PHP Capabilities	30	11

	5.2.2. PHP and HTTP Environment Variables 5.2.3. Variables 5.2.4. Constants 5.2.5. Data Types 5.2.6. Operators 5.2.7. Working with Arrays 5.3. Decision Making, Flow Control and Loops 5.4. Introduction to Laravel 5.5. Creating a Dynamic HTML Form with PHP 5.6. Database Connectivity with MySQL 5.6.1. Performing basic database operations (CRUD) 5.7. Using GET, POST, REQUEST, SESSION, and COOKIE Variables Extra Reading: Sending Emails, PHP with AJAX and XML, Payment Gateway Integration		
Total:		**100**	**45**

Course References:

Recommended Books:

    Text Books:

1. Complete reference HTML, TMH
2. HTML5 & CSS3, Castro Elizabeth 7th Edition
3. Beginning Node.js by Basarat Ali Syed
4. Angular: Up and Running- Learning Angular, Step by Step by Shyam Seshadri
5. Beginning PHP, Apache, MySQL web development

    Reference Books

1. Introducing HTML5 - Bruce Lawson, Remy Sharp
2. Node.js in Action, 2ed by Alex Young, Bradley Meck
3. Mastering Node.js by Pasquali Sandro
4. Angular Essentials by Kumar Dhananjay
5. Complete Ref. PHP

Recommended Learning Material:

- MOOC Courses

    1) **Introduction to HTML5 – University of Michigan**
       https://www.coursera.org/learn/html

2) **Introduction to Web Development – University of California**
   https://www.coursera.org/learn/web-development
3) **HTML, CSS and JavaScript for Web Developers – Johns Hopkins University**
   https://www.coursera.org/learn/html-css-javascript-for-web-developers
4) **Web Design for Everybody: Basics of Web Development & Coding Specialization – University of Michigan**
   https://www.coursera.org/specializations/web-design
5) **Introduction to CSS3 – University of Michigan**
   https://www.coursera.org/learn/introcss
6) **Server-side Development with NodeJS, Express and MongoDB – The Hong Kong University of Science and Technology**
   https://www.coursera.org/learn/server-side-nodejs
7) **Front-End Web UI Frameworks and Tools: Bootstrap 4 – The Hong Kong University of Science and Technology**
   https://www.coursera.org/learn/bootstrap-4
8) **Front-End JavaScript Frameworks: Angular – The Hong Kong University of Science and Technology**
   https://www.coursera.org/learn/angular
9) **Single Page Web Applications with AngularJS – John Hopkins University**
   https://www.coursera.org/learn/single-page-web-apps-with-angularjs
10) **Building Web Applications in PHP – University of Michigan**
    https://www.coursera.org/learn/web-applications-php
11) **Building Database Applications in PHP – University of Michigan**
    https://www.coursera.org/learn/database-applications-php
12) **Web Applications for Everybody Specialization**
    https://www.coursera.org/specializations/web-applications

- Other Learning Material

  - ❖ **HTML 5, CSS3, JavaScript**
    - o https://www.htmldog.com/
    - o https://www.w3schools.com/
    - o https://qhmit.com/
    - o http://www.landofcode.com/
    - o https://www.codecademy.com/
    - o http://www.echoecho.com/html.htm
    - o https://www.awwwards.com/
  - ❖ **Bootstrap**
    - o https://www.w3schools.com/bootstrap4/
    - o https://getbootstrap.com/
    - o https://www.freecodecamp.org/news/learn-bootstrap-4-in-30-minute-by-building-a-landing-page-website-guide-for-beginners-f64e03833f33/
    - o https://www.freecodecamp.org/news/want-to-learn-bootstrap-4-heres-our-free-10-part-course-happy-easter-35c004dc45a4/
  - ❖ **NodeJS**
    - o https://nodejs.org/en/docs/guides/
    - o https://www.w3schools.com/nodejs/
    - o https://www.nodebeginner.org/
    - o http://visionmedia.github.io/masteringnode/

  - ❖ **Angular**

- o https://www.c-sharpcorner.com/topics/angular-8
- o https://www.javatpoint.com/angular-8
- ❖ **PHP**
  - o https://www.php.net/manual/en/index.php
  - o https://phptherightway.com/
  - o https://www.tutorialspoint.com/php/php_useful_resources.htm
  - o https://www.w3schools.com/php/

Recommended Certifications:

1. Microsoft HTML5 and CSS3 (https://www.microsoft.com/en-us/learning/exam-70-480.aspx)

2. Certification available on Coursera and Udemy.

Course Code: IT-24
Course Name: Advanced DBMS

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	15	10	-	50	75

Course Description:

Prerequisite:
> Basics of Database Concepts

Course Objectives:
1. To understand core concepts of database management system and its types
2. To provide database design approaches using E-R model and normalization
3. To discuss transaction management and concurrency control
4. To gain an awareness of the structure of object-oriented database and its applications
5. To gain familiarization of Database crash, recovery concepts and security issues
6. To Demonstrate SQL, XML schema and NO SQL database

Course Outcomes:
Student will be able to
> CO1: Describe the core concepts of DBMS and various databases used in real applications (Understand)
>
> CO2: Design relational database using E-R model and normalization (Apply)
>
> CO3: Demonstrate XML database and nonprocedural structural query languages for data access (Apply)
>
> CO4: Explain concepts of Parallel, Distributed and Object-Oriented Databases and their applications (Understand)
>
> CO5: Apply transaction management, recovery management, backup and security – privacy concepts for database applications (Apply)

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions
1	1. **Introduction DBMS – Concepts & Architectures** 1.1 Database and Need for DBMS, Characteristics of DBMS 1.2 Database 3-tier schema (ANSI/SPARC) and system architecture of DBMS 1.3 Views of data- Schemas and instances, Data Independence	10	4

	1.4 Centralized, Client-Server system, Transaction servers, Data servers, Cloud based servers Extra Reading: Indexing and Hashing - Basic concepts of indexing, ordered index, B+ tree index, B+ tree extensions, Multiple key access, Hashing concepts, types of hashing, Bitmap indices		
2	**2. Data Modelling and Relational Database Design** 2.1 Data Modelling using ER Diagram: Representation of Entities, Attributes, Relationships and their Type, Cardinality, Generalization, Specialization, Aggregation. 2.2 Relational data model: Structure of Relational Database Model, Types of keys, Referential Integrity Constraints 2.3 Codd's rules 2.4 Database Design using E-R, E-R to Relational 2.5 Normalization – Normal forms based on primary (1 NF, 2 NF, 3NF, BCNF) Note: Case studies based on E-R diagram & Normalization Extra Reading: Database languages - Relational Algebra, Relational database languages, Data definition in SQL, Views and Queries in SQL, Joins, specifying constraints and Indexes in SQL, Specifying constraints management systems Postgres/ SQL/MySQL	16	8
3	**3. Transaction and Concurrency control** 3.1. Concept of transaction, ACID properties, States of transaction 3.2. Concurrency control, Problems in concurrency controls 3.3. Scheduling of transactions, Serializability and testing of serilaizibity 3.4. Lock-based Protocol and Time stamp-based ordering protocols 3.5. Deadlock Handling Extra Readings: Semantic data controls & Multi-version concurrency control	13	6
4	**4. Parallel Databases** 4.1. Introduction to Parallel Databases 4.2. Parallel Database Architectures 4.3. I/O parallelism 4.4. Inter-query and Intra-query parallelism 4.5. Inter-operational and Intra-operational parallelism	13	6

	4.6. Key elements of parallel database processing: Speed-up, Scale-up Synchronization and Locking Extra Readings: Parallel handling and Load balancing		
5	**5. Distributed Databases** 5.1. Introduction to Distributed Database System 5.2. Homogeneous and Heterogeneous Databases 5.3. Distributed data storage (Fragmentation and Replication) 5.4. Distributed transactions 5.5. Concurrency control schemes in DDBMS 5.6. Commit protocols 2 phase and 3 Phase Commit Protocol Extra Readings: Reliability issues in DDBMS and Web based interface of DDBMS	13	6
6	**6. Object Oriented Databases & Applications** 6.1. Overview of Object- Oriented Database concepts & characteristics 6.2. Database design for OODBMS – Objects, OIDs and reference type 6.3. Spatial data and Spatial indexing (Any two techniques) 6.4. Mobile Database: Need, Structure, Features, Limitations and Applications 6.5. Temporal databases, temporal aspects valid time, transaction time or decision time 6.6. Multimedia Database: Architecture, Type and Characteristics	10	4
7	**7. Crash Recovery and Backup** 7.1. Failure classifications 7.2. Recovery & Atomicity 7.3. Log based recovery 7.4. Checkpoint and Shadow Paging in Data recovery 7.5. Database backup and types of backups Extra Readings: Role and Functions of Database administrator	10	5
8	**8. Security and Privacy** 8.1. Database security issues 8.2. Discretionary access control based on grant & revoking privilege 8.3. Mandatory access control and role-based access control for multilevel security 8.4. Encryption & public key infrastructures	10	4
9	**9. NO-SQL Database** Introduction, Types of NOSQL, Need of NoSQL	5	2

databases, Use Cases		
Total:	**100**	**45**

List of Practicals (if any)

1. To install and configure database software (ORACLE/MYSQL)
2. To design a database (logical & physical database)
3. To Perform all SQL operations and queries on designed physical database
4. To install and configure NO-SQL database and practice for core operations
5. To perform experiments on database crash and recovery
6. To perform experiments on database Backup – restoring operations on database server
7. To perform some operations on Object oriented databases

Course References:

Recommended Books:

Text Books:
1.
2. Introduction to database systems C.J. Date, Pearson.
3. Fundamentals of Database Systems by Elmasri Navathe
4. Principles of Database Management James Martin, PHI
5. Database System Concepts by Abraham Silberschatz, H. Korth, Sudarshan

Reference Books:

1. Database Management System by Raghu Ramakrishnan / Johannes Gherke
2. Database Management System (DBMS)A Practical Approach. By Rajiv Chopra
3. Database system practical approach to design, implementation & management by Connoly & Begg,
4. NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence Martin Fowler

Recommended Certifications:

1. Oracle certified associate (OCA)
2. Oracle certified professional (OCP)
3. Database administrator (DBA)
4. Database related certification courses available at NPTEL/Coursera/Udemy

Course Code: IT-21L
Course Name: Practicals

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
-	10 Hrs./Week	5	-	75	-	50	125

Course Description:

This Practical course contains 2 sections. –

1. List of Practicals – Python Programming
2. List of Practicals – Advanced Internet Technologies

Course Outcomes:
Student will be able to

CO1: implement python programming concepts for solving real life problems. (Apply)
CO2: Implement Advanced Internet Technologies (Apply)

Course Structure:

List of Practicals – Python Programming

Note:
- Recommended IDE for python – IDLE
- Exception handling concepts should be used with file handling programs.

1. Python installation and configuration with windows and Linux
2. Programs for understanding the data types, control flow statements, blocks and loops
3. Programs for understanding functions, use of built in functions, user defined functions
4. Programs to use existing modules, packages and creating modules, packages
5. Programs for implementations of all object-oriented concepts like class, method, inheritance, polymorphism etc. (Real life examples must be covered for the implementation of object-oriented concepts)
6. Programs for parsing of data, validations like Password, email, URL, etc.
7. Programs for Pattern finding should be covered.
8. Programs covering all the aspects of Exception handling, user defined exception, Multithreading should be covered.
9. Programs demonstrating the IO operations like reading from file, writing into file from different file types like data file, binary file, etc.
10. Programs to perform searching, adding, updating the content from the file.

11. Program for performing CRUD operation with MongoDB and Python
12. Basic programs with NumPy as Array, Searching and Sorting, date & time and String handling

13. Programs for series and data frames should be covered.
14. Programs to demonstrate data pre-processing and data handling with data frame
15. Program for data visualization should be covered.

List of Practicals – Advanced Internet Technologies

1. Program to implement Audio and Video features for your web page.
2. Program to design form using HTML5 elements, attributes and Semantics.
3. Programs using Canvas and SVG.
4. Programs to demonstrate external and internal styles in the web page using font, text, background, borders, opacity and other CSS 3 properties.
5. Implement Transformation using Translation, Rotation and Scaling in your web page.
6. Program to show current date and time using user defined module
7. Program using built-in modules to split the query string into readable parts.
8. Program using NPM which will convert entered string into either case
9. Write a program to create a calculator using Node JS. (Install and configure Node JS and Server)
10. Write Program for Form validation in Angular.
11. Program to demonstrate the ngif, ngfor, ngswitch statements.
12. Create angular project which will demonstrate the usage of component directive, structural directive and attribute directives
13. Create angular project which has HTML template and handle the click event on click of the button (Installation of Angular and Bootstrap 4 CSS Framework)
14. Program for basic operations, array and user interface handling.
15. Program to demonstrate session management using various techniques.
16. Program to perform the CRUD Operations using PHP Script.

Course Code: ITC21
Course Name: Mini Project

Credit Scheme			Evaluation Scheme				
Lecture	Practical	Credit	Internal			External	Total
			Written	Practical	Tutorial		
-	10 Hrs./Week	5	-	75	-	50	125

Course Description:

A mini project is an assignment that the student needs to complete at the end of every semester to strengthen the understanding of fundamentals through effective application of the subjects learnt.

Course Outcomes:
Student will be able to

   CO1: Create working project using tools and techniques learnt in this semester (Create)

Course Structure:

Guidelines for Mini Project

1. Students are expected to undertake one mini project starting from first semester till third semester.
2. The student may take up the mini project in first semester based on the courses learnt in that semester and for every next semester the mini project may be based on the courses learnt in the current semester along with all the subjects learnt in earlier semesters.
3. The student may take up the project individually or in group. However, if project is done in group, each student must be given a responsibility for distinct modules.
4. Selected project/module must have relevant scope as per the marks assigned and must be carried out in the Institute.
5. Internal guide should monitor and evaluate the progress of the project on individual basis through handwritten workbook (Project Diary) maintained by students containing various project milestones with learnings and remarks from internal guide for concurrent evaluation.
6. The Project Synopsis should contain an Introduction to Project clearly stating the project scope in detail justifying enough scope for 125 marks. The project work will carry 75 marks for internal assessment and 50 marks for external assessment.
7. Students are expected to show working demo of the project during final evaluation.
8. **Students are expected to upload mini-project on GITHUB as project repository of the institution.**
9. Students are expected to submit the soft copy of mini project report as a part of final submission.
10. The project will be assessed internally as well as externally by the examiners appointed by University. University may appoint Industry Experts as an external examiner
11.

Savitribai Phule Pune University, Pune

Faculty of Commerce and Management

Master of Computer Applications (MCA)

Programme Curriculum (Sem. III & IV)
(2020-2022)

Semester III

Course Code: IT-31
Course Name: Mobile Application Development

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	25	-	-	50	75

Course Description:

Course Objectives:
1. To understand the different mobile application Architectures.
2. To understand different types of widgets like buttons, views, layout etc.
3. To know the ways of application handling like intents, adapters, Notifications, Web Services and Web View.
4. To learn and know about data storing, retrieval and sharing in android.
5. To explore cross platform mobile application development framework, React Native and Flutter.

Course Outcomes:
Student will be able to
   CO1: Understand Various Mobile Application Architectures. (Understand)
   CO2: Apply different types of widgets and Layouts. (Apply)
   CO3: Describe Web Services and Web Views in mobile applications. (Understand)
   CO4: Implement data storing and retrieval methods in android. (Apply)
   CO5: Demonstrate Hybrid Mobile App Framework. (Apply)

Course Structure:

Unit No.	Topics Details	Weightage in %	No of Sessions

1	1. Mobile application development architectures
	   1.1. Introduction to Mobile Application technologies
	   1.2. Android Architecture
	   1.3. IOS Architecture
	   1.4. Windows Architecture
	   1.5. Hybrid Architecture
		14	5

2	2. Creating Android Application
	   2.1. Creating Android project
	   2.2. Project Structure
	   2.3. Activity and Activity Life Cycle
	   2.4. Fragment and Fragment Life Cycle
	   2.5 Views and View groups
		20	10

3	3. Interactivity Tools
	   3.1. Intents and Filters
	   3.2. Adapters
	   3.3. Dialogs
	   3.4. Menus
	   3.5. Notifications
		20	10

4	4. Interaction with Database
	   4.1. Introduction to Database (SQLite and Firebase)
	   4.2. Cursors and content values
	   4.3. CURD Operations
		16	6

5	5. Web Services and Web View
	   5.1. Introduction to web services
	   5.2. Receiving HTTP Response (JSON, XML)
	   5.3. Parsing JSON and XML
	   5.4. Introduction to Web View
		12	5

6	6. React Native
	   6.1. Introduction
	   6.2. Environment Setup
	   6.3. JavaScript ES6 Overview
	   6.4. Create React Native App
	   6.5. React Native Alert API
	   6.6. React Native Geolocation API
	   6.7. Third Party Libraries
		10	5

7	7. Introduction Flutter
	   7.1. Overview of Flutter
	   7.2. Installation of Flutter
	   7.3. Architecture of Flutter
	   7.4. Introduction to Dart Programming
	   7.5. Demonstration of Simple application
		8	4

	Total:	**100**	**45**

Course References:

Reference Books:

1. Professional Android 4 Application Development by Meier, Reto - Wiley Education
2. Beginning Android 4 Application Development by Lee, Wei- Meng - Wiley Education
3. Android application Development: in 24 hours by Delessio, Carmen; Darcey, Lauren; Conder, Shane - Pearson Education
4. Android by Dixit, Prasanna Kumar - Vikas Publishing House
5. Android Studio Development Essentials Book by Neil Smith
6. Beginning App Development with Flutter by Rap Payne
7. Flutter in Action by Eric Windmill
8. REACT NATIVE IN ACTION DEVELOPING IOS AND ANDROID APPS WITH JAVASCRIPT BOOK BY NADER DABIT

Web Reference:

1. https://developer.android.com
2. https://facebook.github.io/react-native/docs/tutorial
3. https://flutter.dev/docs/get-started/install

Course Code: IT-32
Course Name: Data Warehousing and Data Mining

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	10	10	5	50	75

Course Description:

Course Objectives:
1. To introduce the concepts, techniques and applications of data warehousing and data mining.
2. To understand how to Preprocess, understand and analyze various kinds of data
3. To Study data warehouse Concepts, architectures, OLAP and the project planning aspects in building a data warehouse
4. To enable students to understand and implement various techniques of association, classification and clustering in data mining
5. To enable students to understand and implement the concepts of Web mining and Text Mining in data mining

Course Outcomes:
Student will be able to

CO1: Understand Data warehouse concepts, architecture and models (Understand)

CO2: Learn and understand techniques of preprocessing on various kinds of data (Understand)

CO3: Apply association Mining and Classification Techniques on Data Sets (Apply)

CO4: Apply Clustering Techniques and Web Mining on Data Sets (Apply)

CO5: Understand other approaches of Data mining (Understand)

Course Structure:

Unit No.	Topics Details	Weightage in %	No of Sessions

1	1. Data Warehouse Fundamentals
	   1.1. Introduction to Data Warehouse, OLTP Systems; Differences between OLTP Systems and Data Warehouse:
	   1.2. Characteristics of Data Warehouse; Functionality of Data Warehouse:
	   1.3. Advantages and Applications of Data Warehouse; Top- Down and Bottom-Up Development Methodology:
	   1.4. Tools for Data warehouse development: Data
		15	6

	Warehouse Types		
	1.5. Planning and Project Management in constructing Data warehouse: Data Warehouse Project;		
	1.6. Data Warehouse development Life Cycle, Kimball Lifecycle Diagram		
2	2. Data Warehouse Architecture 2.1. Introductions, Components of Data warehouse Architecture 2.2. Technical Architectures; Federated Data Warehouse Architecture: Tool selection; 2.3. Dimensional Modeling: E-R Modeling VS Dimensional Modeling 2.4. Data Warehouse Schemas; Star Schema, Inside Dimensional Table, Inside Fact Table, Fact Less Fact Table, Granularity, Star Schema Keys: Snowflake Schema, Fact Constellation Schema 2.5. Introduction to Metadata : Categorizing Metadata: 2.6. Metadata management in practice; Meta data requirements gathering, Metadata classification, Meta data collection strategies, Tools for Metadata Management	15	6
3	3. Data Preprocessing and ETL 3.1. Data Pre-processing: Data Cleaning tasks 3.2. Data Integration and Data Reduction 3.3. Discretization and Concept Hierarchy Generation 3.4. Data Transformation; Basic Tasks in Transformation, Major Data Transformation Types 3.5. Introduction to ETL(Extract, Transform and Load) 3.6. ETL requirements and steps: Data Extraction; Extraction Methods, Logical Extraction Methods, Physical Extraction Methods 3.7. Data loading; Data Loading Techniques, ETL Tools	20	7
4	4. Data Warehouse & OLAP: 4.1. Introduction: What is OLAP?; Characteristics of OLAP, 4.2. Steps in the OLAP Creation Process, OLAP operations, Advantages of OLAP: Multidimensional Data: 4.3. OLAP Architectures; MOLAP, ROLAP, HOLAP: 4.4. Data Warehouse and OLAP: Hypercube & Multicubes	10	5
5	5. Introduction to Data Mining: 5.1. Introduction and Scope of Data Mining 5.2. How does Data Mining Works, Predictive Modeling 5.3. Data Mining and Data Warehousing 5.4. Architecture for Data Mining	5	4

	5.5. Profitable Applications: Data Mining Tools:		

6	6. Data Mining Techniques
	     6.1. An Overview: Introduction, Data Mining, Data Mining Versus Database Management System,
	     6.2. Data Mining Techniques- Association rules(Apriori, FP Tree algorithms)
	     6.3. Classification (Decision Tree induction, Bayesian classification, SVM, KNN)
	     6.4. Clustering, Neural networks.
	     6.5. Evaluating Association rules , Classification model
		15	6

7	7. Clustering
	     7.1. Introduction to Clustering, Cluster Analysis
	     7.2. Clustering Methods- K means, Hierarchical clustering, Agglomerative clustering, Divisive clustering,
	     7.3. clustering and segmentation software
	     7.4. Evaluating clusters
	     7.5. Data Mining trends and Applications
		10	5

8	8. Web Mining
	     8.1. Introduction, Terminologies
	     8.2. Categories of Web Mining: Web Content Mining, Web Structure Mining, Web Usage Mining
	     8.3. Applications of Web Mining, and Agent based and Database approaches, Web mining Software/Tools.
	     8.4. Text Mining: process and types, steps in Text Mining, applications and tools of Text Mining
	     8.5. Data visualization, Dashboard- KPI, Business Intelligence and its future.
		10	6

	Total:	**100**	**45**

List of Practicals (if any)

1. Creating a simple data warehouse & performing OLAP operations using simple tools
2. Extracting data from any Operational database (ETL) and performing pre-processing tasks
3. Performing association mining on large data sets and extracting best possible rules / a case study
4. Performing classification and evaluating the efficient model / a case study
5. A case study on finding efficient Clusters on very large set of documents data
6. A case study on Web mining and Text mining using software tools

Students may practice or implement Data warehouse, ETL & Data mining concepts on the following software/ tools (Students versions) at on premise / Cloud based platform

1) Data warehouse - My-SQL, MongoDB / Google BigQuery / Amazon Redshift / Talend
2) ETL Tools : Pentaho Kettle / Talend-Open Studio / Apache Kafka / Informatica Power Center
3) BI and Analytics tools : Python / XL-Miner, R-Studio / Rapid-Miner Studio
4) Visualization Tools : Tableau / Power-BI / Qlick sense

Course References:

Recommended Books:

Text Books:

1. Data Mining: Introductory and Advanced Topics, by Margaret Dunham, Pearson Education
2. Data Mining by Arun K. Pujari – University Press.

Reference Books:

1. DATAWAREHOUSING FUNDAMENTALS: A COMPREHENSIVE GUIDE FOR IT PROFESSIONALS, by Paulraj Poonniah, Latest Edition
2. Building the Data Warehouse, 3rd edition by W. H. Inmon
3. Data Mining concepts and Techniques by Jiawei Han, Micheline Kambler –Elsevier.
4. Data Mining practical Machine Learning Tools and Techniques by Ian H. Witten Eibe Frank Mark Hall - Elsevier publication
5. Introduction to Data Mining with Case Studies by G. K. Gupta, Prentice Hall

Web Reference:

1. www.ibm.com/in/en/
2. www.pentaho.com/
3. www.jaspersoft.com/
4. www.amazon.com/Data-Mining-Business-Intelligence-Applications
5. www.ibm.com/insights/in
6. www.sas.com
7. Weka– Data Mining with Open Source Machine Learning Software, www.cs.waikato.ac.nz/ml/weka.
8. https://cloud.google.com/bigquery/
9. https://www.rstudio.com/ 10.https://aws.amazon.com/redshift/

Course Code: IT-33
Course Name: Software Testing and Quality Assurance

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	10	10	5	50	75

Course Description:

Course Objectives:

1. To understand the principles of software development emphasizing processes and activities of quality assurance
2. To study fundamental concepts in software testing, including software testing objectives, process, strategies and methods.
3. To understand test design techniques based on functionality and structure of software
4. To understand test planning, monitoring and control process
5. To gain the techniques and skills on how to use software testing tools to support software testing activities

Course Outcomes:

Student will be able to

CO1: Understand the role of software quality assurance in contributing to the efficient
 delivery of software solutions. (Understand)

CO2: Demonstrate specific software tests with well-defined objectives and targets. (Apply)

CO3: Apply the software testing techniques in commercial environments. (Apply)

CO4: Construct test strategies and plans for software testing. (Analyze)

CO5: Demonstrate the usage of software testing tools for test effectiveness, efficiency and
 coverage (Apply)

Course Structure:

Unit No.	Topics Details	Weightage in %	No of Sessions

1	1. Software Quality Assurance Fundamentals
	  1.1. Definition of Quality, Quality Assurance, Quality Control, Difference between QA and QC, Software Quality Assurance Challenges
	  1.2. Software Quality Assurance, SQA Planning & Standards (ISO 9000, Six Sigma)
	  1.3. SQA Activities
		20	6

	1.4. Building Blocks of SQA 1.5. Software Quality factors 1.6. Software Quality Metrics: Process Metrics & Product Metrics 1.7. Software Reliability & Reliability Measurement Factors: ROCOF, MTTF, MTTR, MTBF, POFOD, Availability Extra Reading: ISO/IEC 9126, ISO/IEC 25010:2011, Malcom Balridge		

2	2. Software Testing Fundamentals
	   2.1. Definition & Objectives of Testing
	   2.2. Role of testing and its effect on quality
	   2.3. Causes of software failure: Definition of -Error, Bug, Fault, Defect and Failure,
	   2.4. Economics of Testing
	   2.5. Seven Testing Principles
	   2.6. Software Testing Life cycle
	   2.7. Validation & Verification Concepts - V Model and W Model
	   2.8. Agile Testing- Test Driven Software Development
	   2.9. Levels of Testing-
	      2.9.1. Unit (Component) Testing
	      2.9.2. Integration Testing
	      2.9.3. System Testing
	      2.9.4. User Acceptance Testing (UAT)
	   2.10. Test Types
	      2.10.1. Functional testing (Black-box)
	      2.10.2. Non-functional testing (Testing of software product characteristics)
	      2.10.3. Structural testing (White-box)
	      2.10.4. Testing related to changes - Confirmation (Re-testing) and Regression Testing
	   2.11. Non-Functional Testing Types –
	      2.11.1. Performance (Load & Stress)
	      2.11.2. Usability
	      2.11.3. Maintainability
	      2.11.4. Portability
	      2.11.5. Security
	      2.11.6. Localization & Internationalization
	   2.12. Concept of Smoke testing and Sanity Testing
		17	10

3	3. Static Testing
	   3.1. Static Techniques – Review
	      3.1.1. Review Process (Informal & Formal)
	      3.1.2. Desk Checking,
	      3.1.3. Technical or Peer Review
	      3.1.4. Walkthrough
		8	3

	3.1.5. Inspection
	3.2. Static Techniques – Static Analysis
	    3.2.1. Data flow analysis
	    3.2.2. Control flow analysis,
	    3.2.3. Static Analysis by Tools (Automated Static Analysis)
	
	Case Study on Preparation of Inspection Checklist		

4	4. Dynamic Testing
	   4.1. Test Design Techniques-Black Box Testing Techniques:
	    4.1.1. Equivalence Partitioning
	    4.1.2. Boundary Value Analysis
	    4.1.3. Decision Table Testing
	    4.1.4. State Transition Testing
	   4.2. Test Design Techniques -White Box Testing Techniques (coverage based and fault-based)
	    4.2.1. Statement coverage
	    4.2.2. Branch & Decision coverage
	    4.2.3. Path coverage
	    4.2.4. McCabe's Cyclomatic Complexity Metric (Computation of Cyclomatic Complexity to be covered)
	    4.2.5. Data Flow based Testing
	    4.2.6. Mutation Testing
	   4.3. Test Design Techniques -Experience based techniques:
	    4.3.1. Error Guessing
	    4.3.2. Exploratory Testing
	
	Problems based on Black Box and White Box Testing Techniques to be covered
		15	7

5	5. Test Management
	   5.1. Test Organization- Roles & Skills of Tester, Test Lead, Test Manager
	   5.2. Test Planning- Test Plan as per IEEE 829 STANDARD TEST PLAN TEMPLATE
	   5.3. Test Process Monitoring & Control
	    5.3.1. Test Monitoring through -Test Log (IEEE 829: TEST LOG TEMPLATE to be discussed) and Defect Density
	    5.3.2. Reporting Test Status (IEEE 829: TEST SUMMARY REPORT TEMPLATE to be discussed)
	    5.3.3. Test Control
	   5.4. Requirement Traceability Matrix (Horizontal & Vertical), Test Scenario, Test Suite, Test Cases (both Positive & Negative Test Cases, as per IEEE 829:
		25	10

	TEST CASE SPECIFICATION TEMPLATE)
	5.5. Configuration Management- Configuration Management support for Testing
	5.6. Risk and Testing- Project Risk & Product Risk
	5.7. Incident/ Defect Management
	    5.7.1. Defect Life Cycle
	    5.7.2. Defect/ Incident Report (IEEE 829: TEST INCIDENT REPORT TEMPLATE to be discussed)
	
	Case Study on Test Plan for applications and Case study on Test Cases for different features within applications
	
	Extra Reading: Version Control Tool: SVN, Defect Tracking Tool: Bugzilla, JIRA		

6	6. Tool Support for Testing
	    6.1. Types of Test tools –CAST (only type & their purpose should be covered)
	    6.2. Effective Use of Tools: Potential Benefits and Risks
	    6.3. Introduction of a tool into an organization
	    6.4. Testing tools
	        6.4.1. Selenium -WebDriver and Test NG
	        6.4.2. Appium
	        6.4.3. JMeter
	
	Extra Reading: Functional Test Automation Tools: Quick Test Professional (QTP), IBM Rational Robot, Non-functional Test Automation Tools: Load Runner, Test Management Tools: Test Director, Test Link, Bugzilla, Redmine, API Testing Tool: Postman, ETL Testing Tool, Big Data Testing Tool, AI based Testing Tool: Test Craft, UI Testing, Website Testing: TestRail
		15	9

	Total:	**100**	**45**

List of Practicals (if any)

<u>Practicals based on Selenium</u>

1. Focusses on how to invoke the Firefox browser, maximizing the window, navigate commands, etc.

Scenario:
    1.1. Open the Firefox browser.
    1.2. Maximize the browser window.
    1.3. Navigate to a particular URL (let say, SPPU website) "http://www.unipune.ac.in/".

1.4. Write a method to print PASS if the title of the page matches with the page title else FAIL. (If you are familiar with TestNG or JUnit use assert statement like assert.assertequals(actual, expected) to give a verdict of the pass or fail status.

1.5. Navigate to another URL (let say, the Facebook page) "https://www.facebook.com"

1.6. Navigate back to the QA Tech Hub website.

1.7. Print the URL of the current page.

1.8. Navigate forward.

1.9. Reload the page.

1.10.   Close the Browser.

2. Focusses on interacting with form elements like textbox, buttons, radio buttons and drop-down (Facebook Signup)
Scenario:

2.1. Open a browser.

2.2. Navigate to "http://www.fb.com"

2.3. Verify that the page is redirected to "http://www.facebook.com", by getting the current URL. (use if-else condition to verify this condition or use Assert.assertequals() in case you are familiar with TestNG or JUnit)

2.4. Verify that there is a "Create an account" section on the page.

2.5. Fill in the text boxes: First Name, Surname, Mobile Number or email address, "Re-enter mobile number", new password.

2.6. Update the date of birth in the drop-down.

2.7. Select gender.

2.8. Click on "Create an account".

2.9. Verify that the account is created successfully.

3. Focusses on working with links and getAttribute() method.
Scenario:

3.1. Open a Browser (write the generic code such that by changing the parameter browser can be changed.)

3.2. Navigate to https://flipkart.com website.

3.3. Write a method to find the count (number of) links on the homepage of Flipkart.

3.4. Write another method to print link text and URLs of all the links on the page of Flipkart.

4. Focusses on Frame Handling, mouse over operations (Login to an application)
Scenario:

4.1. Open any browser of your choice, for example, Chrome Browser.

4.2. Navigate to Snapdeal site (http://www.snapdeal.com)

4.3. Move to Sign in Button and hold

4.4. Move to the Sign In button and click.

4.5. Enter valid Email Id and click continue.

4.6. Enter the valid password and click LOGIN.

4.7. Verify that the user is logged in successfully.

5. Focusses on writing dynamic xpath (Login to Gmail Account and sending a mail from Gmail)

Scenario:

    5.1. Open any browser of your choice, say Mozilla Firefox

    5.2. Navigate to https://www.gmail.com

    5.3. Enter a valid Email Id or Phone Number

    5.4. Click Next button

    5.5. Enter Password and click "Sign in" button.

    5.6. Verify that Gmail is logged in successfully.

    5.7. Click compose button and verify that a new mail window is opened.

    5.8. Enter an Email Id

    5.9. Enter some subject, say "Test Mail"

    5.10.   Enter some text in body

    5.11.   Click send button.

Course References:

Recommended Books:

Text Books:

1. Foundations of Software Testing by Rex black, Erik Van Veenendaal, Dorothy Graham (2012)-Cengage Learning: London UK, 3rd Edition
2. Software Engineering by Sommerville-Pearson,8thEdition
3. Daniel Galin, "Software Quality Assurance: From Theory to Implementation", Pearson Addison-Wesley, 2012. 2.
4. Effective Methods for Software Testing by William Perry- Wiley Pub, 3rd Edition.

Reference Books:

1. Roger S. Pressman, "Software Engineering-A Practitioner's Approach", McGraw Hill pub.2010
2. Software Testing in Real World Edward Kit- Pearson Pub
3. Software Testing Techniques by Boris Beizer-DreamTech Pub,2nd Edition
4. Software Testing by Ron Patton, TechMedia Pub.
5. Introducing Software by Testing Louise Tamres
6. Fundamentals of Software Engineering –Rajib Mall, 3rd Edition
7. Allen Gilles "Software quality: Theory and management", International Thomson, Computer press 1997.
8. Software Testing Principles Techniques and Tools by Milind. G. Limaye- Tata McGraw Hill Pub.
9. Stephen H. Kan, "Metrics and models in software quality Engineering", Addison –Wesley 2003.

Web Reference:

1. www.istqb.org
2. https://www.seleniumhq.org/
3. https://www.softwaretestingmaterial.com/selenium-tutorial/
4. https://www.toolsqa.com/selenium-tutorial/
5. www.guru99.com/software-testing.html
6. www.guru99.com/selenium-tutorial.html
7. www.guru99.com/mobile-testing.html
8. https://www.softwaretestinghelp.com/appium-tutorial-for-beginners/
9. www.professionalqa.com
10. www.resources.sei.cmu.edu/library
11. www.iist.org

Course Code: IT-34
Course Name: Knowledge Representation and Artificial Intelligence: ML, DL

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	25	--	--	50	75

Course Description:

Course Objectives:

Course Outcomes:

Student will be able to

      CO1: Understand basic building block of Artificial Intelligence and Knowledge Representation.
         (Understand)
      CO2: Apply Propositional Logic for knowledge representation. (Apply)
      CO3: Design various models based on Machine Learning methodology (Apply)
      CO4: Design various models based on Deep Learning methodology (Apply)
      CO5: Understand various hardware and software aspect used for AI and its application.
         (Understand)

Course Structure:

Unit No.	Topics Details	Weightage in %	No of Sessions

1	1. Artificial Intelligence and Knowledge representation
	   1.1. Introduction to Artificial Intelligence and its evolution.
	   1.2. What is Intelligence and Artificial Intelligence
	   1.3. How AI is affecting on real life?
	   1.4. Different branches of AI
	   1.5. Limitations of AI
	   1.6. Need of knowledge Representation
	   1.7. Knowledge Representation and Mapping schemes
	   1.8. Properties of good knowledge-based system
	   1.9. Types of knowledge
	   1.10. Knowledge Representation issues
	   1.11. AND-OR Graph
	   1.12. The Wumpus World
		15	3

2	2. Propositional Logic
	   2.1. Mathematical Logic and Inference
	   2.2. First Order Logic: Syntax and Semantic, Inference in FOL
	   2.3. Forward chaining, backward Chaining
	   2.4. Language
	   2.5. Semantics and Reasoning
	   2.6. Syntax and Truth Values,
	   2.7. Valid Arguments and Proof Systems
	   2.8. Rules of Inference and Natural Deduction
	   2.9. Axiomatic Systems and Hilbert Style Proofs
	   2.10. The Tableau Method
	   2.11. The Resolution Refutation Method
	
	Problems based on FOPL
		15	8

3	3. Machine Learning
	   3.1. History of Machine Learning
	   3.2. Machine Learning Vs Statistical Learning
	   3.3. 3Type of Machine Learning - Supervised, Unsupervised Learning, Reinforcement Learning
	      3.3.1. Linear Regression
	      3.3.2. Logistic Regression
	      3.3.3. Support Vector Machines
	      3.3.4. Random Forest
	      3.3.5. Naïve Bayes Classification
	      3.3.6. Ordinary Least Square Regression
	      3.3.7. K-means
	   3.4. Essentials of Data and its analysis
	   3.5. Framework of Data Analysis
	
	Extra Reading: Forms of Learning, Inductive Learning, Ensemble Methods, Apriori Algorithm, Principal Component Analysis, Singular Value Decomposition, Reinforcement or Semi-Supervised Machine Learning, Independent Component Analysis
		30	15

4	4. Deep Learning
	   4.1. Fundamentals of Deep networks and Defining Deep learning
	   4.2. Deep learning Problem types
	      4.2.1. ANN
	      4.2.2. CNN
	      4.2.3. RNN
	      4.2.4. GAN
	      4.2.5. NLP
	   4.3. Building blocks of Deep learning
	   4.4. Classification and Detection
		30	15

	Algorithms should be taught using Python Library – Pytorch **Extra Reading:** DNN, Transfer Learning, Architectural Principals of Deep networks – AlexNet, VGG 16, Inception, MobileNet			
5	5. Hardware and Software for AI 5.1. Data Center 5.2. Gateway edge computing 5.3. Keyprocessor for AI 5.4. CPU and GPU 5.5. Field Programmable Gate Array (FPGA)	5	2
6	6. Application of AI 6.1. Robotics Process Automation – Chatbot 6.2. NLP 6.3. Image Processing 6.4. Speech Recognition	5	2
	Total:	**100**	**45**

Course References:

Recommended Books:

Reference Books:

1. Artificial Intelligence, 3rd Edition, Elaine Rich, Kevin Knight, S.B. Nair - Tata McGraw Hill.
2. Artificial Intelligence: A Modern Approach Textbook by Peter Norvig and Stuart J. Russell
3. Artificial Intelligence by Patrick Henry Winston - Addison-Wesley, Third Edition.
4. Artificial Intelligence and Intelligent Systems by N.P.Padhy - Oxford University Press.
5. Data Mining practical Machine Learning Tools and Techniques by Ian H. Witten Eibe Frank Mark Hall - Elsevier publication
6. Python Machine Learning and Deep Learning with Python Scikit-learn, and TensorFlow 2, 3rd Edition by Sebastian Raschka, Vahid Mirjalil
7. Machine Learning by Tom M Mitchell – TMGH Publication
8. Machine Learning using Python by Manaranjan Pradhan and U. Dinesh Kumar – WILEY Publication
9. Machine Learning for Big Data – Hands on for Developers and Technical Professionals by Jason Bell – WILEY Publication

Course Code: IT-35
Course Name: Cloud Computing

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	10	10	5	50	75

Course Description:

Course Objectives:

1. To introduce the fundamentals of cloud computing, its technologies, Challenges and Applications
2. To give Insights into the virtualization technologies and Architecture
3. To know the relationship between Cloud and SOA
4. To classify and evaluate Cloud Security Issues
5. To apply theory to practical knowledge through case Studies

Course Outcomes:

Student will be able to

CO1: Describe the concepts of Cloud Computing and its Service Models& Deployment Models.
      (Understand)

CO2: Classify the types of Virtualization. (Understand)

CO3: Describe the Cloud Management and relate Cloud to SOA. (Understand)

CO4: Interpret Architecture and Pharrell Programing of Cloud Computing. (Apply)

CO5: Demonstrate practical implementation of Cloud computing. (Apply)

Course Structure:

Unit No.	Topics Details	Weightage in %	No of Sessions
1	1. Cloud Services and Cloud Models 1.1. Introduction to Cloud 1.2. Cloud Computing vs. Cluster Computing vs. Grid Computing 1.3. Introduction to Cloud Service Models 1.4. Characteristics, Advantages, Security 1.5. XAAS- Anything as a Service – Storage as a service, Network as a Service, Database as a Service etc. 1.6. IAAS, PAAS, SAAS characteristics, benefits and Applications 1.7. Comparison of SAAS, PASS and IAAS 1.8. Cloud Deployment Models-Public, Private, Hybrid	20	7

	1.9. Cloud Platforms :
	     1.9.1. Google Cloud Platform,
	     1.9.2. Microsoft Azure
	     1.9.3. SalesForce,
	     1.9.4. AWS.
	
	 Extra Reading: Offerings of AWS		

2	2. Virtualization
	   2.1. Introduction to Virtualization concept &Hypervisors
	   2.2. Types of Virtualization: Server, Storage and Network
	   2.3. Pros and Cons of Virtualization
	   2.4. Machine Image, Virtual Machine (VM)
	   2.5. Technology Examples
	     2.5.1. Xen: Para virtualization
	     2.5.2. VMware: Full Virtualization
	     2.5.3. Open Source Virtualization Manager
		15	8

3	3. SOA & Cloud Management
	   3.1. Definition of Service Oriented Architecture
	   3.2. Basic concepts of SOA
	   3.3. Web Services: SOAP and REST
	   3.4. Cloud APIs (RESTful)
	   3.5. Relating SOA and Cloud Computing.
	   3.6. Cloud Availability
	   3.7. Cloud Governance
	   3.8. Service Level Agreement
	
	 Extra Reading: Pricing Model: Usage Reporting, billing and metering (AWS), Cloud Statistics
		15	8

4	4. Multi Core Architecture
	   4.1. Cloud Computing Architecture
	   4.2. Multi Core Architecture
	   4.3. Multi Cloud Environment
	   4.4. Parallel Programming
	   4.5. Parallel Processing
	   4.6. Edge Computing Concepts
		15	6

5	5. Moving Applications to the Cloud
	   5.1. Cloud Migration Strategies and Process
	   5.2. Issues in Inter Cloud
	   5.3. Applications in the Clouds
	   5.4. Cloud Service Attributes
	   5.5. Cloud Bursting.
	   5.6. Data Migration in Cloud
	   5.7. 5Quality of Services in cloud Computing
	
	 Extra Reading: Six R for Cloud Migration
		15	6

6	6. Cloud Security & Implementation of Cloud	20	10
	6.1. Cloud Security Fundamentals		
	6.2. Cloud Security Architecture		
	6.3. Cloud Computing Security Challenges		
	6.4. Privacy and Security in Cloud		
	6.5. Identity Management and Access control		
	6.6. Demonstrate the commercial cloud computing Infrastructures		
	6.7. Introduction to Dockers Container		
	6.8. Case Study's based on Cloud Computing Concepts.		
	Total:	**100**	**45**

List of Practicals (if any)

1. Create an Account to Cloud Service Provider (AWS, AZURE, Google Cloud, etc.)
2. Create an Instance on Cloud
3. Provide Access Control and Permission to Users
4. Execute the Web Page on Cloud
5. Provide Security Mechanism to your instance.

Course References:

Recommended Books:

Reference Books:

1. Cloud Computing Bible by Barrie Sosinsky, Wiley India Pvt. Ltd,
2. Cloud Computing : Automating the Virtualized Data Center
3. Cloud Computing by Dr. Kumar Saurabh ,Wiley–India
4. Cloud computing: A practical approach by Anthony T. Velte, Tata McGraw-Hill
5. Cloud Computing Concepts, Technology & Architecture by Thomas Erl, Zaigham Mahmood, and Ricardo Puttin
6. Mastering Cloud Computing by Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi - McGraw Hill Education (India) Private Limited,
7. Cloud Computing Web –Based Applications that change the way you work and Collaborate Online by Michael Miller, Pearson
8. Cloud Computing for Dummies by Judith Hurwitz, Robin Bloor, Marcia Kaufman, FernHalper

Web Reference:

1. http://www.cloudcomputingpatterns.org/
2. http://whatiscloud.com
3. www.w3schools.com

Course Code: IT-31L
Course Name: Practicals

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
-	10 Hrs./Week	5	-	75	-	50	125

Course Description:

This Practical course contains 2 sections. –

1. List of Practicals – Mobile Application Development
2. List of Practicals – KR an AI, ML, DL

Course Outcomes:
Student will be able to

CO1: Develop mobile application. (Apply)
CO2: Develop ML, DL models using Python (Apply)

Course Structure:

Suggestive List of Practicals

Mobile Application Development

1. Demonstrate different Layouts with different views in android Layouts-ConstraintLayout, RelativeLayout, TableLayout Views- Button, TextView, EditText, WebView, CheckBox, RadioButton, ToggleButton, ImageButton, RatingBar, ProgressBar, SeekBar, VideoView, DatePicker, CalendarView, Spinner
2. Write an android code to make phone call using Intent
3. Write an android code to turn ON/OFF Bluetooth
4. Write an android code to turn ON /OFF the Wi-Fi
5. Design android application for login activity. Write android code to check login credentials with username = "mca" and password = "android". Display appropriate toast message to the user.
6. Create a fragment that has its own UI and enable your activities to communicate with fragments.
7. Demonstrate Array Adapter using List View to display list of fruits.
8. Write an application to demonstrate Alert Dialog Box in android
9. Demonstrate Options Menu, Context Menu and Popup Menu in android
10. Write an application to produce Notification

11. Write an android application using SQLite to create table and perform CRUD operations (Example. COURSE table (ID, Name, Duration, Description), perform ADD, UPDATE, DELETE and READ operations)
12. Create an Android app, powered by Firebase Realtime database that supports: Adding Data to Firebase Realtime database, Retrieving Data from Firebase and Deleting data from firebase data.
13. Demonstrate WebView to display the web pages in an android application.
14. Write an android app to write JSON data into a file and read JSON data from created file.
15. Write an application to display a PDF as an image in React app using URL
16. Develop simple flutter application to open a browser using Android SDK

KR an AI, ML, DL

1. Find the correlation matrix.
2. Plot the correlation plot on dataset and visualize giving an overview of relationships among data on iris data.
3. Analysis of covariance: variance (ANOVA), if data have categorical variables on iris data.
4. Apply linear regression Model techniques to predict the data on any dataset.
5. Apply logical regression Model techniques to predict the data on any dataset.
6. Clustering algorithms for unsupervised classification.
7. Association algorithms for supervised classification on any dataset
8. Developing and implementing Decision Tree model on the dataset
9. Bayesian classification on any dataset.
10. SVM classification on any dataset
11. Text Mining algorithms on unstructured dataset
12. Plot the cluster data using python visualizations.
13. Creating & Visualizing Neural Network for the given data. (Use python)
14. Recognize optical character using ANN.
15. Write a program to implement CNN
16. Write a program to implement RNN
17. Write a program to implement GAN
18. Web scraping experiments (by using tools)

Course Code: ITC31
Course Name: Mini Project

Credit Scheme			Evaluation Scheme				
Lecture	Practical	Credit	Internal			External	Total
			Written	Practical	Tutorial		
-	10 Hrs./Week	5	-	75	-	50	125

Course Description:

A mini project is an assignment that the student needs to complete at the end of every semester to strengthen the understanding of fundamentals through effective application of the subjects learnt.

Course Outcomes:

Student will be able to

CO1: Create working project using tools and techniques learnt in this semester (Create)

Course Structure:

Guidelines for Mini Project

1. Students are expected to undertake one mini project starting from first semester till third semester.
2. The student may take up the mini project in first semester based on the courses learnt in that semester and for every next semester the mini project may be based on the courses learnt in the current semester along with all the subjects learnt in earlier semesters.
3. The student may take up the project individually or in group. However, if project is done in group, each student must be given a responsibility for distinct modules.
4. Selected project/module must have relevant scope as per the marks assigned and must be carried out in the Institute.
5. Internal guide should monitor and evaluate the progress of the project on individual basis through handwritten workbook (Project Diary) maintained by students containing various project milestones with learnings and remarks from internal guide for concurrent evaluation.
6. The Project Synopsis should contain an Introduction to Project clearly stating the project scope in detail justifying enough scope for 125 marks. The project work will carry 75 marks for internal assessment and 50 marks for external assessment.
7. Students are expected to show working demo of the project during final evaluation.
8. **Students are expected to upload mini-project on GITHUB as project repository of the institution.**
9. Students are expected to submit the soft copy of mini project report as a part of final submission.
10. The project will be assessed internally as well as externally by the examiners appointed by University. University may appoint Industry Experts as an external examiner

Savitribai Phule Pune University, Pune

Faculty of Commerce and Management

<u>Master of Computer Applications (MCA)</u>

<u>Programme Curriculum</u>
<u>(2020-2022)</u>

Semester IV

Course Code: IT-41
Course Name: DevOps

Credit Scheme			Evaluation Scheme				
Lecture	**Practical**	**Credit**	**Internal**			External	Total
			Written	**Practical**	**Tutorial**		
3 Hrs./Week	-	3	25	-	-	50	75

Course Description:

Course Objectives:

Course Outcomes:
Student will be able to

CO1: describe the evolution of technology & timeline (Understand)

CO2: explain Introduction to various Devops platforms (Remember)

CO3: demonstrate the building components / blocks of Devops and gain an insight of the Devops Architecture. (Understand)

CO4: apply the knowledge gain about Devops approach across various domains (Apply)

CO5: build DevOps application (Apply)

Course Structure:

Unit No.	Topics Details	Weightage in %	No of Sessions
1	1. Introduction to DevOps. 1.1. Define Devops 1.2. What is Devops 1.3. SDLC models, Lean, ITIL, Agile 1.4. Why Devops? 1.5. History of Devops 1.6. Devops Stakeholders 1.7. Devops Goals 1.8. Important terminology 1.9. Devops perspective 1.10. DevOps and Agile 1.11. DevOps Tools 1.12. Configuration management 1.13. Continuous Integration and Deployment 1.14. Linux OS Introduction 1.15. Importance of Linux in DevOps 1.16. Linux Basic Command Utilities 1.17. Linux Administration 1.18. Environment Variables 1.19. Networking 1.20. Linux Server Installation 1.21. RPM and YUM Installation	10	4
2	2. Version Control-GIT 2.1. Introduction to GIT 2.2. What is Git 2.3. About Version Control System and Types 2.4. Difference between CVCS and DVCS 2.5. A short history of GIT 2.6. GIT Basics 2.7. GIT Command Line 2.8. Installing Git 2.9. Installing on Linux 2.10. Installing on Windows 2.11. Initial setup 2.12. Git Essentials 2.13. Creating repository 2.14. Cloning, check-in and committing 2.15. Fetch pull and remote 2.16. Branching 2.17. Creating the Branches, switching the branches, merging 2.18. The branches.	15	3

3	3. Chef for configuration management	25	13
	3.1. Overview of Chef; Common Chef Terminology (Server, Workstation, Client, Repository Etc.) Servers and Nodes Chef Configuration Concepts.		
	3.2. Workstation Setup: How to configure knife Execute some commands to test connection between knife and workstation.		
	3.3. Organization Setup: Create organization; Add yourself and node to organization.		
	3.4. Test Node Setup: Create a server and add to organization, check node details using knife.		
	3.5. Node Objects and Search: How to Add Run list to Node Check node Details.		
	3.6. Environments: How to create Environments, Add servers to environments.		
	3.7. Roles: Create roles, Add Roles to organization.		
	3.8. Attributes: Understanding of Attributes, Creating Custom Attributes, Defining in Cookbooks.		
	3.9. Data bags: Understanding the data bags, Creating and managing the Data bags, Creating the data bags using CLI and Chef Console, Sample Data bags for Creating Users.		
4	5. Build tool- Maven	20	10
	5.1. Maven Installation		
	5.2. Maven Build requirements		
	5.3. Maven POM Builds (pom.xml)		
	5.4. Maven Build Life Cycle		
	5.5. Maven Local Repository (.m2)		
	5.6. Maven Global Repository		
	5.7. Group ID, Artifact ID, Snapshot		
	5.8. Maven Dependencies		
	5.9. Maven Plugins		
4	4. Docker– Containers & Build tool- Maven	30	15
	4.1. Introduction: What is a Docker, Use case of Docker, Platforms for Docker, Dockers vs. Virtualization		
	4.2. Architecture: Docker Architecture., Understanding the Docker components		
	4.3. Installation: Installing Docker on Linux. Understanding Installation of Docker on windows. Some Docker commands. Provisioning.		
	4.4. Docker Hub.: Downloading Docker images. Uploading the images in Docker Registry and AWS ECS, Understanding the containers, Running commands in container. Running multiple containers.		
	4.5. Custom images: Creating a custom image. Running a container from the custom image. Publishing the custom image.		

		4.6. Docker Networking: Accessing containers, linking containers, Exposing container ports, Container Routing.		
		Total:	**100**	**45**

Course References:

Reference Books:

1. DevOps for Developers: Michael Hüttermann
2. DevOps: A Software Architect's Perspective: Ingo M. Weber, Len Bass, and Liming Zhu
3. Building a DevOps Culture: Jennifer Davis, Katherine Daniels. Publisher: O'Reilly
4. Practical DevOps: Joakim Veronal
5. DevOps for Dummies: Gene Kim, Kevin Behr, George, Publisher: John Wiley & Sons

Web Reference:

1. https://devops.com/
2. https://devopsinstitute.com/
3. https://aws.amazon.com/devops/
4. https://www.guru99.com/devops-tutorial.html
5. https://www.edureka.co/blog/maven-tutorial/
6. https://www.chef.io/configuration-management/
7. https://www.edureka.co/blog/devops-tutorial

Course Code: BM-41
Course Name: PPM and OB

Credit Scheme			Evaluation Scheme				
Lecture	Practical	Credit	Internal			External	Total
			Written	Practical	Tutorial		
3 Hrs./Week	-	3	20	-	5	50	75

Course Description:

Course Objectives:
1. This course aims to improve students understanding of Management & human behavior in organization and the ability to lead people to achieve more effectively toward increased organizational performance.

Course Outcomes:
Student will be able to

CO1: Describe and analyze the interactions between multiple aspects of management. (Understand)

CO 2: Analyze the role of planning and decision making in Organization (Analyze)

CO 3: Justify the role of leadership qualities, Motivation and Team Building. (Analyze)

CO 4: Analyze stress management and conflict management (Analyze)

CO 5: Describe Personality and Individual Behavior (Understand)

Course Structure:

Unit No.	Topics Details	Weightage in %	No of Sessions
1	1. Management: 1.1. Meaning and Definition 1.2. The need, scope and process of Management 1.3. Managerial levels/Hierarchy 1.4. Managerial functions: Planning, Organizing, Staffing Directing, Controlling 1.5. Types of managers & its Skill: Functional, Specialize, Generalize 1.6. Social responsibility of management	10	4
2	2. Nature & Development of Management Thought: 2.1. Historical perspective 2.2. Evolution of Management: Introduction to Scientific Management by Taylor, Administrative Management by Fayol, Contribution of Peter Drucker 2.3. System approach-with reference to management, organization and MIS 2.4. Contingency approach	10	4

3	3. Decision making:
	   3.1. Introduction
	   3.2. Decision making environment- Decision making under certainty, under uncertainty, under risk
	   3.3. Types of Decision, decision making processes & Tools
	   3.4. Individual Vs Group decision making
	   3.5. Herbert Simon's Model & Principle of Rationality
	
	Note: Case studies should be covered on this topic
		10	4

4	4. Organization, Organizational Behavior & Organizational Culture:
	   4.1. Definition and Need for Organization
	   4.2. Introduction to OB, Organizing Process
	   4.3. Organizational structure (Functional organization, Product Organization, Territorial Organization)
	   4.4. Introduction- Development and Levels of Organizational Culture
	   4.5. Types of Corporate Culture
		10	4

5	5. Motivation and Leadership:
	   5.1. Concept of Motivation, Benefits to organization and Manager
	   5.2. Maslow's need Hierarchy theory
	   5.3. Herzberg's Motivation- Hygiene Theory
	   5.4. Theory X and Y, Theory Z
	   5.5. Definition, Nature, Qualities of Leader, Leader V/s Manager
	   5.6. Leadership Styles (Autocratic, Participative, Laissez faire or subordinate-centered, Bureaucratic leadership, Transformational leadership, Transactional leadership)
		15	7

6	6. Team Building
	   6.1. Concept of Team, Nature, Benefits from team,
	   6.2. Types of Teams
	   6.3. Creating Effective Teams, Turning Individuals into Team Player.
	
	Note: Case studies should be covered on this topic
		15	10

7	7. Stress Management and Conflict management:
	   7.1. Work stress: Meaning of stress, Stressors, Sources of Stress, Types of stress
	   7.2. Stress Management strategies
	   7.3. Concept of Conflict, Functional versus Dysfunctional Conflict
	   7.4. Five stage Conflict Process, Types of Conflict (Task Conflict, Relationship Conflict, Process Conflict, Personality Conflict, Intergroup Conflict)
		15	7

	7.5. Managing Conflict (Styles for Handling Dysfunctional Conflict, Third-Party Interventions) **Note: Case studies should be covered on this topic**		

8	8. Personality and Understanding Individual Behavior:
	    8.1. Introduction, Definition of Personality - Determinants of Personality
	    8.2. Personality Theories -Personality and Organization
	    8.3. Personality Structure -Personality and Behavior
	    8.4. Ego State, Johari window- Transactional Analysis
		15	5

	Total:	**100**	**45**

Course References:

Recommended Books:

    Reference Books:

1. Principles and Practices of Management- Shejwalkar
2. Essential of management- 7th edition Koontz H &Weitrich H TMH
3. Management Today Principles and Practices - Burton & Thakur
4. Mgmt. Principles and Functions - Ivancevich & Gibson, Donnelly
5. Organizational behavior Keith Davis
6. Organizational behavior Fred Luthans TMH 10th edition
7. Organizational behavior Dr. Ashwatthapa THI 7th edition
8. Organizational Behavior - Fred Luthans
9. Organizational Behavior - Stephen Robbins
10. Organizational Behavior - K. Aswathappa (8th revised edition)
11. Business psychology and Organizational Behavior – Eugene McKenna
12. Understanding Organizational Behavior - Udai Pareek
13. Organization Development – Wendell L. French and Cecil H. Bell Jr.

Course Code: ITC41
Course Name: Project

Credit Scheme			Evaluation Scheme				
Lecture	Practical	Credit	Internal			External	Total
			Written	Practical	Tutorial		
-	40 Hrs./Week	22	-	250	-	300	550

Course Description:

A project is an assignment that the student needs to complete at the end of semester IV to strengthen the understanding of fundamentals through effective application of the subjects learnt.

Course Outcomes:
Student will be able to

   CO1: Create working project using tools and techniques learnt in the programme (Create)

Course Structure:

The project is an outcome of technical skills and domain knowledge acquired by the students during the program. Students demonstrate problem solving skills, analytical ability, logical thinking, communication skills and team work during the course of the project. The project can be implementation of a research work published in any reputed journal.

1. The project may be done individually or in groups. However, if project is done in groups, each student must be given a responsibility for distinct modules.
2. Selected project/module must have relevant scope as per the marks assigned and can be carried out in the Institute or outside with prior permission of the Institute.
3. Internal guide should monitor and evaluate the progress of the project on individual basis through handwritten workbook maintained by students containing various project milestones with learnings and remarks from internal guide for concurrent evaluation.
4. The Semester IV project should be having sufficient scope for 400 marks. The project work will carry 300 marks for internal assessment and 250 marks for external assessment.
5. Students are expected to show working demo of the project during final evaluation in semester IV.
6. The project report should be prepared as per the University prescribed format with all the chapters mentioned in project guidelines. And it should be printed on back-to-back pages (one copy) which should be signed by the internal guide and the Director of the Institute. A client (colleges, Non IT organization, and IT organization) certificate should be attached to prove the authenticity of the project work done.
7. The project will be assessed internally as well as externally by the examiners appointed by the institutions and University.

Type of Projects

1.   Application Development

The students are advised to choose a project that involves window-based development, web-based development, mobile-based development, projects based on machine learning. Analysis and interpretation of any company specific data is not permitted.

2.   Embedded Systems / IoT

A project should be developed and implemented for application specific system after thorough investigation of the latest development in the field of electronics or communication to facilitate their efficient operation. The Real Time Operating System (RTOS) or open source platform can be used to develop embedded applications such as Robotics, Microcontroller / Microprocessor based projects etc. An IOT project can be used to design products for reliability and security using simple electronics concepts and integrating with a cloud platform to get the data real-time and make some operational analysis. It has to use efficient algorithms for strong authentication and security protocols and disable non-essential services.

Few examples of IoT applications
Smart home, Health care applications, Smart waste management, Activity Tracker etc.

3.   ETL Projects

Extract, transform, load (ETL) is the process of integrating the data from one or more sources. It is expected from the student that he should demonstrate the entire ETL process with reference to any domain like finance, banking, insurance, retail etc.
Data extraction consists of extracting the data from homogeneous or heterogeneous sources and transforming it into a proper format using data cleansing. The data can be finally loaded into a final target database such as operational data base, a data mart or data warehouse. This data can be further used for the purpose of querying and analyzing.

4.   Research Projects

The research project will be able to demonstrate the skills of working scientifically, and through the project the students will able to understand how to do a literature review, and how to appraise the literature to address questions. To explore an area of interest (develop some expertise and a deeper understanding of a topic). Understand the tools to critically and thoughtfully appraise problems which are faced every day; to learn communicate scientific research in verbal presentations and written form. As an example, the students can identify any problem, by observation or through survey to understand the problem in depth and propose the solution by applying the research methodology.

Project Guidelines:

1.   Application Development Project

Chapter No		Details
1		**Introduction**
	1.1	Company Profile / Institute Profile / Client Profile
	1.2	Abstract
	1.3	Existing System and Need for System
	1.4	Scope of System
	1.5	Operating Environment - Hardware and Software
	1.6	Brief Description of Technology Used 1.6.1 Operating systems used (Windows or Unix) 1.6.2 RDBMS/No Sql used to build database (mysql/ oracle, Teradata, etc.)
2		**Proposed System**
	2.1	Study of Similar Systems (If required research paper can be included)
	2.2	Feasibility Study
	2.3	Objectives of Proposed System
	2.4	Users of System
3		**Analysis and Design**
	3.1	System Requirements (Functional and Non-Functional requirements)
	3.2	Entity Relationship Diagram (ERD)
	3.3	Table Structure
	3.4	Use Case Diagrams
	3.5	Class Diagram
	3.6	Activity Diagram
	3.7	Deployment Diagram
	3.8	Module Hierarchy Diagram
	3.9	Sample Input and Output Screens (Screens must have valid data. All reports must have at-least 5 valid records.)
4		**Coding**
	4.1	Algorithms
	4.2	Code snippets
5		**Testing**
	5.1	Test Strategy
	5.2	Unit Test Plan
	5.3	Acceptance Test Plan
	5.4	Test Case / Test Script
	5.5	Defect report / Test Log
6		**Limitations of Proposed System**
7		**Proposed Enhancements**
8		**Conclusion**

Chapter No		Details
9		**Bibliography**
10		**Publication / Competition certificates**
11		**Appendix – Cost sheet , Data sheet**
12		**User Manual** (All screens with proper description/purpose Details about validations related to data to be entered.)

2.   Embedded Systems / IoT Project

Chapter No		Details
1		**Introduction**
	1.1	Company Profile / Institute Profile / Client Profile
	1.2	Abstract
	1.3	Existing System and Need for System
	1.4	Scope of System
	1.5	Operating Environment - Hardware and Software
	1.6	Brief Description of Technology Used 1.6.1 Operating systems used (Windows or Unix) 1.6.2 Database (if applicable)
2		**Proposed System**
	2.1	Study of Similar Systems (If required research paper can be included)
	2.2	Feasibility Study
	2.3	Objectives of Proposed System
	2.4	Users of System
3		**Analysis and Design**
	3.1	Technical requirements – H/W , S/W
	3.2	System Architecture / Block Diagram
	3.3	System Hardware Details
	3.4	Pin Diagrams
	3.5	Interface diagrams
	3.6	Design Sequence
	3.7	System Software Details
	3.8	Process / System Flow chart
4		**Coding**
	4.1	Algorithms
	4.2	Code snippets (if applicable)
5		**Testing**
	5.1	Results & reports
	5.2	Test cases
	5.3	Acceptance Testing
	5.4	Test reports in IEEE format
6		**Limitations of Proposed System**
7		**Proposed Enhancements**

8		**Conclusion**
9		**Bibliography**
10		**Publication / Competition certificates**
11		**Appendix – Cost sheet , Data sheet**
12		**User Manual** (All screens with proper description/purpose Details about validations related to data to be entered.)

3.   ETL Projects

Chapter No		Details
1		**Introduction**
	1.1	Company Profile / Institute Profile / Client Profile
	1.2	Existing System functionality (Source System for which the ANALYTICS is being developed)
	1.3	Business process understanding and specifications 1.3.1 Business Requirement Specifications: 1.3.1. 1 The o/p from BR Analysis are BRS Business Requirement Specifications (Business specific Rules to be mentioned here from analysis point of view) 1.3.1.2 Identify the dimensions, required attributes, measures, filter conditions, adjustments for KPIs going to be used in the Target system and its availability in the Source System. If any gaps suggest remediation of gaps 1.3.2 Business Rules Collection 1.3.3 Identify the Key Performance Indicator (specified by 1.3.4 Establish the User Acceptance Criteria client)
	1.4	Scope of the project
	1.5	Operating Environment - Hardware & Software, Description of Tools / Technology to be used in the Target system 1.5.1.1 Operating systems used (Windows or Unix) 1.5.1.2 RDBMS/NoSql used to build database (mysql/ oracle, Teradata, etc.) 1.5.1.3 ETL tools used (Talend/Informatica, Datastage etc) 1.5.1.4 OLAP/ Data mining/ machine learning/ analytics tools used (Python/ Cognos, BO, etc.) 1.5.1.5 Data visualization tools (power BI / Tableau)
2		**Proposed System**
	2.1	Creating multiple ETL strategies - Specifying metadata details, identifying heterogeneous architectures, processes for I/O only for ETL, scrapping , identifying the volatilities in the channels , designing strategies in the context of the business and existing ERP
	2.2	Comparing them in the context of selected business system (as per the business requirements)
	2.3	Suggesting optimum solution (process)
3		**Analysis and Design**
	3.1	Use Case Diagram
	3.2	Activity diagram to demonstrate Process flow (execution of ETL process)

	3.3	Design of Target system (Elaborate the tiers of DW architecture in the Target System)
	3.4	Database schema / Table specifications of Target system
	3.5	Details of Source & Targets of mapping in the database
	3.6	Details of Load (Full/Incremental etc.)
	3.7	Design of ETL schema/strategy
4	**4.1**	**Design of strategy for Visualization** 4.1.1 Visualizations in support of comparison of performance of various ETL strategies 4.1.2 Data visualization using different techniques (if any)
5		**Drawbacks and Limitations Proposed Enhancements**
6		**Conclusion**

4.   Research Projects

Research projects especially are designed to gain knowledge about some specified area and the deliverable is that knowledge gained, usually encapsulated in some form of report.
Students are expected to contribute something new to academic or practical knowledge in their research area—something original that is more than the accepted knowledge.

Completing a Research Project as part of your coursework is an opportunity to:

- learn to read and interpret other people's research critically by doing your own. This gives you an insight into the effects of practical difficulties and theoretical debates on published research
- develop and apply the knowledge that you have learnt in 4 semesters of your curriculum.
- submit a paper for peer-reviewed publication. (If successful, this will give a boost to your c.v.) If you wish to enroll in a research degree such as PhD, a research project as part of your coursework will assist the committee evaluating your application in assessing whether you are ready to do independent research.

Research Index

1.   Title page

2.   Acknowledgements

You should acknowledge the assistance given to you by your supervisors, and any other person or organization that has helped you in the planning, conduct, analysis or reporting of your project.

3.   Abstract

This is a synopsis of your study question, aims and objectives, background literature, methods, results, key conclusions and recommendations. This should be 250–300 words long and should be very clear and easy to follow.

4.   Introduction

In this section of your report you introduce the subject, provide the background to the topic or problem, outline the study question (or problem or study hypothesis), and outline the aims and objectives of your study.

5.   Literature review

This is a review of the literature on the topic or problem you are studying. It should include a review of any other studies or projects similar or relevant to yours, and perhaps a review of the literature on the method you have chosen if your project tests a new method of research or analysis.

6.   Methods

This section includes the methodology of your research. It will cover such issues as:
In case of Computer Management Research :

- Study design
- Study population, sampling frame and numbers, sampling method
- survey design
- survey or data collection instruments
- protocol for obtaining data
- ethical issues and how they are addressed
- information letters, consent forms
- data management and analysis methods
- statistical analysis and tests
- In case of Computer Science Research:
- Study design
- System Architecture
- Implementation
  - Experimental Implementation
  - Simulation
- Data management and analysis methods
- Analysis and testing

7.   Results

In this section you present the results of your research. Tables, figures and graphs are an excellent means of presenting this sort of information. All tables, figures and graphs, should be numbered consecutively throughout the whole report, and labelled with a clear and concise descriptive title.

8.   Discussion

In this section you interpret your results and discuss their implications, with reference to other published research. Any limitations in your research methodology should also be referred to here. Examiners expect you to acknowledge these limitations as an integral part of your evaluation of your project.

9.   Conclusion

This section summarizes the key results and the conclusions that you can draw from these results. It also needs to reflect what your initial project aims and objectives were.

10.   Recommendations

It is good research practice to make recommendations or to suggest directions for further research or actions as a result of your project findings.

11.   References

This is a list of all the references and sources you used in your literature review, methodology and discussion. This includes books, journal articles, abstracts, conference and symposium papers, media articles, and any form of published literature or comment.

12.   Appendices

This section may contain copies of any questionnaires if any or evaluation instruments used covering letters, participant information and ethics approvals, or additional explanations.