



GOVERNMENT POLYTECHNIC, KOLHAPUR

(An Autonomous Institute of Government of Maharashtra)

Curriculum Document

CURRICULUM : MPECS-2016

(Outcome Based Curriculum)

for

DIPLOMA IN INFORMATION TECHNOLOGY

Secretary

Chairman

Programmewise Board of Studies (PBOS)

Information Technology Programme

Government Polytechnic, Kolhapur

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SECTION – I

**CURRICULUM PHILOSOPHY
AND
STRUCTURE**

1. CURRICULUM DEVELOPMENT : INTRODUCTION AND PROCESS OF DEVELOPMENT OF OUTCOME BASED CURRICULUM

Curriculum Design and Development :

Curriculum is an absolute instructional and effective instrument designed with a student centered approach. It incorporates systematic method of teaching learning process. It is a sequence of planned academic activities; on completion of which the desired programme outcomes are expected to be attained in the student. The curriculum and the course contents are expected to motivate the students to acquire desired level of knowledge and skills. An emphasis and an attempt has been made in the curriculum to get a perfect blending of theoretical concepts and actual requirements of industry. Keen attention has been provided to make it more structured by incorporating the valuable suggestions of industrial experts of PBOs and feedback by the field and academic professionals. An overview of systematic and scientific mode of implementation and evaluation has also been pondered; consequently a practicable model of it has been achieved. It incorporates specific guidelines and assessment criteria for theory/practical/oral modes of evaluation. Specification table for each course has been provided to prepare question paper justifying meticulous coverage.

Curriculum philosophy :

The impacts of globalization and rapid changes in the engineering science and technology have been a great cause of comprehensive and noticeable change in engineering fraternity, hence the institutions. Only way to incorporate such a transformation, is to modify the curriculum, preserving the consistency of engineering education. Frequent review and feedback from the experts and the freedom of autonomous status of the institution have encouraged to undertake relevant changes in the curriculum to make it versatile. Consequently the desired competencies and skills are transformed amongst the students in pursuing their preparedness to cope up with the global changes. It aims to promote self reliance and satisfaction of acquiring modern engineering concepts and multi capabilities within the students to make them model technicians.

“Curriculum is an educational program designed and implemented to achieve specified programme outcomes”

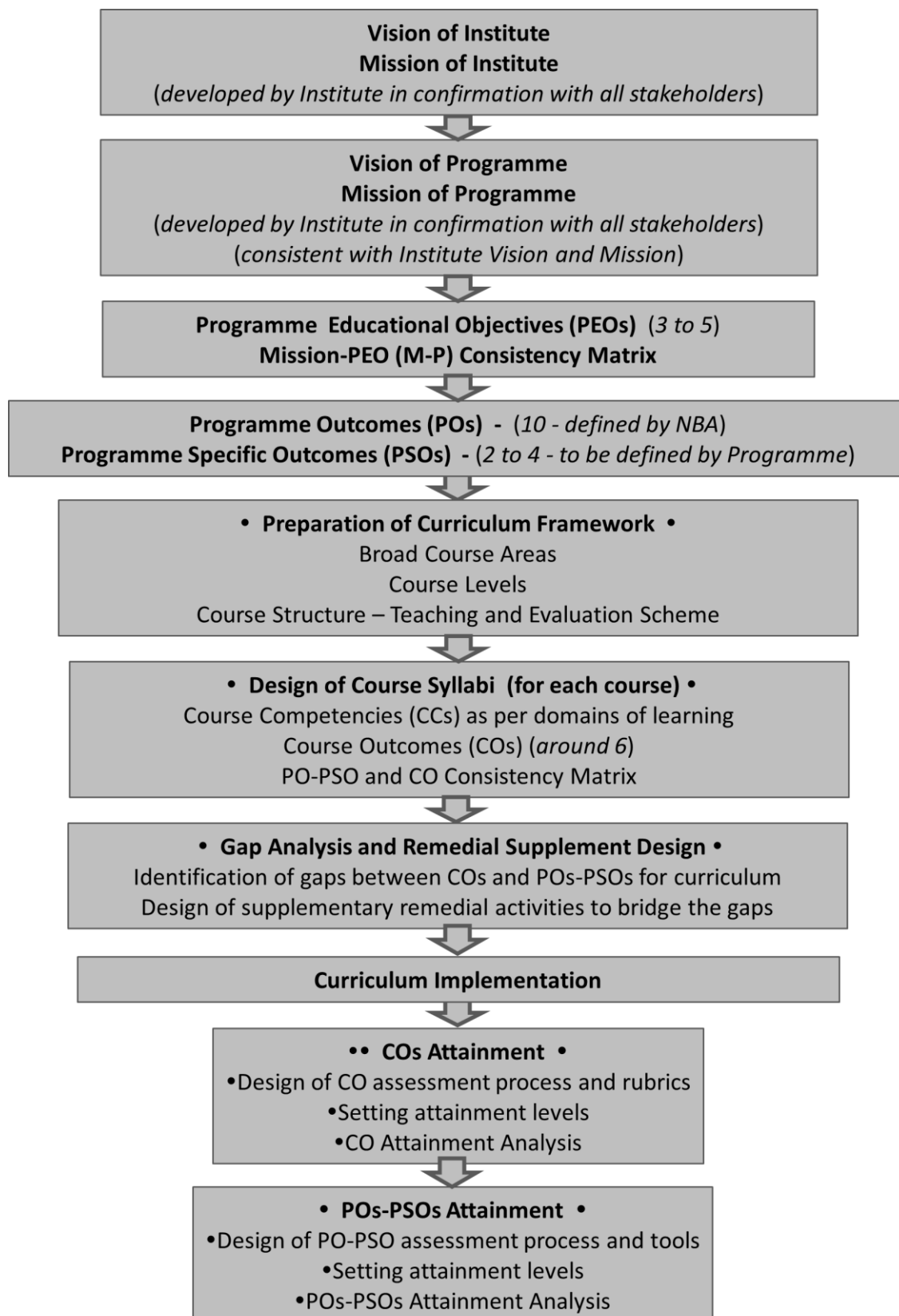
Hence, in a broad sense, a curriculum incorporates the following :

- To define the purpose of education
- To accept systematic planning methods
- To confirm implementation strategies
- To identify and to incorporate needs of industries
- To follow the policy directives
- To cope-up with social concerns
- To aim at personality development of students
- To allow future developments and challenges in emerging science and technology.

Outcome-based Curriculum

Outcome based curriculum is the curriculum based on the concepts of outcome-based education (OBE) philosophy. India is a permanent signatory of the Washington Accord - the international agreement among bodies responsible for accrediting engineering programmes with the National Board of Accreditation (NBA) as the national authority for accrediting degree and diploma programmes in engineering in India. Hence as per the accreditation criteria of the NBA, the curriculum of the Institute is expected to be outcome based.

Outcome Based Education (OBE) is an educational approach in which all the activities of an education system are based on attainment of pre-defined learning outcomes of student. The approach is to be included in the following three aspects of education system :i) Curriculum Design, ii) Curriculum Implementation, iii) Students' Evaluation. The flow diagram shown below summarizes the elements of Outcome-based Education System. The glossary of terms used in academic autonomy and OBE are provided for reference.

OUTCOME BASED EDUCATION SYSTEM

Glossary of terms related to Outcome Based Education

Outcome-Based Education (OBE) - It is an educational approach in which all the activities of an education system are based on attainment of pre-defined learning outcomes of student.

The approach is to be included in the following three aspects of education system :i) Curriculum Design, ii) Curriculum Implementation, iii) Students' Evaluation

Washington Accord and NBA – It is an International Agreement among bodies responsible for accrediting undergraduate engineering degree programmes. Established in 1989, the signatory countries as of 2014 are Australia, Canada, Taiwan, Hong Kong, India, Ireland, Japan, Korea, Malaysia, New Zealand, Russia, Singapore, South Africa, Sri Lanka, Turkey, the United Kingdom and the United States. National Board of Accreditation (NBA), India has become the permanent signatory member of the Washington Accord on 13th June 2014.

The membership of Washington Accord is an international recognition of the quality of undergraduate engineering education offered by the member country and is an avenue to bring it into the world class category. It encourages and facilitates the mobility of engineering graduates and professionals at international level.

NBA accreditation is a quality assurance scheme for higher technical education in India.

The Washington Accord covers engineering degrees and diploma under outcome-based education approach.

Vision of Institute - It is a statement that defines concisely the aspirations to be achieved in the near future by the Institute

Mission of Institute - It is a set of statements that defines the broad steps to be executed to achieve the vision of the Institute

Vision of Programme - It is the vision statement for a particular educational programme (like Civil Engineering Programme, Mechanical Engineering Programme, etc.). Programme Vision should be consistent with the Institute vision

Mission of Programme - It is the set of statements that define the broad steps to be executed to achieve the vision of the educational programme

Programme Educational Objectives (PEOs) - It is a set of 3 to 5 statements defining the objectives to be attained in order to execute the mission

Programme Outcomes (POs) – It is a set of ten generic outcomes, stated by NBA, expected from any engineering diploma-holder in India

Programme-specific Outcomes (PSOs) – It is a set of 2 to 4 outcomes to be defined by the programme under consideration in addition to the POs

Course Outcomes (COs) – It is a set of about 6 outcomes, expected to be attained by student on learning a course. Course Outcomes shall be defined in curriculum for each course. Course outcomes are worded using action verbs like solve, explain, calculate, compare, distinguish, describe, draw, etc.

Mission-PEO Consistency Matrix – It is a matrix showing degree of consistency of PEOs with mission

PO-CO Consistency Matrix – It is a matrix showing degree of consistency of COs with POs and PSOs

Competency – It is the set of specific abilities, categorized as cognitive, psychomotor and affective domains of learning, from which course outcomes statements are derived

Cognitive domain – It is the set of abilities related to thinking

Bloom's Revised Taxonomy of Cognitive Domain : It is a six-level cumulative hierarchy of cognitive abilities in the order of increasing complexity as follows :

Remembering > Understanding > Applying > Analyzing > Evaluating > Creating

Psychomotor Domain : It is the set of abilities related to physical and psychological skills

Taxonomy of Psychomotor Domain : It is a six-level cumulative hierarchy of cognitive abilities in the order of increasing complexity as follows :

Perception > Set > Guided response > Mechanism > Adaptation > Origination

Affective Domain : It is the set of abilities related to attitudinal development

Taxonomy of Affective Domain : It is a five-level cumulative hierarchy of affective abilities in the order of increasing complexity as follows :

Receiving > Responding > Valuing > Organizing > Characterizing

Educational Technology : It is the systematic study of theoretical foundations and material tools to facilitate learning

Glossary of terms used in Academic Autonomy and MPECS

Academic Autonomy – It is the freedom and responsibility offered to the Institute by the Government to attain high quality standards in the following three dimensions :

i) Design of own curricula ii) Conduct of own examinations iii) Award of own diploma

Multi-point Entry and Credit System (MPECS) – It is a system of education in which student can be admitted at different entry levels of qualification and he is offered *credits* along with marks on passing in a course

Credits – It is the number of weekly instructional hours provided for a course in the curriculum

Programme – It is the particular branch of Engineering in which Diploma is awarded. e.g. Civil Engineering Programme, Mechanical Engineering Programme, etc.

Curriculum – It is a document providing plan of the complete academic activity to be conducted by student for award of Diploma in a Programme in tune with the vision of the Institute

Course – It is a particular subject defining study and evaluation unit of the curriculum. e.g. Applied Mechanics, Engineering Drawing-1, etc.

Syllabus – It is the complete academic information regarding a particular course in a curriculum

Course Registration (CR) - It is the procedure to be carried out by every student at the beginning of every semester in which he/she has to declare the courses he/she is going to study in that semester as per academic time table of the Institute. The registration is to be done as per *Rules of Registration* of the Institute.

Examination Registration (ER) - It is the procedure to be carried out by every student at the beginning of every semester in which he/she has to declare the courses in which he/she is going appear for examination in that semester as per examination time table of the Institute. The registration is to be done as per *Rules of Registration* of the Institute.

Curriculum MPECS-2016 - It is the Curriculum of the Institute revised in the year 2016. It is applicable to the students admitted since 2016

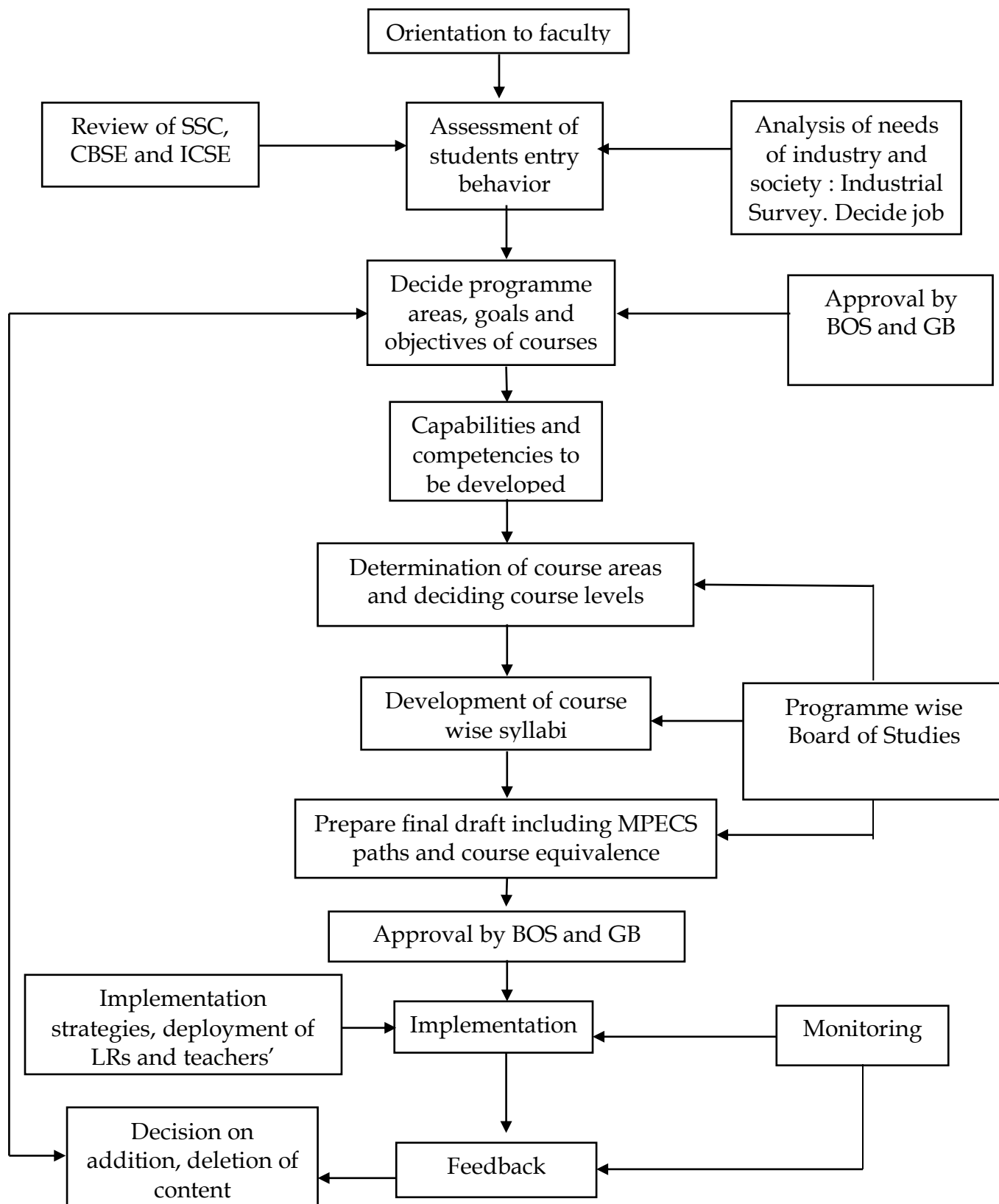
Programme Department – It is the department of the Institute offering Diploma in a particular Programme. e.g. Civil Engineering Department, Mechanical Engineering Department, etc.

Programme Dean – He/she is the Head of Department of a Programme Department

Allied Department – It is department that does not award diploma and contributes to curriculum implementation of many Programmes. e.g. Applied Mechanics Department, Workshop Department, Science Department, English Department, Mathematics Department, etc.

Academic Autonomy and MPECS at Government Polytechnic, Kolhapur –

- Year of award of academic autonomy : 1992 ☐ Year of award of MPECS and Flexibility : 1994
Government Polytechnic, Kolhapur is the first Government Polytechnic in Maharashtra to have been awarded academic autonomy
- Bodies and Cells under Academic Autonomy :
 - i) Governing Body
 - ii) Board of Studies
 - iii) Programme-wise Boards of Studies
- Examination Committee Curriculum Revisions under Autonomy : 1992, MPECS-2001, MPECS-2006, MPECS-2010, MPECS-2013, MPECS-2016
- Award of Diploma in *Convocation Ceremony* every year

Curriculum Development Model :

2. VISION, MISSION, PROGRAMME EDUCATIONAL OBJECTIVES (PEOs), PROGRAMME OUTCOMES (POs) AND PROGRAMME-SPECIFIC OUTCOMES (PSOs)

Vision of Institute :

Institute of high recognition developing competent technicians for quality services or entrepreneurship to cater the needs of industry and society.

Mission of Institute :

- To educate and train in multi-disciplinary multi-level programmes to develop technicians and skilled manpower having global competency
- To ensure employability, encourage entrepreneurship, promote lifelong learning
- To inculcate in the students the qualities of a good citizen at individual, social and professional level
- To provide quality management system with focus on effective student-centric education
- To utilize faculty expertise and Institute infrastructure to render quality consultancy services

Vision of Programme :

Programme with high recognition catering needs of Information Technology industry in tune with the nation's mission for "Digital India"

Mission of Programme :

- To pursue excellence in areas of Information Technology keeping pace with the latest developments.
- To educate and train students to design, develop and test software systems.
- To develop the spirit of team work, innovation and professionalism
- To cultivate attitude of lifelong learning

Programme Educational Objectives (PEOs):

- Engage in continuous learning by upgrading skills in Information Technology and solve real life & professional problems with the knowledge of fundamental science and engineering concepts.
- Select/develop and apply appropriate techniques and IT tools for the design & analysis of the systems.
- Apply engineering and communication skills to analyze complex problems to design and implement the feasible solutions.

Programme Outcomes (POs)

1. **Basic Knowledge:** An ability to apply knowledge of Basic Mathematics, Science and Engineering to solve the engineering problems.
2. **Discipline Knowledge:** An ability to apply discipline-specific knowledge to solve core and / or applied engineering problems.
3. **Experiments and Practice:** An ability to plan and perform experiments and practices and to use the results to solve engineering problems.
4. **Engineering Tools:** Apply appropriate technologies and tools with an understanding of the limitations.
5. **The Engineer and Society:** Demonstrate knowledge to assess societal, health, legal and cultural issues and the consequent responsibilities relevant to engineering practices.
6. **Environment and Sustainability:** Understand the impact of the engineering solutions in societal and environmental context and demonstrate the knowledge and need for sustainable development.
7. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
8. **Individual and Teamwork:** Function effectively as an individual and as a member or leader in diverse / multidisciplinary teams.
9. **Communication:** An ability to communicate effectively.
10. **Lifelong Learning:** Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the context of technological changes.

Programme Specific Outcomes (PSOs)

1. **Design and Development:** Analyze the problem, design algorithm, identify and define computing requirements to its solutions and implement software using suitable platform.
2. **Networking and Database Management:** Configure and administer database servers / network servers to support business environments.

Job profiles and related Competencies for the diploma holder

Competencies:

- ✓ To create leaders, trend-setters for the next generation of the IT Industry.
- ✓ To carry out research and development in IT and its applications.
- ✓ To offer state-of-art information technology education, and imparting skills for building leading-edge and innovative IT applications.
- ✓ To train individuals who would contribute substantially to the ambitious IT goals of the country.

Job Titles:

- ✓ Software engineer
- ✓ Technical support
- ✓ Network engineer
- ✓ Web developer
- ✓ Software tester

3. OVERVIEW AND SALIENT FEATURES OF CURRICULUM : MPECS-2016

3.1 Overview of Curriculum MPECS-2016

Total No. of Credits		180
No. of courses offered	Total	37
	Theory	29
Max. no. courses in a semester		07
Total Maximum Marks		4400
Courses in Level IV and V	No.	13
	Credits	60
	Marks	1600
Courses in Level I	No.	10
	Credits	48
	Marks	1050
Courses in Level II	No.	03
	Credits	11
	Marks	200
Courses in Level III	No.	11
	Credits	61
	Marks	1550
*Courses in Level IV	No.	08
	Credits	43
	Marks	1050
*Courses in Level V	No.	05
	Credits	17
	Marks	550
%Ratio of Th:Pr	Marks-wise	60:40
	Credit-wise	53:47
No. of Allied Courses		02
Optional Courses	No. of courses	03
	Options/courses	01/03
No. of Practical Exams	Internal	10
	External	09
No. of Orals	Internal	09
	External	01

Diploma shall be awarded on the basis of marks obtained in Level IV and Level V courses

3.2 Salient Features of Curriculum MPECS-2016

Addition and deletion of Courses with respect to MPECS-2013 :

1. Android Mobile Application development added as a new course in the curriculum so that students can develop mobile apps for mobile operating systems which is having huge applications in today's online world.
2. Information Security is made as compulsory subject. Students must be aware of the protection of information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction.
3. New Course Cyber Law is added to make students aware about the growing danger from crimes committed against computers, or against information on computers.
4. Cloud Computing is introduced as Cloud-based services are ideal for businesses with growing or fluctuating demands of hardware, software and computing resources.
5. Industrial Organization Management is added instead of Management Information System.
6. Higher Mathematics is removed from curriculum as per suggestion of MSBTE.

Major modifications in Course Contents with respect to MPECS-2013 :

1. Examination Scheme of Basic Electronics is modified.
2. Online Examination are introduced for Computer Fundamentals and Web Page Designing courses.
3. Curriculum of Computer Network is revised.

Changes in Implementation Strategy and Treatment with respect to MPECS-2013 :

1. Mini project is introduced as a part of practical in every semester.
2. Vacation Industrial training of six weeks is made compulsory for students and will be assessed as a part of termwork of Project work.
3. The students to be admitted to directly to second year diploma in MPECS 2016 shall be offered no backlog courses as approved in the Examination Committee Meeting of Institute held on 9th June 2017.
4. Emphasis is given on practical work and practical examination as per guidelines by Director, MSBTE, and Mumbai.

4. TEACHING AND EXAMINATION SCHEME (LEVEL-WISE)

S N	Name of Course	Course Code	Course Abbrev ia-tion	L e v e l	Pre- re- qui- site Course	Teaching Scheme (hours per week)			Examination Scheme (marks)				
						Th	Pract. / Drg. / Tut	Cr edi ts	T h	T S	T W	Pr	Or
Level 1: Foundation Courses													
1	Engineering Physics	CCF102	FPHB	1	NIL	4	2	6	80	20	--	50I	--
2	Engineering Chemistry	CCF104	FCHB	1	NIL	4	2	6	80	20	--	50I	--
3	Basic Mathematics	CCF105	FBMT	1	NIL	3	1	4	80	20	--	--	--
4	Engineering Mathematics	CCF106	FEMT	1	CCF105	3	1	4	80	20	--	--	--
5	Engineering Graphics	CCF109	FEGR	1	NIL	2	4	6	--	--	25	50E	--
6	Computer Fundamentals	ITF101	FCFA	1	NIL	2	2	4	40	10	--	50I	--
7	C Programming	ITF102	FCPR	1	NIL	3	4	7	80	20	--	50I	--
8	Web Page Designing	ITF103	FYPD	1	NIL	2	2	4	40	10	--	25I	--
9	Basic Electronics	ITF104	FBTX	1	NIL	2	2	4	40	10	--	--	50I
10	Elements of Practical Electricity	ITF105	FEPE	1	NIL	1	2	3	--	--	--	--	50I
Level 2 : Life Skills and Professional Skills Courses													
11	Generic Skills	CCF201	FGNS	2	NIL	2	2	4	--	--	25	50I	--
12	Communication Skills	CCF202	FCMS	2	NIL	2	2	4	40	10	--	25I	--
13	Professional Practices	CCF203	FPRP	2	NIL	1	2	3	--	--	--	--	50I
Level 3: Basic Technology Courses													
14	Applied Mathematics	ITF301	FAPA	3	CCF105& CCF106	3	1	4	80	20	--	--	--
15	Digital Electronics	ITF302	FDTE	3	NIL	3	2	5	80	20	--	--	50I
16	Data Communication	ITF303	FDTC	3	NIL	4	1	5	80	20	--	--	50I
17	OOP using C++	ITF304	FCPP	3	NIL	3	4	7	80	20	--	50E	--
18	Database Management System	ITF305	FDBM	3	NIL	4	4	8	80	20	--	50E	--
19	Computer Network	ITF306	FCON	3	NIL	3	2	5	80	20	--	--	50I
20	Operating System	ITF307	FOPS	3	NIL	3	2	5	80	20	--	--	50I
21	Computer archi. & maintenance	ITF308	FCAM	3	NIL	3	2	5	80	20	--	--	50I
22	Programming using .Net	ITF309	FPRV	3	NIL	2	4	6	--	--	50	50E	--
23	Data Structure	ITF310	FDST	3	ITF102 / ITF304	3	4	7	80	20	--	50E	--
24	Elective – 1			3		3	1	4	80	20	50	--	--
Level 4: Applied Technology Courses													
25	Network Administration	ITF401	FNAD	4	ITF306	3	2	5	80	20	--	--	25E
26	Software Engineering	ITF402	FSOE	4	NIL	3	1	4	80	20	--	--	25I
27	Information Security	ITF403	FIFS	4	NIL	3	2	5	80	20	--	--	50I
28	Web Technology	ITF404	FWET	4	NIL	3	4	7	80	20	--	50E	--
29	Linux	ITF405	FLIN	4	NIL	3	2	5	80	20	--	50I	--
30	Java Programming	ITF406	FJAP	4	NIL	3	4	7	80	20	--	50E	--
31	Advanced Java Programming	ITF407	FAJP	4	ITF406	1	4	5	--	--	--	50E	--
32	Elective – 2			4		3	2	5	80	20	--	50I	--
Level 5: Diversified Technology Courses													
33	Project – I	ITF502	FPRO	5	NIL	0	2	2	--	--	50	--	50I
34	Project – II	ITF503	FPRT	5	ITF501	0	4	4	--	--	50	50E	--
35	Industrial Org and Management	CCF501	FIOM	5	NIL	3	0	3	80	20	--	--	--
36	Elective – 3			5		3	0	3	80	20	--	--	--
37	Elective – 4			5		3	2	5	80	20	--	50I	--

Optional Courses for Electives

S N	Name of Course	Course Code	Course Abbreviation	Level	Pre-requisite Course	Teaching Scheme (hours per week)			Examination Scheme (marks)				
						Th	Pract. / Drg. / Tutorial	Credits	Th	TS	TW	Pr	Or
	Elective - 1												
24 A	Microprocessor	ITF311	FMIP	3	NIL	3	1	4	80	20	50	--	--
24 B	Computer Graphics	ITF312	FCOG	3	NIL	3	1	4	80	20	50	--	--
24 C	System Programming	ITF313	FSYP	3	NIL	3	1	4	80	20	50	--	--
	Elective – 2												
32 A	Software Testing	ITF408	FSOT	4	NIL	3	2	5	80	20	--	50I	--
32 B	PHP	ITF409	FPHP	4	NIL	3	2	5	80	20	--	50I	--
32 C	Multimedia Techniques	ITF410	FMMT	4	NIL	3	2	5	80	20	--	50I	--
	Elective – 3												
36 A	Mobile Communication	ITF504	FMO C	5	NIL	3	0	3	80	20	--	--	--
36 B	Distributed System	ITF505	FDIS	5	NIL	3	0	3	80	20	--	--	--
36 C	Cloud Computing	ITF506	FCCM	5	NIL	3	0	3	80	20	--	--	--
	Elective – 4												
37 A	Cyber Law	ITF507	FCLC	5	NIL	3	2	5	80	20	--	--	50I
37 B	Object Oriented Modeling and Design	ITF508	FOOM	5	NIL	3	2	5	80	20	--	--	50I
37 C	Mobile Application Development	ITF509	FMA D	5	NIL	3	2	5	80	20	--	--	50I

5. PATH-WISE COURSE STRUCTURES: Path-1 : Students admitted to First Year - X std. and X std. Tech

S N	Name of Course	Course Code	Course Abbr.	Leve l	Prerequisit e Course	Teaching Scheme (hours per week)			Examination Scheme (Marks)				
						T h	Pr/Tut /Drg.	Cred	T h	T S	T W	Pr	Or
Semester 1													
1	Engineering Physics	CCF102	FPHB	1	NIL	4	2	6	80	20	--	50 I	--
2	Basic Mathematics	CCF105	FBMT	1	NIL	3	1	4	80	20	--	--	--
3	Engineering Graphics	CCF109	FEGR	1	NIL	2	4	6	--	--	25	50 E	--
4	Computer Fundamentals	ITF101	FCFA	1	NIL	2	2	4	40	10	--	50I	--
5	Basic Electronics	ITF104	FBTX	1	NIL	2	2	4	40	10	--	--	50 I
6	Generic Skills	CCF201	FGNS	2	NIL	2	2	4	--	--	25	50I	--
Semester 2													
7	Engineering Chemistry	CCF104	FCHB	1	NIL	4	2	6	80	20	--	50I	--
8	Engineering Mathematics	CCF106	FEMT	1	CCF105	3	1	4	80	20	--	--	--
9	C Programming	ITF102	FCPR	1	NIL	3	4	7	80	20	--	50I	--
10	Communication Skills	CCF202	FCMS	2	NIL	2	2	4	40	10	--	25I	--
11	Web Page Designing	ITF103	FHPD	1	NIL	2	2	4	40	10	--	25I	--
12	Elements of Pract Electricity	ITF105	FEPE	1	NIL	1	2	3	--	--	--	--	50 I
Semester 3													
13	Applied Mathematics	ITF301	FAPA	3	CCF106	3	1	4	80	20	--	--	--
14	Digital Electronics	ITF302	FDTE	3	NIL	3	2	5	80	20	--	--	50 I
15	Data Communication	ITF303	FDTC	3	NIL	4	1	5	80	20	--	--	50 I
16	OOP using C++	ITF304	FCPP	3	NIL	3	4	7	80	20	--	50 E	--
17	Database Management System	ITF305	FDBM	3	NIL	4	4	8	80	20	--	50 E	--
18	Professional Practices	CCF203	FPRP	2	NIL	1	2	3	--	--	--	--	50 I
Semester 4													
19	Computer Network	ITF306	FCON	3	NIL	3	2	5	80	20	--	--	50 I
20	Operating System	ITF307	FOPS	3	NIL	3	2	5	80	20	--	--	50 I
21	Comp. archi. & maintenance	ITF308	FCAM	3	NIL	3	2	5	80	20	50	--	--
22	Programming using .Net	ITF309	FPRD	3	NIL	2	4	6	--	--	50	50 E	--
23	Data Structure	ITF310	FDST	3	ITF102 /304	3	4	7	80	20	--	50 E	--
24	Elective– 1			3		3	1	4	80	20	50	--	--
Vacational Industrial Training Phase- I of 4 weeks assessed in Project-I.													

Semester 5													
25	Network Administration	ITF401	FNAD	4	ITF306	3	2	5	80	20	--	--	25 E
26	Software Engineering	ITF402	FSOE	4	NIL	3	1	4	80	20	--	--	25 I
27	Information Security	ITF403	FIFS	4	NIL	3	2	5	80	20	--	--	50 I
28	Linux	ITF405	FLIN	4	NIL	3	2	5	80	20	--	50I	--
29	Java Programming	ITF406	FJAP	4	NIL	3	4	7	80	20	--	50 E	--
30	Project - I	ITF501	FPRO	5	NIL	0	2	2	--	--	50	--	50 I
31	Elective – 2			4		3	2	5	80	20	--	50I	--
<i>Vacational Industrial Training Phase- I of 2 weeks assessed in Project-II.</i>													
Semester 6													
32	Web Technology	ITF404	FWET	4	NIL	3	4	7	80	20	--	50 E	--
33	Advanced Java Programming	ITF407	FAJP	4	ITF406	1	4	5	--	--	--	50 E	--
34	Ind. Org and Management	CCF501	FIOM	5	NIL	3	0	3	80	20	--	--	--
35	Project - II	ITF502	FPRT	5	ITF501	0	4	4	--	--	50	50 E	--
36	Elective – 3			5		3	0	3	80	20	--		--
37	Elective – 4			5		3	2	5	80	20	--	50I	--

Path-2 : Students admitted directly to Second Year

S N	Name of Course	Course Code	Cours e Abbrevia- tion	L e v e l	Pre- requi- site Course	Teaching Scheme (hours per week)			Examination Scheme (Marks)				
						T h	Pract. / Drg. / Tut	C red	T h	T S	T W	Pr	Or
Semester 3													
13	Applied Mathematics	ITF301	FAPA	3	CCF106	3	1	4	80	20	--	--	--
14	Digital Electronics	ITF302	FDTE	3	NIL	3	2	5	80	20	--	--	50I
15	Data Communication	ITF303	FDTC	3	NIL	4	1	5	80	20	--	--	50I
16	OOP using C++	ITF304	FCPP	3	NIL	3	4	7	80	20	--	50E	--
17	Database Management System	ITF305	FDBM	3	NIL	4	4	8	80	20	--	50E	--
18	Professional Practices	CCF203	FPRP	2	NIL	1	2	3	--	--	--	--	50I
Bridge Courses													
	C Programming	--	--	--	--	2	1	--	--	--	--	--	--
	Basic Mathematics	--	--	--	--	1	--	--	--	--	--	--	--
Semester 4													
19	Computer Network	ITF306	FCON	3	NIL	3	2	5	80	20	--	--	50I
20	Operating System	ITF307	FOPS	3	NIL	3	2	5	80	20	--	--	50I
21	Computer archi. & maintenance	ITF308	FCAM	3	NIL	3	2	5	80	20	50	--	--
22	Programming using .Net	ITF309	FPRD	3	NIL	2	4	6	--	--	50	50E	--
23	Data Structure	ITF310	FDST	3	ITF102 /304	3	4	7	80	20	--	50E	--
24	Elective– 1			3		3	1	4	80	20	50	--	--
Bridge Courses													
	Engineering Mathematics	--	--	--	--	1	--	--	--	--	--	--	--
Semester 5													
25	Network Administration	ITF401	FNAD	4	ITF306	3	2	5	80	20	--	--	25E
26	Software Engineering	ITF402	FSOE	4	NIL	3	1	4	80	20	--	--	25I
27	Information Security	ITF403	FIFS	4	NIL	3	2	5	80	20	--	--	50I
28	Linux	ITF405	FLIN	4	NIL	3	2	5	80	20	--	50I	--
29	Java Programming	ITF406	FJAP	4	NIL	3	4	7	80	20	--	50E	--
30	Project - I	ITF501	FPRO	5	NIL	0	2	2	--	--	50	--	50I
31	Elective – 2			4		3	2	5	80	20	--	50I	--
Semester 6													
32	Web Technology	ITF404	FWET	4	NIL	3	4	7	80	20	--	50E	--
33	Advanced Java Programming	ITF407	FAJP	4	ITF406	1	4	5	--	--	--	50E	--
34	Industrial Organization and Management	CCF501	FIOM	5	NIL	3	0	3	80	20	--	--	--
35	Project - II	ITF502	FPRT	5	ITF501	0	4	4	--	--	50	50E	--
36	Elective – 3			5		3	0	3	80	20	--		--
37	Elective – 4			5		3	2	5	80	20	--	50I	--

First year courses Exempted for DSY entry & Credits allotted

Semester 1													
1	Engineering Physics	CCF102	FPHB	1	NIL	4	2	6	80	20	--	50 I	--
2	Basic Mathematics	CCF105	FBMT	1	NIL	3	1	4	80	20	--	--	--
3	Engineering Graphics	CCF109	FEGR	1	NIL	2	4	6	--	--	25	50E	--
4	Computer Fundamentals	ITF101	FCFA	1	NIL	2	2	4	40	10	--	50I	--
5	Basic Electronics	ITF104	FBTX	1	NIL	2	2	4	40	10	--	--	50I
6	Generic Skills	CCF201	FGNS	2	NIL	2	2	4	--	--	25	50I	--
Semester 2													
7	Engineering Chemistry	CCF104	FCHB	1	NIL	4	2	6	80	20	--	50I	--
8	Engineering Mathematics	CCF106	FEMT	1	CCF105	3	1	4	80	20	--	--	--
9	C Programming	ITF102	FCPR	1	NIL	3	4	7	80	20	--	50I	--
10	Communication Skills	CCF202	FCMS	2	NIL	2	2	4	40	10	--	25I	--
11	Web Page Designing	ITF103	FWPD	1	NIL	2	2	4	40	10	--	25I	--
12	Elements of Practical Electricity	ITF105	FEPE	1	NIL	1	2	3	--	--	--	--	50I

Note : Separate *Supplementary Input Sessions* for necessary content of First Year courses shall be designed and arranged for these students so as to bridge the gap of FY courses

6. EXEMPTIONS FOR COURSES

Eligibility for Exemptions for First and Second Semester Courses of MPECS-2016 for students admitted on X-pass basis

S N	Name of Course	Course Code	Whether eligible for exemption ? (Yes / No)				
			XII Science	XII Tech.	XII MCVC	XII Voc.	ITI
1	Engineering Physics (CE/ME/SM/MT)	CCF101	YES	YES	No	No	No
2	Engineering Physics (EE/IE/ET/IT)	CCF102	YES	YES	No	No	No
3	Engineering Chemistry (CE/ME/SM/MT)	CCF103	No	No	No	No	No
4	Engineering Chemistry (EE/IE/ET/IT)	CCF104	No	No	No	No	No
5	Basic Mathematics	CCF105	YES	YES	No	YES	No
6	Engineering Mathematics	CCF106	YES	YES	No	YES	No
7	Engineering Drawing -1 (CE/ME/MT)	CCF107	No	YES	No	No	No
8	Engineering Drawing-1(SM)	CCF117	No	YES	No	No	No
9	Engineering Drawing -2 (CE/ME/SM/MT)	CCF108	No	YES	No	No	No
10	Engineering Graphics (EE/IT/ IE/ET)	CCF109	No	YES	No	No	No
11	Applied Mechanics	CCF110	No	No	No	No	No
12	Workshop Practices-1 (CE)	CCF111	No	YES	YES	YES	YES
13	Workshop Practices-1 (ME, SM, MT)	CCF112	No	YES	YES	YES	YES
14	Workshop Practices (EE)	CCF113	No	YES	YES	YES	YES
15	Workshop Practices (IE, ET)	CCF114	No	YES	YES	YES	YES
16	Workshop Practices -2 (CE)	CCF115	No	YES	YES	YES	YES
17	Workshop Practices -2 (ME, SM, MT)	CCF116	No	YES	YES	YES	YES
18	Generic Skills	CCF201	No	No	No	No	No
19	Communication Skills	CCF202	No	No	No	No	No

Note : The above eligibility is subject to condition that the student has secured at least 40 % marks in the respective subject.

Students seeking exemption for any other subjects should contact Academic Coordinator / Controller of Examinations.

7. COURSE EQUIVALENCE FOR PREVIOUS MPECS

Name of the course	Course code	Name of the course	Course code	Name of the course	Course code	Name of the course	
MPECS 2006		MPECS 2010		MPECS 2013		MPECS 2016	
Generic Skill	R101	Generic Skill	X101	Generic Skills	CCE201	Generic Skills	CCF201
Communication Skill	R102	Communication Skill	X106	Communication Skills	CCE202	Communication Skills	CCF202
Applied Physics - I	R103	Basic Physics	X102	Engineering Physics	CCE102	Engineering Physics	CCF102
Applied Physics - II	R104	Applied Physics	X108	Engineering Physics	CCE102	Engineering Physics	CCF102
Applied Chemistry	R105	Applied Chemistry	X103	Engineering Chemistry	CCE104	Engineering Chemistry	CCF104
Elements of Pract. Elect.	R106	Elements of Pract. Elect.	IF 103	Elements of Pract. Electricity	ITE110	Elements of Pract. Electricity	ITF105
Basic Mathematics	R107	Basic Mathematics	X104	Basic Mathematics	CCE105	Basic Mathematics	CCF105
Engineering Mathematics	R108	Engineering Mathematics	X110	Engineering Mathematics	CCE106	Engineering Mathematics	CCF106
Engineering Drawing	R109	Engineering Drawing	IF101	Engineering Graphics	CCE109	Engineering Graphics	CCF109
Intro. To Elect. Devices	IT113	Basic Electronics	IF104	Basic Electronics	ITE108	NIL	NIL
Intro. To Elect. Circuits	IT110	Basic Electronics	IF104	Basic Electronics	ITE108	NIL	NIL
Computer Funda. & App.	R111	Computer Fundamentals	IF 102	Computer Fundamentals	ITE103	NIL	NIL
C Programming	IT112	C Programming	IF105	C Programming	ITE104	C Programming	ITF102
		Web Page Design	IF106	Web Page Design	ITE107	NIL	NIL
Computer Workshop	IT114	Computer Fundamentals	IF102	Computer Fundamentals	ITE103	NIL	NIL
Applied Mathematics	IT201	Applied Mathematics	IF201	Applied Mathematics	ITE301	Applied Mathematics	ITF301
Digital Electronics	IT202	Digital Electronics	IF202	Digital Electronics	ITE302	Digital Electronics	ITF302
Analog & Digital Comm.	IT203	Analog & Digital Comm.	IF203	NIL	NIL	NIL	NIL
OOPS Using C++	IT204	OOPS Using C++	IF204	OOP using C++	ITE304	OOP using C++	ITF304
Personality Development	IT205	Personality Development	IF 205	Professional Practices	CCE203	Professional Practices	CCF203
DBMS	IT206	DBMS	IF206	DBMS	ITE305	DBMS	ITF305
Computer Network	IT207	Computer Network	IF207	Computer Network	ITE306	Computer Network	ITF306
Operating System	IT208	Operating System	IF208	Operating System	ITE307	Operating System	ITF307

System Programming	IT209	System Programming	IF209	System Programming	ITE310	System Programming	ITF313
Visual Basic	IT210	Programming using VB.NET	IF210	NIL	NIL	NIL	NIL
Microprocessor	IT 211	Microprocessor	IF 211	Microprocessor	ITE311	Microprocessor	ITF311
Computer Archi. & Main.	IT 212	Computer Archi. & Main.	IF212	Computer Archi. & Main.	ITE308	Computer Archi. & Main.	ITF308
Higher Math's	R228	Higher Math's	R213	Higher Mathematics	ITE312	NIL	NIL
		Computer Graphics	IF213	Computer Graphics	ITE313	Computer Graphics	ITF312
Network Administration	IT301	Network Administration	IF301	Network Administration	ITE401	Network Administration	ITF401
Software Engineering	IT302	Software Engineering	IF302	Software Engineering	ITE402	Software Engineering	ITF402
Data Structure	IT303	Data Structure	IF303	Data Structure	ITE403	Data Structure	ITF403
Internet Technology	IT304	Internet Technology	IF308	Internet Technology	ITE408	NIL	NIL
		Software Testing	IF309	Software Testing	ITE409	Software Testing	ITF408
		Adv. Microprocessor	IF310	NIL	NIL	NIL	NIL
Web Technology	IT305	Web Technology	IF304	Web Technology	ITE404	Web Technology	ITF404
Career & Enter. Develop.	IT401	Career & Enter. Develop.	IF411	NIL	NIL	NIL	NIL
Java Programming	IT402	Java Programming	IF306	Java Programming	ITE406	Java Programming	ITF406
		Adv. Java Programming	IF307	Adv. Java Programming	ITE407	Adv. Java Programming	ITF407
Linux	IT403	Linux	IF305	Linux	ITE405	Linux	ITF405
Project	IT404	Project	IF401	Project – I & Project-II	ITE501 & ITE502	Project – I & Project- II	ITF502 & ITF503
MOC	IT405	Mobile Communication	IF402	MOC	ITE507	MOC	ITF504
Distributed System	IT406	Distributed System	IF403	Distributed System	ITE508	Distributed System	ITF505
Ecommerce	IT407	Ecommerce	IF404	Ecommerce	ITE509	NIL	NIL
Management of Info. Sys.	IT408	Management of Info. Sys.	IF405	NIL	NIL	NIL	NIL
Mgmt. of Info. Tech.	IT409	Management of Info. Tech.	IF406	NIL	NIL	NIL	NIL
		Management	IF407	NIL	NIL	NIL	NIL
		Multimedia Techniques	IF408	NIL	NIL	NIL	NIL
				Multimedia	ITE504	Multimedia	ITF410

				Techniques		Techniques	
		Computer Security	IF409	NIL	NIL		
				Information Security	ITE505	Information Security	ITF403
		OOMD	IF410	NIL	NIL	NIL	NIL
				OOMD	ITE506	OOMD	ITF508
				Env. Studies	CCE204	NIL	NIL
				Data Comm.	ITE303	Data Comm.	ITF303
				Prog. Using .NET	ITE309	Prog. Using .NET	ITF309
				PHP	ITE410	PHP	ITF409
				MIS	ITE503	NIL	NIL

8. PROFORMAS FOR EVALUATION OF TERM WORK, ORALS AND PRACTICALS

GOVERNMENT POLYTECHNIC, KOLHAPUR
Performance for Final Assessment of ORAL / PRACTICAL
By Internal & External Examiner
(For subject having ONLY ORAL / PRACTICAL)

Programme - _____

Summer / Winter Exam - _____ Date - _____

[illegible]

Name and Signature of Internal Examiner Name and Signature of External Examiner

Course Code & Course Name -- _____
 Programme - _____
 Summer / Winter Exam - _____ Date - _____

Name and Signature of Internal Examiner

Summer / Winter Exam - _____ Date - _____

[illegible]

Government Polytechnic, Kolhapur

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Summer / Winter Exam - _____ Date - _____

Name and Signature of Internal Examiner

Summer / Winter Exam - _____ Date - _____

Name and Signature of Internal Examiner

SECTION – II

SYLLABI OF COURSES
(LEVEL-WISE)

LEVEL-I FOUNDATION COURSES

COURSE ID : 1**Course Name : ENGINEERING PHYSICS (EE/IE/IF/ET)****Course Code : CCF102****Course Abbreviation : FPHB****TEACHING AND EVALUATION SCHEME :****Pre-requisite Course(s) : Nil****Teaching Scheme :**

Scheme component	Hours / week	Credits
Theory	04	06
Practical	02	

Evaluation Scheme :

Component	Progressive Assessment		Semester end		Total
	Theory	Practical	Theory	Practical*	
Duration	Average of two tests of 20 marks each	One Skill Test (2 hours) *	One paper (3 hours)	One practical (2 hours)	
Marks	20	--	80	50 I	150

* Assessment as per pro-forma II

I – Internal Examination

RATIONALE :

Physics is the foundation of engineering and technology. The development of all engineering areas requires good understanding of fundamental principles in physics. Studying physics develops scientific methodology and technical aptitude in the students. Applications of principles of physics in engineering fields create interest and motivate the students.

COMPETENCY :

Apply principles of Physics to solve engineering problems as follows :

Cognitive : i) Understanding and applying principles and laws of Physics to simple practical problems/ situations. ii) Observing iii) Classifying iv) Interpreting

Psychomotor : Handling of instruments, apparatus and tools

Affective : Skill of i) working in team ii) curiosity, interest and self-confidence

COURSE OUTCOMES :**CCF102-1** Select proper material in engineering industry by analysis of its physical properties**CCF102-2** Use basic principles of wave motion for related engineering applications**CCF102-3** Use nanotechnology for quality improvement of materials**CCF102-4** Apply principles of optics, electricity to solve engineering problems**CCF102-5** Use LASERs, X-rays and photocell based equipments**CCF102-6** Apply principles of fiber optics for related engineering applications**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX****[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]**

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowled ge	PO 2 Discipli ne knowled ge	PO 3 Experim ents and practice	PO 4 Enginee ring Tools	PO 5 The engineer and society	PO 6 Environ ment and sustaina bility	PO 7 Ethics	PO 8 Individu al and team work:	PO 9 Commu nication	PO 10 Life- long learning	PSO1 Design and develop ment	PSO2 Databas e and Network manage ment
Competency: Apply principles of Physics to solve engineering problems.	3	1	2	1	2	1	-	2	1	2	1	1
CCF102-1 Select proper material in engineering industry by analysis of its physical properties	3	1	2	1	1	1	-	1	1	2	1	1
CCF102-2 Use basic principles of wave motion for related engineering applications	3	1	2	-	1	1	-	2	1	2	1	1
CCF102-3 Use nanotechnology for quality improvement of materials	3	1	1	-	2	2	-	-	1	2	1	1
CCF102-4 Apply	3	1	3	1	2	2	-	2	1	2	1	1

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowled ge	PO 2 Discipli ne knowled ge	PO 3 Experim ents and practice	PO 4 Enginee ring Tools	PO 5 The engineer and society	PO 6 Environ ment and sustaina bility	PO 7 Ethics	PO 8 Individu al and team work:	PO 9 Communi cation	PO 10 Life- long learning	PSO1 Design and develop ment	PSO2 Databas e and Network manage ment
principles of optics, electricity to solve engineering problems												
CCF102-5 Use LASERs, X-rays and photocell based equipments	3	1	2	1	2	1	-	1	1	2	1	1
CCF102-6 Apply principles of fiber optics for related engineering applications	3	1	2	1	2	1	-	1	1	2	1	1

CONTENT :**A) THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome CCF102-1 Select proper material in engineering industry by analysis of its physical properties</i>			
1	ELASTICITY 1.1 Definitions of elasticity, plasticity, rigidity, deforming force, restoring force 1.2 Stress, Strain and their types 1.3 Elastic Limit, Statement of Hooke's law, modulus of elasticity and its types 1.4 Behavior of wire under continuously increasing load- yield point, ultimate stress, breaking stress 1.5 Factor of safety 1.6 Applications of elasticity 1.7 Numerical problems	06	08
2	PROPERTIES OF LIQUID 2.1 INTRODUCTION Definitions of density, specific volume, specific weight, specific gravity, compressibility of liquid 2.2 VISCOSITY 2.2.1 Definition and meaning of viscosity, velocity gradient 2.2.2 Newton's law of viscosity, Coefficient of viscosity 2.2.3 Stokes law (Derivation not required) 2.2.4 Derivation of expression for coefficient of viscosity of liquid by Stokes method	16 (02) (06)	18 (02) (06)

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	2.2.5 Applications of viscosity. 2.3 SURFACE TENSION 2.3.1 Definition and molecular theory 2.3.2 Angle of contact : definition and significance 2.3.3 Capillary action : definition and examples 2.3.4 Derivation of expression for surface tension by capillary rise method (experiment not required) 2.3.5 Effect of temperature and impurity on surface tension 2.3.6 Applications of surface tension No numericals on above topic	(08)	(10)
Course Outcome CCF102-2 Use basic principles of wave motion for related engineering applications			
3	WAVE MOTION 3.1 Definitions of periodic motion, Linear S. H. M. 3.2 Parameters of linear SHM : Amplitudes, Period, Frequency and Phase 3.3 Characteristics of linear SHM 3.4 Concept and definition of wave 3.5 Parameters of wave- Frequency, periodic time, phase and wavelength 3.6 Types of waves (transverse and longitudinal) and their characteristics 3.7 Free and forced oscillations 3.8 Phenomenon of resonance and its applications No numericals on above topic	06	08
Course Outcome CCF102-3 Use nanotechnology for quality improvement of materials			
4	INTRODUCTION TO NANOTECHNOLOGY 4.1 Definition of nanoscale, nanometer, nanoparticle	04	06

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	4.2 Definition and examples of nanostructured materials 4.3 Applications of nanotechnology in electronics, automobile, textile, space, medicine, cosmetics and environment No numericals on above topic		
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Subtopics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome CCF102-4 Apply principles of optics, electricity to solve engineering problems			
5	PROPERTIES OF LIGHT 5.1 Refraction of light 5.2 Laws of Refraction of Light, Snell's law 5.3 Refraction through glass prism 5.4 Derivation of prism formula 5.5 Dispersion & Dispersive Power 5.6 Numerical problems	06	06
6	ELECTRICITY 6.1 Concept of electric current , resistance 6.2 Ohm's law, Specific resistance 6.3 Resistances in series and parallel. 6.4 Wheatstone's Network and Meter Bridge. 6.5 Numerical problems	06	08

Course Outcome CCF102-5 Use LASERs, X-rays and photocell based equipments			
7	MODERN PHYSICS 7.1 PHOTO ELECTRIC EFFECT 7.1.1 Plank's hypothesis 7.1.2 Photon and its characteristics 7.1.3 Photo electric effect and its characteristics 7.1.4 Plank-Einstein equation 7.1.5 Photocell – construction and symbol 7.1.6 Applications of photo electric effect 7.1.7 Numerical Problems 7.2 LASER 7.2.1 Introduction of LASER 7.2.2 Properties of laser 7.2.3 Spontaneous and stimulated emission 7.2.4 Population inversion and optical pumping 7.2.5 Applications of LASER No numericals on above topic 7.3 X-RAYS 7.3.1 Nature and properties of x-rays. 7.3.2 Production of x-rays by Coolidge tube 7.3.3 Applications of x-rays No numericals on above topic	14 (06) (04) (04)	18 (08) (06) (04)
Sr. No.	Topics / Subtopics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome CCF102-6 Apply principles of fiber optics for related engineering applications			
8	FIBER OPTICS 8.1 Optical communication link 8.2 Principle of optical fiber (TIR) 8.3 Structure of optical fiber 8.4 Propagation of light in optical fiber 8.5 Advantages of optical fibers over conventional	06	08

	metal conductors 8.6 Applications of optical fibers No numericals on above topic		
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Section / Topic no.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total marks
		Remember	Understand	Application		
I/1	Elasticity	2	4	2	CCF102-1	08
I/2	Properties of liquids	10	6	2	CCF102-1	18
I/3	Wave motion	4	2	2	CCF102-2	08
I/4	Nanotechnology	2	4	-	CCF102-3	06
II/5	Properties of light	2	2	2	CCF102-4	06
II/6	Electricity	2	2	4	CCF102-4	08
II/7	Modern Physics	8	8	2	CCF102-5	18
II/8	Fiber Optics	2	4	2	CCF102-6	08
	Total	32	32	16		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

B) TERM WORK Term work shall consist of the following :

Laboratory experiments and related skills to be developed :

Sr. No.	Title of Experiment	Skills to be developed	Course Outcome
1	Overview of Field Applications of Physics	i) Information search ii) Information presentation	CCF102-1 To CCF102-6
(Any 10 of the following experiments)			
2	To measure dimensions of given objects by using Vernier Caliper	i) Determine least count and zero error in the measuring instrument. ii) Measuring internal and external dimensions of given objects iii) Handling the measuring instruments for measuring depth, thickness etc. iv) Tabulating observations.	CCF102-1
3	To measure the diameter of bob and thickness of plate by using Micrometer screw gauge	i) Determine least count and zero error in the measuring instrument. ii) Measuring dimensions of given objects iii) Handling the measuring instruments for measuring depth, thickness etc. iv) Tabulating observations.	CCF102-1
4	To determine the viscosity of liquid by Stokes method.	i) Measuring diameter of steel ball using micrometer screw gauge. ii) Measuring terminal velocity of steel ball in the liquid column. iii) Use of stop watch for measurement of time. iv) Tabulating observations.	CCF102-1
5	To determine the surface tension of liquid by capillary rise method	i) Focusing the microscope properly in order to get clear image. ii) Adjusting cross wires of microscope at particular place.	CCF102-1

		iii) Taking readings for main scale and Vernier scale of traveling microscope. iv) Tabulating observations.	
6	To measure unknown resistance of wire by Ammeter – Voltmeter method.	i) Drawing the circuit diagram of the required experiment. ii) Connecting the instruments as per circuit diagram. iii) Measuring the value of potential difference & current in the circuit. iv) Tabulating observations.	CCF102-4
7	To verify Snell's law using glass slab	i) Drawing necessary ray diagram ii) Measuring angles of incidence and refraction iii) Tabulating observations.	CCF102-4
8	To determine refractive index of prism by pin method	i) Removing parallax between the images and the pins observing the refracted ray through a prism. ii) Measuring the angle of refraction correctly iii) Drawing the path of refracted ray through the prism iv) Drawing inference regarding relation between angle incidence & angle of refraction from $i-\delta$ graph v) Tabulating observations.	CCF102-4
9	To determine velocity of sound by resonance tube	i) Adjusting the resonating length by discriminating resonating sound from sound produced by the tuning fork. ii) Measuring internal diameter of resonating tube using vernier caliper iii) Drawing inference & confirming Law $nL = \text{constant}$ iv) Tabulating observations.	CCF102-2
10	To study characteristics of photocell	i) Drawing circuit diagram ii) Handling different delicate instruments. iii) Tabulating observations iv) Drawing graph	CCF102-5

11	To determine the acceleration due to gravity by 'g' by simple pendulum	i) Measuring length of pendulum ii) Finding least count of stopwatch iii) Measuring periodic time with the help of stop watch iv) Tabulating observations.	CCF102-2
12	To measure unknown resistance by Wheatstone's meter bridge.	i) Drawing the circuit diagram for series connections of the resistances. ii) Connecting the resistances for series method as per circuit diagram. iii) Finding the correct position of null point & measuring correct balancing lengths on Meter bridge. iv) Tabulating observations.	CCF102-4

C) INDUSTRIAL EXPOSURE

Sr. No.	Mode of Exposure (Visit/Exp.Lect/Ind.Survey/...)	Topic
1.	Field applications in theory lectures in every topic	All topics in course syllabus
2.	Practical exercise on overview of field applications of Physics	Part of term work

Report of each Industrial Exposure Activity shall be submitted by student as a part of term work for evaluation.

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION**a) Assessment Criteria for Term work :****i) Continuous Assessment of Practical Assignments :**

Every practical assignment shall be assessed for 25 marks as per given criteria .

Domain	Particulars	Marks out of 25
Cognitive	Understanding	05
	Observations, calculations & Result table	05
Psychomotor	Operating Skills	05
	Neat & complete circuit Diagram / schematic Diagram.	05
Affective	Discipline and punctuality Decency and presentation	5
TOTAL		25

ii) Progressive Skill Test :

One mid-term Progressive Skill Test of 25 marks shall be conducted as per criteria given below

Criteria for Continuous Assessment of Practical work and Progressive skill Test :

Sr. No.	Criteria	Marks allotted
1	Neat & complete circuit Diagram / schematic Diagram.	05
2	Observations & Result Table	05
3	Sample Calculations with relevant Formulae.	05
4	Proper Graphs & Procedure / workmanship Safety measures	05
5	Oral Based on Term Work	05
	Total	25

b) Criteria for assessment at semester end practical exam :

Every student has to perform one practical within 2 hours at semester end practical exam which shall be assessed as per following criteria.

Sr. no	Criteria	Marks allotted
1	Preparedness for practical	10
2	Correct figures / diagrams	10
3	Observation tables	10
4	Result table / calculations / graphs	10
5	Safety / use of proper tools	10
	Total	50

INSTRUCTIONAL STRATEGIES :**Instructional Methods :**

1. Lectures cum Discussions 2. Regular Home Assignments. 3. Laboratory work

Teaching and Learning resources:

1. Chalk board 2. Video clips 3. Slides 4. Item Bank 5. Charts

REFERENCE MATERIAL :**a) Books / Codes**

Sr. No.	Author	Title	Publisher
1.	B.G. Bhandarkar	Applied Physics	Nirali publications
2.	Manikpure – Deshpande	Applied Physics	S. Chand publications
3	Narkhede, Pawar, Sutar	Applied Science	Nirali publications
4	Shelake, Shinde, Adwankar	Applied Science	Vision publications
5	B.L. Theraja	Engineering Physics	S. Chand Publishers – New Delhi

6	Beiser	Concept of modern physics	Tata Mc-Graw Hill
7	E. ZebroWski	Physics for Technicians	Tata Mc-Graw Hill
8	V. Rajendran	Engineering Physics	Tata McGraw-Hill Publications

b) Websites

- i) <http://www.physicsclassroom.com>
- ii) <http://scienceworld.wolfram.com/physics/>
- iii) <http://physics.about.com/>

* * *

COURSE ID : 2**Course Name : CHEMISTRY OF ENGINEERING MATERIALS****Course Code : CCF104****Course Abbreviation : FCHB****TEACHING AND EVALUATION SCHEME:****Pre-requisite Course(s) : <nil>****Teaching Scheme:**

Scheme component	Hours / week	Credits
Theory	04	06
Practical	02	

Evaluation Scheme:

Component	Progressive Assessment		Semester end		Total
	Theory	Practical	Theory	Practical*	
Duration	Two tests (1 hour each)	One Skill Test (2 hours)	One paper (3 hours)	One practical (2 hours)	
Marks	20 each	25	80	50*	150

* Assessment as per pro-forma II.

RATIONALE:

This course provides knowledge of chemical properties of materials and selection of appropriate material for specific applications in the field of engineering. Study of different polymers, insulators or dielectrics, adhesives and their applications in electrical appliances, electronic industries etc., study of corrosion and methods of prevention will make students realize importance of care and maintenance of machines and equipments. The contents of this subject are designed to enhance student's reasoning capacity and capabilities in solving challenging problems in engineering field.

COMPETENCY:

Apply principles of advanced chemistry to solve engineering problems.

Cognitive: Understanding concepts of chemistry for applications in the area of engineering.

Psychomotor:

- i) Sketching and labeling the diagrams for extraction of copper
- ii) Experimentally analyzing the water samples for preparing potable water by different methods.
- iii) Preparing chart of showing percentage, composition, properties and industrial applications of solders.

Affective: Attitude of i) Accuracy ii) Safety iii) Punctuality

COURSE OUTCOMES:

CCF104-1 Apply the basic principles of chemistry in Engineering field.

CCF104-2 Use electrochemistry for electroplating and electro-refining as industrial applications.

CCF104-3 Interpret the reasons of corrosion suggesting remedies using appropriate techniques.

CCF104-4 Use relevant water treatment process to solve industry problems.

CCF104-5 Select proper type of cell based on the requirement in electrical/ electronics and computer engineering.

CCF104-6 Assist in monitoring extraction of copper.

CCF104-7 Select insulators, polymer, adhesives, composite materials for different applications in computer engineering.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX[**Note : Correlation levels** : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Networking and database management
Competency: Apply principles of advanced chemistry to solve engineering problems	3	3	3	3	2	2	-	2	2	2	1	-
CCF104-1. Apply the basic principles of chemistry in Engineering field.	3	3	2	-	2	-	-	2	2	2	-	-
CCF104-2 Use electrochemistry for electroplating and electro-refining as industrial applications.	3	3	2	3	2	1	-	2	1	2	1	-
CCF104-3 Interpret the reasons of corrosion suggesting remedies using appropriate techniques.	3	3	3	3	3	-	-	2	1	3	1	-
CCF104-4 Use relevant water treatment process to solve industry problems	3	3	3	1	3	2	-	2	1	1	1	-
CCF104-5 Select proper type of cell based on the requirement in electrical/electronics and computer engineering	3	3	2	3	3	-	-	1	1	2	2	-

Competency and COs	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Networking and database management
CCF104-6 Assist in monitoring extraction of copper..	3	3	3	2	3	-	-	3	2	3	1	-
CCF104-7 Select insulators, polymer, adhesives, composite materials for different applications in computer engineering.	3	2	1	2	3	-	-	2	1	3	2	1

CONTENT:**A. THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
CCF104-1 Apply the basic principles of chemistry in Engineering field.			
1	ATOMIC STRUCTURE 1.1 Atom :Fundamental particles, Nature of atom 1.2 Atomic Number, Mass Number, Isotopes and isobars 1.3 Bohr's theory of atom 1.4 Statement of Hund's rule of maximum multiplicity,Pauli's exclusion principle Aufbau's principle 1.5 Rules of distribution of planetary electrons 1.6 Electronic configuration of atoms with atomic number 1-30 1.7 Lewis and Langmuir's concept of stable electronic configuration 1.8 Electovalency and Co-valency 1.9 Formation Of electrovalent compounds- NaCl, MgO 1.10 Formation of Covalent compounds-H ₂ O,CO ₂	07	08
CCF104-2 Use electrochemistry for electroplating and electro-refining as industrial applications.			
2	ELECTROCHEMISTRY 2.1 Definitions- Conductor, Electrolyte,Electrode 2.2 Difference between metallic conduction and electrolytic conduction	07	08

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	2.3 Distinguish between Atom & Ion 2.4 Arrhenius Theory Of Ionisation 2.5 Degree of Ionisation & Factors affecting degree of ionisation 2.6 Electrolysis of CuSO ₄ solution by using a) Pt electrodes b) Cu-electrodes 2.7 Industrial applications of electrolysis 2.7.1 Electroplating 2.7.2 Electro refining of Cu 2.8 Faraday's Laws of Electrolysis 2.9 Numerical problems based on Faraday's laws		
CCF104-3 Interpret the reasons of corrosion suggesting remedies using appropriate techniques			
3.	CORROSION AND PROTECTIVE COATING 3.1 Definition & types of corrosion 3.2 Dry or Atmospheric corrosion , Oxide Film Formation & its types ,Factors affecting atmospheric corrosion 3.3 Wet or electrochemical corrosion 3.4 Factors influencing immersed corrosion 3.5 Methods of protection of metal from corrosion - Hot dipping (Galvanizing & Tinning) ,Metal spraying, Metal cladding, Cementation or sherardizing	07	08
CCF104-4 Use relevant water treatment process to solve industry problems.			
4	WATER 4.1 Impurities in natural water 4.2 Hard water & Soft water 4.3 Hardness of water- Temporary & Permanent 4.4 Reactions of hard water with soap	11	16

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	4.5 Disadvantages of hard water for domestic & Industrial purpose - Textile Industry, Sugar Industry, Paper Industry Dying Industry 4.6 scale formation in boilers , it's causes, disadvantages & removal of scale 4.7 Sterilization of water - Chlorination –by Cl ₂ , bleaching powder, chloraamine with chemical reactions 4.8 Ion Exchange method to remove total hardness of water 4.9 pH definition, pH scale , applications of pH in boiler, sugar industry & sewage		
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Subtopics	Lectures (Hours)	Theory Evaluation (Marks)
CCF104-5 Select proper type of cell based on the requirement in electrical/ electronics and computer engineering.			
5	CELL AND BATTERIES 5.1 Definition of Electrochemical cell, Battery, Charge, Discharge, Closed Circuit Voltage, Electrochemical couple, Internal resistance, Open Circuit Voltage, Separator, E.M.F. 5.2 Classification of Batteries such as – Primary,		08

	Secondary and Reserve Batteries 5.3 Construction, Working and Applications of a Primary Cell such as Dry Cell , Secondary Cell such as Lead Acid Storage Cell 5.4 Charging and Discharging of Lead Acid Storage Cell 5.5 Hydrogen-Oxygen fuel cell, its chemical reactions &advantages 5.6 Introduction of solar cell	08	
CCF104-6 Assist in monitoring extraction of copper.			
6	METALLIC CONDUCTORS 6.. 1 Occurrence of metals 6.2 Distinction between mineral & ore 6.3 Definition of flux, Gangue & Slag 6.4 Steps involved in metallurgy-Flow chart 6.4.1 Concentration of ores—Physical Methods 6.4.2 Gravity Separation Method 6.4.3 Electromagnetic separation 6.4.4 Froth floatation method 6.5 Chemical Methods 6.5.1 Calcination & Roasting . 6.6 Important ores of copper Metallurgy of copper-Extraction of copper from copper pyrites by concentration , roasting, smelting , Bessemerisation ,Electrorefining 6.7 Physical chemical properties (action of air ,water &acids) 6.8. Uses of Copper	12	14

7	SOLDERS 7.1 Definition of alloy , classification of alloys & purposes of making alloy 7.2 Composition, properties & applications of 7.2.1 Soft solder. 7.2.2 Tinmann’s solder, 7.2.3 Brazing alloy , 7.2.4 Plumber’s solder 7.2.5 Rose metal 7.2.6 Woods metal	03	06
8	SEMICONDUCTORS 8.1 Definition of semiconductor 8.2 Properties & Applications of Semiconductors such as 8.2.1 Silicon 8.2.2 Germanium 8.2.3 Graphite 8.2.4 Silicon carbide	02	04

CCF104-7 Select insulators, polymer, adhesives, composite materials for different applications in computer engineering.			
9	<p>CHEMISTRY OF NONMETALLIC ENGINEERING MATERIALS</p> <p>INSULATORS</p> <p>9.1.1 Definition & Characteristics of insulator</p> <p>9.1.2 Characteristics of good insulator</p> <p>9.1.3 Preparation, properties & uses of glass wool, Thermocole,</p> <p>9.1.3 Properties & uses of Asbestos, Ceramics, mica</p> <p>9.2 POLYMERS</p> <p>9.2.1 Definition of Polymer, Polymerization, types of polymerisation</p> <p>9.2.2 Properties & uses of Teflon & Bakelite</p> <p>9.3 ADHESIVES</p> <p>9.3.1 Definition of Adhesives</p> <p>9.3.2 Characteristics of good Adhesives</p> <p>9.3.3 Properties & uses of Adhesives.</p> <p>9.4 COMPOSITE MATERIALS</p> <p>9.4.1 Definition, Classification, Properties, Application Of composite materials</p>	07	08
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Section / Topic no.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total marks
		Remember	Understand	Application		
I / 1	Atomic structure	06	02	-	CCF104-1	08
I / 2	Electrochemistry	02	02	04	CCF104-2	08
I / 3	Corrosion & protective coating	04	02	02	CCF104-3	08
I / 4	Water	08	04	04	CCF104-4	16
II/5	Cell & Batteries	04	02	02	CCF104-5	08
II/6	Metallic conductors	08	03	03	CCF104-6	14
II/7	Solders	02	02	02	CCF104-6	06
II/8	Semiconductors	02	02	-	CCF104-6	04
II/9	Chemistry of nonmetallic engg. materials	02	02	04	CCF104-7	08
	Total					80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

B. TERM WORK Term work shall consist of the following :

Laboratory experiments and related skills to be developed :

Sr. No.	Title of Experiment	Skills/Competencies to be developed	Course Outcome
1	Introduction to Chemistry laboratory	Awareness of chemicals glasswares & instruments used in chemistry laboratory	CCF104-1
2	Preparation of 1 N, 0.5 N & 0.1 N Solutions of different chemicals like NaOH, HCl, Oxalic acid, FeSO ₄ , etc.	Skill of weighing, handling Glassware & measuring solutions	CCF104-1

3	Titration of strong acid and strong bases (HClX,NaOH)	Skills of determining accurate end point of titration & development of measurement skills.	CCF104-1
4	Titration of strong acid,strong base& weak acid (HCl X NaOH X ,H ₂ C ₂ O ₄ .H ₂ O	Skills of determining accurate end point of titration & development of measurement skills.	CCF104-1
5	Titration of weak base , strong acid & strong base (Na ₂ CO ₃ X H ₂ SO ₄ X KOH	Skills of determining accurate end point of titration & development of measurement skills.	CCF104-1
6	Estimation of chloride content in water by Mohr' s method	Measurement skill utilization of practical data for testing & estimation	CCF104-4
7	Determination of amountofCa and Mg ions present in given sample of water by E.D.T.A method	Measurement skill utilization of practical data for testing & estimation	CCF104-4
8	Estimation of viscosity of oils by Ostwald's method	Measurement skill utilization of practical data for testing & estimation	CCF104-1
9	Estimation of Ca in limestone.	Measurement skill utilization of practical data for testing & estimation	CCF104-6
10	Estimation of % of Fe in given sample of steel	Measurement skill utilization of practical data for testing & estimation	CCF104-6
11	Report of expert lectures demo	Application of chemistry in engineering field	CCF104-6
	Report of market survey	Collection of data	CCF104-4

Criteria for Continuous Assessment of Practical work

Every practical assignment shall be assessed for 50 marks as per following criteria :

Domain	Particulars	Marks out of 50
Cognitive	Understanding	05
	Application	05
Psychomotor	Operating Skills	10
	Writing skills	10
Affective	Discipline and punctuality	10
	Timeliness and accuracy	10
TOTAL		50

Progressive Skill Test:

One mid-term *Progressive Skill Test* of 25 marks as per following criteria.

Domain	Particulars	Marks out of 50
Cognitive	Understanding	05
	Application	05
Psychomotor	Operating Skills	05
	Writing skills	05
Affective	Discipline and punctuality	05
	Timeliness and accuracy	
TOTAL		25

Final marks of term work shall be awarded as per *Assessment Pro-forma II*.

C) INDUSTRIAL EXPOSURE :

(Included in *Laboratory Manual for Applied Mechanics*)

SN	Mode of Exposure	Topic
1.	Lecture demos by industry experts	Chapter of theory syllabus
2.	Market survey of apparatus and chemicals	Term work assignment

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

1. Lectures cum Demonstrations
2. Classroom practices

3. Home Assignments

Teaching and Learning resources :

1. Chalk board
2. LCD presentations
3. Audio presentations
4. Item Bank

REFERENCE MATERIAL :a) Books / IS Codes

Sr. No.	Author	Title	Publisher
1.	Jain & Jain	Engineering chemistry	Dhanpatrai publishing co.
2.	S. C. Rangawala	Engineering materials	Engineerin publication
3.	Jain & Agarwal	Metallurgical Analysis	Agarwal publications
4.	O. P. Khanna	Material science & technology	Khanna publication on 2006
5.	Rollason	Metallurgy for Engineers	ASM publication
6.	J. C. Kuriacose	Chemistry in Engineering & Vol. 1 & 11	
7.	P. C. Jain	Chemistry of Engineering Materials	
8	S. S. Dara	A text of Engineering Chemistry	

b) Websites

- iv) www.substech.com
- v) www.kentchemistry.com
- vi) www.chemcollective.org
- vii) www.wqa.org
- viii) www.chemistryteaching.com

COURSE ID : 3**Course Name : BASIC MATHEMATICS****Course Code : CCF105****Course Abbreviation : FBM T****TEACHING AND EVALUATION SCHEME :****Pre-requisite Course(s) : <nil >****Teaching Scheme :**

Scheme component	Hours / week	Credits
Theory	03	04
Practical	01	

Evaluation Scheme :

Component Details and Duration	Progressive Assessment		Term End		Total
	Theory	Tutorials	Theory	Practical	
	Average of two tests of 20 marks each	As mentioned in the syllabus	Term End Theory Exam (03 hours)	NIL	
Marks	20	--	80		100

RATIONALE:

Mathematics is an important prerequisite for the development and understanding of engineering and technological concepts. For an engineer and technologist, knowledge of mathematics is an effective tool to pursue and master the applications in the engineering and technological fields. Algebra provides the language and abstract symbols of mathematics. The topics Matrices and Determinants are helpful for finding optimum solution of system of simultaneous equations which are formed in the various branches of engineering using different parameters. Trigonometry is the study of triangles and angles. Contents of this subject will form foundation for further study in mathematics.

Competency:

Apply principles of Basic Mathematics to solve mathematical problems as follows -

- 1.Cognitive:** To understand the mathematical concepts
- 2. Psychomotor:** Proper handling of scientific calculator
- 3. Affective :** Attitude of accuracy, punctuality, proper reasoning and presentation

COURSE OUTCOMES:

The student will be able to:

CCF105-1 : To solve simultaneous equations using Cramer's rule.

CCF105-2 : To resolve a given function into partial fractions.

CCF105-3 : To solve simultaneous equations by using inverse of matrix method.

CCF105-4 : To expand any binomial expression for positive integral index.

CCF105-5 : To memorize and solve problems using trigonometric formulae.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[**Note : Correlation levels :** 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Database and Network management
Competency: Apply principles of Basic Mathematics to solve mathematical problems	3	2	3	2	-	-	1	2	1	3		
CCF105-1 : To solve simultaneous equations using Cramer's rule.	3	2	2	-	-	-	1	1	1	3		
CCF105-2 : To resolve a given function into partial fractions.	3	2	3	-	-	-	1	1	1	3		
CCF105-3 : To solve simultaneous	3	2	3	1	2	-	1	2	3	3		

equations by using inverse of matrix method.													
CCF105-4 :To expand any binomial expression for positive integral index.	3	2	3	1	2	-	1	2	3	3			
CCF105-5 :To memorize and solve problems using trigonometric formulae.	3	2	3	1	2	-	1	2	3	3			

CONTENT :**A) THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome CCF105-1 : To solve simultaneous equations using Cramer's rule			
1	Determinants 1.1 Definition of nth order determinant 1.2 Expansion of second and third order determinants 1.3 To solve simultaneous equations having 3 unknowns using Crammer's Rule 1.4 Consistency of equations using Determinants	04	06
Course Outcome CCF105-2 :To resolve a given function into partial fractions			
2	Partial Fractions 2.1 Definition of rational, proper and improper fractions 2.2 Various cases of Partial fractions and Examples	06	12

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome CCF105-1 : To solve simultaneous equations using Cramer's rule			
Course Outcome CCF105-3 :To solve simultaneous equations by using inverse of matrix method			
3	Matrices 3.1 Definition of a matrix, Types of matrices 3.2 Algebra of matrices 3.3 Equality of two matrices, Transpose of a matrix 3.4 Minor and Co-factor of an element of a matrix 3.5 Adjoint and Inverse of a matrix 3.6 Solution of simultaneous equations by Inverse of a matrix method	10	16
Course Outcome CCF105-4 :To expand any binomial expression for positive integral index.			
4	Binomial Theorem 4.1 Statement of theorem for positive integral power 4.2 Expansion 4.3 Simple Examples on expansion	04	06
	Total	24	40
<p>1.Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.</p> <p>2.In each topic, corresponding applications will be explained</p>			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome CCF105-5 :To memorize and solve problems using trigonometric formulae.			
5	Trigonometric Ratios and Identities 5.1 Fundamental Identities(Simple examples) 5.2 Definition of radian measure 5.3 Conversion of degree into radian and vice versa of standard angles	02	04
6	Trigonometric ratios of Compound and Allied Angles 6.1 Proofs of sine ,cosine and tan of (A+B) and (A-B) 6.2 Examples	06	08
7	Trigonometric ratios of Multiple Angles 7.1 Proofs of sine, cosine and tangent of 2θ , 3θ 7.2 Examples	05	10
8	Factorization and Defactorization Formulae 8.1 Proofs of above formulae 8.2 Examples	04	08
9	Inverse Trigonometric Ratios 9.1 Definition 9.2 Principle value 9.3 Proof of standard formulae 9.4 Examples	07	10
	Total	24	40
1.Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (level wise)			Total Marks
		Knowledge	Comprehension	Application	
1	Determinants	-	2	4	06
2	Partial Fractions	2	2	8	12
3	Matrices	2	2	12	16
4	Binomial Theorem	2	-	4	06
5	Trigonometric Ratios and Identities	2	-	2	04
6	Allied Angles	2	2	4	08
7	Compound Angles	2	-	8	10
8	Factorisation & De-factorisation angles	2	-	6	08
9	Inverse Trigonometric ratios	2	2	6	10
TOTAL		16	10	54	80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

B) TUTORIALS

Sr.No	Topics	Tutorial Content (10 problems in each tutorial)
1	Determinants	Examples on expansion of determinants , Cramer's rule, consistency of equations.
2	Partial Fractions	To resolve given function into partial fractions-Different cases
3	Matrices	Examples on addition ,Subtraction and Multiplication of Matrix
4	Matrices	To find adjoint ,Inverse of a given matrix, To solve simultaneous equation by Matrix method
5	Binomial Theorem	To expand $(x+y)^n$ by Binomial theorem,

6	Trigonometric Ratios and Identities	Examples on conversion of degree to radian and vice versa, simple examples on trigonometry.
7	Allied Angles	Examples on Allied angles
8	Compound Angles	Examples on Compound angles
9	Factorisation & De-factorisation angles	Examples on Allied angles
10	Inverse Trigonometric Ratios	Examples on principle value and trigonometric functions

INSTRUCTIONAL STRATEGIES :**Instructional Methods:**

1. Lectures cum Demonstrations
2. Tutorials

Teaching and Learning resources:

1. Chalk board
2. Item Bank

REFERENCE MATERIAL :**a) Books:**

Sr. No.	Author	Title	Publisher
1.	G.V. Kumbhojkar	A Text Book on Engineering Mathematics (First Year Diploma	PhadakePrakashan, Kolhapur
2.	Patel,Rawal and others	Basic Mathematics	NiraliPrakashan,Pune
3.	P.M.Patil and Others	Basic Mathematics	Vision Prakashan, Pune
4.	Engineering Mathematics	S. S. Sastry	Prentice Hall of India
5.	S.P.Deshpande	Mathematics for polytechnic	Pune Vidyarthi Griha,Pune

b) Website

- i) www.khanacademy.org
- ii) www.easycalculation.com
- iii) www.math-magic.com

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COURSE ID : 4**Course Name : ENGINEERING MATHEMATICS****Course Code : CCF106****Course Abbreviation : FEMT****TEACHING AND EVALUATION SCHEME:****Pre-requisite Course(s) : CCF105 Basic Mathematics****Teaching Scheme :**

Scheme component	Hours / week	Credits
Theory	03	04
Practical	01	

Evaluation Scheme :

Component Details and Duration	Progressive Assessment		Term End		Total
	Theory	Assignments	Theory	Practical	
	Average of two tests of 20 marks each	As mentioned in the syllabus	Term End Theory Exam (03 hours)	---	
Marks	20	--	80		100

RATIONALE:

This subject is an extension of Basic mathematics of first semester and a bridge to further study of applied mathematics. The knowledge of mathematics is useful in other technical areas. Differential calculus has applications in different engineering branches. For example concepts such as bending moment, curvature, maxima and minima. Numerical methods are used in programming as an essential part of computer engineering. In Metrology and quality control statistical methods are used to determine the quality and suitability of components. Engineering mathematics lays the foundation to understand technical principles in various fields.

Competency:

Apply principles of Engineering Mathematics to solve Engineering problems as follows-

1.Cognitive: Understanding and applying principles of Engineering Mathematics to

Engineering problems

2. Psychomotor: a) Use of co-ordinate geometry in animation, autocad, computer graphics etc.

b) Proper handling of calculator.

3. Affective : Attitude of accuracy, punctuality, presentation, visualization.

COURSE OUTCOMES:

CCF106-1 : To solve problems on two dimensional co-ordinate geometry for straight line and circles.

CCF106-2 : To find approximate solution of algebraic equations and simultaneous equations by various methods.

CCF106-3 : To find limits of different types of functions using various methods.

CCF106-4 : To solve the problems of maxima, minima and geometrical applications.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Database and Network management
Competency: Apply principles of Engineering Mathematics to solve Engineering problems	3	2	3	2	-	-	1	2	1	3	-	-
CCF106-1 : To solve problems on two dimensional co-ordinate geometry for straight line and circles.	3	2	2	-	-	-	1	1	1	3	-	-

CCF106-2 :To find approximate solution of algebraic equations and simultaneous equations by various methods.	3	2	3	-	-	-	1	1	1	3	-	-
CCF106-3 :To find limits of different types of functions using various methods.	3	2	3	1	2	-	1	2	3	3	-	-
CCF106-4 :To solve the problems of maxima, minima and geometrical applications.	3	2	3	1	2	-	1	2	3	3	-	-

CONTENT:**THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	<i>Course outcome CCF106-1 : To solve problems on two dimensional co-ordinate geometry for straight line and circles.</i>		
1	Point and Distances 1.1 Distance formula (Only mention, No examples) 1.2 Section formula & midpoint formula (No Examples & without proof) 1.3 Centroid of a triangle & Area of Triangle 1.4 Collinearity	02	04

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	<i>Course outcome CCF106-1 : To solve problems on two dimensional co-ordinate geometry for straight line and circles.</i>		
2	The Straight line 2.1 Slope, intercepts & various methods of finding slope 2.2 Conditions for two straight lines to be parallel and Perpendicular to each others 2.3 Various forms of equations of straight line 2.4 Perpendicular distance of a point from a line 2.5 Distance between two parallel lines 2.6 Angle between two straight lines 2.7 Intersection of two straight lines & the equation of line passing through this point of intersection	06	08
3	Circle 3.1 Equations of Circle (various forms) 3.2 Examples to find equation of circles	04	08
	<i>Course outcome CCF106-2 : To find approximate solution of algebraic equations and simultaneous equations by various methods.</i>		
4	Numerical solution of Algebraic Equations 4.1 Bisection Method 4.2 Regula- Falsi Method	06	10
5	Numerical solution to simultaneous equations 5.1 Jacobi's Method 5.2 Gauss-Seidel method .	06	10
	Total	24	40

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	<i>Course outcome CCF106-3 :To find limits of different types of functions using various methods.</i>		
6	Functions 6.1 Definition and Concept of function 6.2 Definition of Odd & Even functions, Explicit & implicit functions, Composite functions, Parametric functions 6.3 Value of a function 6.4 Examples on value of functions, Odd & Even functions, Composite functions	03	06
7	Limits 7.1 Definition 7.2 Limits of algebraic functions by factorization, simplification, rationalization, Limit as $x \rightarrow \infty$ 7.3 Limits of trigonometric functions by factorization, formula $\frac{\sin x}{x}$ as $x \rightarrow 0$, substitution.	06	08
	<i>Course outcome CCF106-4 :To solve the problems of maxima, minima and geometrical applications.</i>		

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	<i>Course outcome CCF106-3 :To find limits of different types of functions using various methods.</i>		
8	Differentiation 8.1 Definition, Derivative of standard functions (without poof), 8.2 Derivative of sum, difference, product and quotient of two or more functions 8.3 Derivative of composite functions 8.4 Derivative of Inverse functions 8.5 Derivative of Implicit functions 8.6 Derivative of Parametric functions 8.7 Derivative of exponential and logarithmic functions 8.8 Logarithmic differentiation 8.9 Differentiation of second order	12	20
9	Applications Of Derivatives 9.1 Geometrical meaning of derivative (To find equation of Tangent and normal) 9.2 Maxima and minima of functions	03	06
	Total	24	40
<p>1.Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.</p> <p>2. In each topic corresponding applications will be explained</p>			

Specification table for setting question paper for semester end theory examination:

Topic No.	Name of topic	Distribution of marks (level wise)			Total Marks
		Knowledge	Comprehension	Application	
1	Point and Distances	2	--	2	4
2	Straight line	2	2	4	8
3	Circle	2	2	4	8
4	Numerical solution of Algebraic Equations and simultaneous Equations	2	2	16	20
5					
6	Functions	2	-	4	6
7	Limits	2	2	4	8
8	Differentiation	4	4	12	20
9					
10	Applications Of Derivatives	--	--	6	6
Total		16	12	52	80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

C. TUTORIALS : Note - Tutorials are to be used to get enough practice

Sr No.	Topic	Tutorial Content (10 problems in each tutorial)
1	Point and Distances	Examples on Centroid of triangle, area of triangle, collinearity
2	Straight line	Examples on different cases of straight line, To find perpendicular distance of a point from a line, angle between two lines, intersection of lines.
3	Circle	To find equation of Circle- Different forms
4	Num. solution of Algebraic & simultaneous Eq	Numerical solution of algebraic equations.
5		Numerical solution of simultaneous equations
6	Functions	Examples on functions
7	Limits	Evaluation of limits by Factorisation, Rationalization, Simplification, Infinity method Evaluation of limits of Trigonometric functions

8	. Differentiation	To find derivatives by product rule, quotient rule, Chain rule, Inverse function, Implicit function
9	. Differentiation	To find derivatives of Parametric function, Logarithmic function, Derivatives of second order
10	Applications of Derivatives.	To find equation of Tangent, Normal & To find Maxima and Minima of a function.

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

1. Lectures cum Demonstrations
2. Tutorials

Teaching and Learning resources:

1. Chalk board
2. Item Bank

REFERENCE MATERIAL:**a) Books:**

Sr. No.	Author	Title	Publisher
1.	G.V. Kumbhojkar	Engineering Mathematics III	PhadakePrakashan, Kolhapur
2.	Patel,Rawal,	Engineering Mathematics	NiraliPrakashan,Pune
3.	Mathematics for Polytechnic	S. P. Deshpande	Pune VidyarthiGriha Prakashan
4.	Sameer Shah	Engineering Mathematics	Tech-Max Publication, Pune
5.	A.M. Vaidya	Applied Mathematics	Central Techno

- b) Websites** i) www.khanacademy.org ii) www.easycalculation.com
 ii) www.math-magic.com

* * *

COURSE ID : 5**Course Name : ENGINEERING GRAPHICS****Course Code : CCE109****Course Abbreviation : FEGR****TEACHING AND EVALUATION SCHEME :****Pre-requisite Course(s) : <nil >****Teaching Scheme: MPECS-2016**

Scheme component	Hours / week	Credits
Theory	02	06
Practical	04	

Evaluation Scheme :

Component	Progressive Assessment		Term End		Total
	Theory	Practical	Practical	Term Work	
Details and Duration	--	One mid-term Skill Test (2 hrs)	External Practical Exam (2 Hours Duration)	As per Proforma I	
Marks	--	-	50 E	25	75

* Assessment as per Pro-forma – II

E-External Examination

RATIONALE :

Engineering Graphics is one of the ways of communication among engineering professionals. It describes scientific facts, concepts, principles and techniques of drawing in any engineering fields to express the ideas and conveying the instructions which are use for carrying out tasks at work place. This preliminary course aims at building a foundation for the further course in drawing and other allied subjects. This subject is useful in developing, drafting and sketching skills of students. So it is necessary to all programmes.

COMPETENCY: Read, draw & Interpret the engineering drawing of simple objects.

Cognitive :Understand various drawing procedures.

Psychomotor :Produce engineering drawing from the given problem.

Affective :Attitude of using i) Procedures ii) Practices iii) Drawing Instruments iv)

Accuracy v) Drafting Skill.

COURSE OUTCOMES :

CCE109-1 Understand various fundamentals in engineering drawing.

CCE109-2 Produce the projection of point, lines & planes inclined to one reference plane.

CCE109-3 Produce orthographic drawing from given pictorial view.

CCE109-4 Produce sectional orthographic drawing from given pictorial view.

CCE109-5 Visualize & draw accordingly the pictorial view by correlating the given views.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Database and Network management
Competency:	3	3	3	3	2	-	-	2	2	3	3	2
CCE109-1	3	3	-	3	-	-	-	1	1	3	3	-
CCE109-2	3	2	-	-	-	-	-	1	1	3	-	-
CCE109-3	3	2	-	-	-	-	-	1	1	3	3	-
CCE109-4	3	2	-	-	-	-	-	1	1	3	3	-
CCE109-5	3	2	-	-	-	-	-	-	-	3	3	-

CONTENT :**A) THEORY :****SECTION -I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	<i>CCE109-1 Understand various fundamentals in engineering drawing</i>		
1	Introduction To Engineering Drawing 1.1 Drawing Instruments and their uses 1.2 Standard sizes of drawing sheets 1.3 Letters and numbers (single stroke vertical) 1.4 Convention of lines and their applications 1.5 Scale (reduced, enlarged & full size) Plain scale and Diagonal scale. 1.6 Dimensioning technique as per SP-46 (Latest Edition) Types and applications of chain, parallel and Co-ordinate dimensioning 1.7 Introduction to CAD software (Basic commands like Draw, modify). 1.8 Advantages of CAD, 1.9. Geometrical constructions	06	10
	<i>CCE109-2 Produce the projection of point, lines & planes inclined to one reference plane</i>		
2	Projection Of Point And Lines 2.1 Projection of points when point is in first quadrant Only 2.2 Projection of Line inclined to one Reference plane and Parallel to other Reference Plane (Both ends of line should be in first quadrant)	04	06

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
CCE109-2 Produce the projection of point, lines& planes inclined to one reference plane.			
3	Projection Of Planes 3.1 Projection of Planes of Circular , Square, Triangular,Rectangular , Pentagonal , Hexagonal Shapes Inclined To One Reference Plane And perpendicular to other Reference Plane. (Planes in First Quadrant Only)	06	06

CCE109-3 <i>Produce orthographic drawing from given pictorial view.</i>				
4	Orthographic Projection 4.1 Introduction of Orthographic Projection-First and Third angle Projection Method 4.2 Conversion of Pictorial view into Orthographic Views. (First angle Projection Method Only) 4.3 Dimensioning Technique as per SP-46	06	16	
CCE109-4 <i>Produce sectional orthographic drawing from given pictorial view.</i>				
5	Sectional Views. 5.1 Types of sections 5.2 Conversion of pictorial view into sectional Orthographic views. (First Angle Projection Method only)	04		
CCE109-5 Visualize & draw accordingly the pictorial view by correlating the given views.				

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
6	Isometric Projection 6.1 Introduction 6.2 Isometric Axis 6.3 Isometric scale 6.4 Drawing of Isometric view and Projection. 6.5 Conversion of Orthographic Views into Isometric view/projection(Including rectangular, cylindrical objects, representation of slots on sloping as well as plane surfaces)	06	12
	Total	32	50
Semester end Practical exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end Practical examination :

Topic No.	Name of topic	Distribution of marks			Total marks
		Knowledge	Comprehension	Application	
1	Introduction To Engineering Drawing	04	02	04	10
2	Projection of Point And Lines	02	02	02	06
3	Projection of Planes	02	02	02	06
4	Orthographic projection	04	04	08	16
5	Sectional Views.				
6	Isometric Projection	04	02	06	12
	TOTAL	16	12	22	50

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

Practical:

List of Practical:

Sr No.	Title of Practical Exercise	Skills / Competencies to be developed	Course Outcome
1	Geometrical Constructions Using CAD (1 Sheet)	To develop drawing skill	CCE109-1
2	Projections of line (1 Sheet)	To develop drawing ability in Projections of line	CCE109-2
3	Projections of Planes (1 Sheet)	To develop drawing ability in Projections of Planes	CCE109-2
4	Orthographic projection(1 Sheet)	To develop drawing ability to draw Orthographic projection	CCE109-3
5	Sectional Views. (1 Sheet)	To develop drawing ability in sectional views	CCE109-4
6	Isometric Projection (2 Sheet) Isometric views of two objects – 1 sheet Isometric Projections of two objects – 1 sheet	To develop ability to draw Isometric projection	CCE109-5

ASSESSMENT CRITERIA FOR TERM WORK**a)Continuous Assessment of Drawing Practical**

Every practical Sheet shall be assessed for **25** marks as per criteria given below:

Sr No.	Criteria	Marks allotted
1	Attendance	05
2	Preparedness	05
3	Correctness and understanding	10
4	Line work and neatness	05
	Total	25

One mid-term *Progressive Skill Test* of **50** marks shall be conducted as per criteria given below:

Sr No.	Criteria	Marks allotted
1	Correctness and understanding	20
2	Line work and neatness	10
3	Dimensioning and judgment without measurement	10
4	Proper use of instrument	10
	Total	50

INSTRUCTIONAL STRATEGIES :**Instructional Methods :**

1. Lectures cum Demonstrations
2. Classroom practices

Teaching and Learning resources :

1. Chalk board
2. LCD presentations
3. Audio presentations
4. Computer, printer etc.
5. Question Bank

a) Reference Books

Sr. No.	Author	Title	Publisher
1.	N. D. Bhatt	Engineering Drawing	Charotar Publishing House 2010
2.	Amar Pathak	Engineering Drawing	Dreamtech Press, 2010
3.	D.Jolhe	Engineering Drawing	Tata McGraw Hill Edu., 2010
4.	M.B.Shah, B.C.Rana	Engineering Drawing	Pearson, 2010
5.	K. Venugopal	Engineering Drawing and Graphics + AutoCAD	New Age Publication, Reprint 2006
6.	IS Code, SP – 46	Engineering Drawing Practice	--

b) Web References :

1)<http://www.design-technology.info/IndProd/drawings/>

2)<http://graphicalcommunication.skola.edu.mt/syllabus/engineering-drawing/>

3)http://en.wikipedia.org/wiki/Engineering_drawing

4)<http://www.engineeringdrawing.org/>

5)http://www.teachengineering.org/view_activity

COURSE ID:06

Course Name : COMPUTER FUNDAMENTALS
Course Code : ITF101
Course Abbreviation : FCFA

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL

Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	2	4
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each to be converted out of 10 marks	i. 25 marks for each practical ii. One PST of 25 marks	Term End Online Theory Exam (01 hour)	--	As per Proforma-II	
Marks	10	--	40	--	50	100

RATIONALE:

Computers play a vital role in various fields like business, academics, defense, budget research, engineering, medicine. In the present Industrial & commercial environment, the technician is expected to use computers skillfully.

The primary purpose of this course is to give an elementary but sound fundamental understanding of how computers work, its basic hardware software components, what basic applications of computer technology currently exist, how they work and basic knowledge and applications of Internet.

COMPETENCY

Apply Fundamental knowledge of computer system to work with simple applications.

Cognitive : i) Identify the basic parts of a computer system and relationships among component.

ii) Describe characteristics and functions of CPU's, motherboard, RAM, expansion connection, hard drives and CD-ROM drives.

Psychomotor : i) Investigate computer system, Network & computer program ii) drawing flow chart for computer programs constructions

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality

COURSE OUTCOMES:

ITF101-1: State types of computers & its application

ITF101-2: Relate functions of hardware & software components of a computer system

ITF101-3: Compare basic differences of among operating systems

ITF101-4: Illustrate computer programs, tools & languages

ITF101-5: Demonstrate importance of computer networks and internet

ITF101-6: Design files of word processors, spreadsheets, presentation software, and database application

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX[**Note : Correlation levels** : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowled ge	PO 2 Discipli ne knowled ge	PO 3 Experim ents and practice	PO 4 Enginee ring Tools	PO 5 The engineer and society	PO 6 Environ ment and sustaina bility	PO 7 Ethics	PO 8 Individu al and team work:	PO 9 Communi cation	PO 10 Life- long learning	PSO1 Design and develop ment	PSO2 Databas e and Network manage ment
Competency: Apply Fundamental knowledge of computer sytem to work with simple applications.	-	2	2	2	1	1	-	1	-	2	-	-
ITF101-1: State types of computers & its application	-	1	1	1	1	-	-	1	-	2	-	-
ITF101-2: Relate functions of hardware & software components of a computer system	-	2	1	1	1	1	-	1	-	2	-	-
ITF101-3: Compare basic differences of among operating systems	-	1	1	1	-	-	-	1	-	2	-	-
ITF101-4: Illustrate computer programs, tools & languages	-	2	2	2	-	-	-	1	-	2	-	-
ITF101-5: Demonstrate importance of computer networks and internet	-	2	2	2	-	-	-	1	-	2	-	-
ITF101-6: Design files of word processors, spreadsheets, presentation software, and database application	-	2	2	2	-	-	-	2	-	3	-	-

CONTENT:

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF101-1 : State types of computers & its application</i>			
1	INTRODUCTION TO COMPUTERS 1.1 History of computers 1.2 Types of computers 1.3 Applications of computers –Education, Business, Medical, Engineering etc.	2	04
<i>Course Outcome ITF101-2 : Relate functions of hardware & software components of a computer system</i>			
2	SYSTEM UNIT 2.1 System Board 2.2 Microprocessor 2.3 Memory and its types 2.4 Expansion cards	2	04
3	HARDWARE COMPONENTS 3.1 Input devices and its connections: Keyboard, Mouse, Scanner, Microphone 3.2 Output devices and its connections: Monitors, Printers, Projectors, Speakers 3.3 Storage devices: Hard disks, Magnetic Tapes, Optical Discs, Pen drive 3.3 Tips on “How to buy a computer”.	4	04

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF101-3 : Compare basic differences of among operating systems			
4	INTRODUCTION TO SOFTWARE 4.1 Types of software 4.1.1 System software 4.1.2 Application Software 4.2 Introduction to Operating System 4.2.1 Definition: Operating System 4.2.2 Role of Operating System 4.2.3 Various Examples of Operating Systems	4	04
Course Outcome ITF101-4 : Illustrate computer programs, tools & languages			
5	COMPUTER PROGRAM 5.1 Purpose of program planning 5.2 Algorithm 5.3 Flowchart 5.4 Pseudocode 5.5 Plan the logic of a computer program 5.6 Commonly used tools for program planning and their use	4	04
6	COMPUTER LANGUAGES 6.1 Computer languages or programming languages 6.2 Three broad categories of programming languages- machine, assembly, and high-level languages 6.3 programming language tools - assembler, compiler, linker, and interpreter	4	04

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	6.4 Concepts of object-oriented programming languages 6.5 concepts such as Subprogram, Characteristics of a good programming language		
Course Outcome ITF101-5 : Demonstrate importance of computer networks and internet			
7	COMPUTER NETWORKS 7.1 Basic elements of a communication system 7.2 Data transmission modes 7.3 Data transmission speed & category 7.4 Data transmission media 7.5 Digital & Analog data transmission 7.6 Concept : Network 7.7 Types of Networks : LAN, MAN, WAN	4	04
8	INTERNET & CYBER LAWS 8.1 Internet basic terminology 8.2 Client, server concepts 8.3 Applications of Internet 8.4 Hardware & software requirements for internet connection 8.4 Various examples of Browsers 8.5 Browsing 8.6 Search Engines 8.7 Virus, Types of Viruses, Virus Protection 8.8 Introduction to Cyber Law 8.9 Information Technology Act of India 2000	4	06

Course Outcome ITF101-6 : Design files of word processors, spreadsheets, presentation software, database application			
9	OFFICE AUTOMATION TOOLS 9.1 MS-Word – Opening menus, toolbars, opening and closing documents, clipboard concept 9.2 MS – Excel – Working and manipulating data with excel, formulas, functions, chart and its types 9.3 MS – PowerPoint – Working with PowerPoint and presentation ,Changing layout, Graphs , Auto content wizard ,Slide show, Animation effects,Normal, outline, Slide sorter, Reading view.	4	06

Laboratory experiments and related skills to be developed :

Sr. No.	Title of Experiment	Skills to be developed	Course outcome
1.	Understanding PC(system unit and connections of internal components)	1. Identify the front and rear panel components of CPU 2. Identify different components inside the CPU cabinet 2.1 Identify different components on motherboard. 2.2 Motherboard connection. 2.3 Graphics card connection. 2.4 Network interface card connection.	ITF101-1
2.	Understanding the storage devices	1. Study various secondary storage devices along with their capacities. 2. Connecting HDD, and CD, DVD drives. 3. Attaching USB devices. Care of the above devices.	ITF101-2
3.	Understanding the input/output devices and their	1. Study of connections of mouse, keyboard, monitor, printer. 2. Install driver software for a printer, Scanner	ITF101-4

	connections	3. Set up a printer & scanner Scan a page, print a test page	
4.	Study of system software with basics of OS	1. Understanding the concept of system and application software. 2. Examples of system software. 3. Study of application software. 4. Understand the concept & functions of Operating system, Examples of Operating system Overview of Windows OS	ITF101-5
5.	Creating and Editing a word document	1. Use of menus and submenus. 2. Type and format the text matter in paragraphs. 3. Set up page size, margins 4. Insert headers and footers, bullets. 5. Use of borders and shading 6. Format picture, word-art, text box etc. 7. Typing text in multi-columns Use of equation editor	ITF101-6
6.	Inserting table and Mail-Merge	Table: 1. Insert,format Table. 2. Sort data in table Mail-Merge: 1. Understand the mail-mergeFacility. 2. Create main document and edit it 3. Create & edit data source 4. Merge the main document anddata source. 5. Merge to file and merge to print.	ITF101-7
7.	Creating and Editing a work-book	1. Use of menus and submenus. 2. Enter the data in worksheet. 3. Creating a table in worksheet. 4. Use of editing commands. 5. Fill series by auto-fill handle, Insert / delete rows, columns and worksheet. Set up page size, margins.& set the print area.	ITF101-7

8	Understanding the basics of presentation software & Creating a new presentation	<ol style="list-style-type: none"> 1. Insert new / duplicate slides 2. Create objects on a slide and use general editing operations. 3. Use of different views in presentation 4. Use standard templates for slides. <p>Use preset animation, slide transition and Prepare speaker notes.</p>	ITF101-8
9	Using advanced features of slide-show	<ol style="list-style-type: none"> 1. Use of custom animation effect 2. Use of action buttons on slides 3. Rehearse time-setting of slide show 	ITF101-9
10	Making use of Internet (Email, Chat, virus protection.)	<ol style="list-style-type: none"> 1. Study of different types of networks. 2. Visit the website. 3. Using search engines. 4. Register online for e-mail ID. 5. Communicate with others using e-mail 6. Chatting 7. Installation, use and update of Anti-virus software <p>Removing detected viruses</p>	ITF101-9
11	Mini Project	Mini Project based on Microsoft office suite which incorporates presentation, database & spreadsheet handling, word processing skills.	

Progressive Skills Test :**Criteria for Continuous Assessment of Practical work and Progressive skill Test:**

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	10
2	Preparedness for practical	05
3	Neat & complete Diagram.	05
4	Observations & computer handling skill	05
5	Use of toolbar, menu bar and short cut keys.	05
6	Logical thinking and approach	10
7	Oral Based on Lab work and completion of task	10
TOTAL		50

Assessment at semester end practical exam as per Pro-forma II.

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1.	Technical ability	20
2.	Communication skill	10
3.	Logical approach	20
	TOTAL.	50

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

1. Lectures cum Discussions
2. Regular Home Assignments.
3. Laboratory experiences and laboratory interactive sessions

Teaching and Learning resources:

1. Chalk board
2. O.H.P.
3. Slides
4. Self-learning Tutors

REFERENCE MATERIAL:**a) Books / Codes**

Sr. No.	Author	Title	Publisher
1.	Sanjay Saxena	A first course in Computers 2003 edition	Vikas Publishing House Pvt Limited
2.	Anita Goel	Computer Fundamentals	Pearson Education India
3.	Sudipto Das	A Complete Guide to Computer Fundamentals	Laxmi Publications
4.	P.K.Sinha	Computer Fundamentals	BPB Publication

b) Websitesix) <http://my.safaribooksonline.com>x) <http://www.edulearn.com>xi) <http://kvsecontents.in/computer-fundamentals>

COURSE ID : 07**Course Name : C Programming****Course Code : ITF102****Course Abbreviation : FCPR****TEACHING AND EVALUATION SCHEME:****Pre-requisite Course(s) : NIL****Teaching Scheme :**

Scheme component	Hours / week	Credits
Theory	3	7
Practical	4	

Evaluation Scheme :

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-II	
Marks	20	--	80	--	50	150

RATIONALE :

This course is designed to develop programming attitude and attract the interest of the students in the C Language. C is a very powerful, widely used, efficient and compact, which combines features of high-level language and low-level language. It is used in many scientific programming situations. It forms the core of the modern languages Java and C++. Almost every set up in software Engineering domain chooses C as a first priority programming language. It acts as a backbone for object oriented programming.

COMPETENCY

Apply concepts of C Programming to solve engineering problems as follows :

Cognitive : Understanding and implementing concepts of procedural programming

Psychomotor : i) Operating Computer system efficiently

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :

ITF102-1 Identify C expressions with character set and operators.

ITF102-2 Apply decision making and branching and looping constructs in programming.

ITF102-3 Implement user defined functions.

ITF102-4 Implement one dimensional and two dimensional arrays.

ITF102-5 Implement library functions for string handling.

ITF102-6 Write C programs using structures and pointers to implement real life examples.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs											PSO1 Design and develop ment	PSO2 Databas e and Network manage ment
	PO 1 Basic knowled ge	PO 2 Discipli ne knowled ge	PO 3 Experim ents and practice	PO 4 Enginee ring Tools	PO 5 The engineer and society	PO 6 Environ ment and sustaina bility	PO 7 Ethics	PO 8 Individu al and team work:	PO 9 Communi cation	PO 10 Life- long learning			
Competency: Apply concepts of C Programming to solve engineering problems	1	2	3	2	2	-	-	2	-	3	3	-	
ITF102-1 Identify C expressions with character set and operators.	-	-	1	-	-	-	-	2	-	3	-	-	
ITF102-2 Apply decision making and branching and looping constructs in programming.	1	1	3	3	1	-	-	2	-	3	2	-	

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Database and Network management
ITF102-3 Implement user defined functions.	-	1	3	3	1	-	-	2	-	3	2	1
ITF102-4 Implement one dimensional and two dimensional arrays.	-	1	3	3	1	-	-	2	-	3	2	1
ITF102-5 Implement library functions for string handling.	-	1	3	3	1	-	-	2	-	3	2	1
ITF102-6 Write C programs using structures and pointers to implement real life examples.	-	2	3	3	2	-	-	3	1	3	3	1

CONTENT:**D. THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF102 – I Identify C expressions with character set and operators.			
1	C FUNDAMENTALS 1.1 History of c 1.2 C character set 1.3 Identifiers & Keywords, 1.4 Data types 1.5 Variables 1.6 Declarations 1.7 Constants 1.8 Expressions 1.9 C Instructions 1.10 The first C program 1.11 Compilation & Execution	04	06

2	OPERATORS& DATA INPUT AND OUTPUT FUNCTIONS 2.1 Operators 2.1.1 Arithmetic Operators 2.1.2 Assignment Operator 2.1.2 Unary operators 2.1.3 Relational & Logical Operators, 2.1.4 Conditional & Comma Operator 2.2 Input and Output Library Functions 2.2.1 printf() 2.2.2 scanf() 2.2.3 getchar() 2.2.4 putchar() 2.2.5 gets() 2.2.6 puts()	04	10
3Course Outcome ITF102 -2 Apply decision making and branching and looping constructs in programming.			
3	CONTROL STATEMENTS 3.1 Decision making and branching 3.1.1 if Statement(if, if-else, if-else ladder, nested if-else) 3.1.2 Switch, break, continue, goto statement 3.2 Decision making and looping 3.2.1 While, do – while, for Statements 3.2.2 Nested loops	08	12
Course Outcome ITF102 -3 Implement user defined functions			

4	FUNCTIONS 4.1 Defining a Function, Accessing a function, 4.2 Passing arguments to a Function(call by value and call by reference), Specifying argument data types 4.3 Scope and lifetime of variables 4.4 Function prototypes 4.5 Category of function(No argument no return value, argument with no return value, No argument with return value, argument with return value) 4.6 Recursion	08	12
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Subtopics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF102 -4 Implement one dimensional and two dimensional arrays.			
5.	ARRAYS 5.1 Defining an array, 5.2 One dimensional array ,Declaration and Initialization of Arrays, 5.3 Two Dimensional Arrays Declaration and Initialization of Arrays, 5.4 Passing arrays to a function	08	14
Course Outcome ITF102 -5 Implement library functions for string handling.			
6	CHARACTERS & STRINGS 6.1 The char data type, using character variables, using string 6.2 Declaring and initializing string variables, 6.3 Reading strings from terminal 6.4 Writing Strings to screen, putting strings together.	06	12

	6.5 Comparison of two strings 6.6 String- handling Functions - strcmp(), strlen(), strcpy(), strcat(), strupr(), strlwr(), strrev()		
Course Outcome ITF102 -6 Write C programs using structures and pointers to implement real life examples.			
7	Structures and Pointers 7.1 Simple structures (Defining & declaring structures, accessing structure members) 7.2 Complex structures (structures that contain arrays) 7.3 Arrays of structure, Initializing structure, 7.4 Understanding pointers, declaring pointer variable, initialization of pointer variable, accessing address of a variable 7.5 Programs related to accessing address of a variable	10	14
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination:

Section / Topic no.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total marks
		Remember	Understand	Applica- -tion		
I / 1	C Fundamentals	2	2	2	ITF102-1	06
I / 2	Operators & Data Input and Output Functions	4	4	2	ITF102-1	10
I / 3	Control Statements	4	4	4	ITF102-2	12
I / 4	Functions	4	4	4	ITF102-3	12
II / 5	Arrays	4	4	6	ITF102-4	14
II/6	Characters & Strings	4	4	4	ITF102-5	12
II/7	Structures, Unions and Pointers	4	4	6	ITF102-6	14
TOTAL		26	26	28		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

E. TERM WORK

Term work shall consist of the following:

i) Laboratory experiments and related skills to be developed :

Sr. No.	Title of Experiment	Skills to be developed	Course Outcome
01	Study of Flowcharts and Algorithm	<ul style="list-style-type: none"> Understanding an Algorithm Understanding the Flowchart Study of various Flowchart Symbols To draw Flowchart on any Practical routine 	ITF102-1
02	Character set and Operators, Valid and invalid identifiers, variables and constants	<ul style="list-style-type: none"> study of character set of C language Various types of operator and their use identifier, variables, constant, Keyword Rules for valid variables, identifiers, constants. Identify valid and invalid variables, keywords, identifiers, constants 	ITF102-1
03	Study of .C. expressions	<ul style="list-style-type: none"> Study of simple programming structure and Standard Header file Understanding expression Conversion of mathematical Expression in .C. Identify valid and invalid C expressions. Use of library functions 	ITF102-1
04	Input and output Functions	<ul style="list-style-type: none"> Standard Input function- scanf() Standard Output function-printf() Syntax and use of scanf() and printf() function with example 	ITF102-1
05	Study of decision making statement:	<ul style="list-style-type: none"> necessity of control structure If statement - syntax and flowchart 	ITF102-1 To ITF102-2

	if	<ul style="list-style-type: none"> • If-else statement - syntax and flowchart • Nested if..else - syntax and flowchart • Else..if ladder - syntax and flowchart • Program based on if statement 	
06	Study of switch statement	<ul style="list-style-type: none"> • use of switch statement • Syntax and flowchart of switch statement. • significance of break statement in switch case • use of default statement in switch case • Program using switch statement 	ITF102-1 To ITF102-2
07	Study of conditional and unconditional branching	<ul style="list-style-type: none"> • conditional and unconditional branching • syntax and use of go to statement • use of forward and backward jumping • break statement • continue statement • Program based on goto, continue and break statement 	ITF102-1 To ITF102-2
08	Study of for statement	<ul style="list-style-type: none"> • definition of loop • syntax and flowchart of for loop • execution of for loop • nested for loop • Program based on for loop 	ITF102-1 To ITF102-2
09	Study of while loop	<ul style="list-style-type: none"> • Exit control and Entry control loop • syntax and flowchart of while loop • execution of while loop • program based on while loop 	ITF102-1 To ITF102-2
10	Study of do while loop	<ul style="list-style-type: none"> • Exit control and Entry control loop • syntax and flowchart of do_ while loop • execution of do_while loop • program based on do_while loop 	ITF102-1 To ITF102-2
11	Study of function	<ul style="list-style-type: none"> • Understanding function • function declaration or prototype 	ITF102-2 To ITF102-3

		<ul style="list-style-type: none"> • syntax to define a function • function call • function parameters • function return value • Program using functions 	
12	Study of Recursive function	<ul style="list-style-type: none"> • definition of recursion • use of recursion • program using recursive function 	ITF102-2 To ITF102-3
13	Study of an array	<ul style="list-style-type: none"> • Understanding and use of an array • syntax to declare and initialize an array • read and print the elements of an array • access a particular element of an array • programs based on arrays 	ITF102-1, ITF102-2, ITF102-3, ITF102-4.
14	Study of two dimensional array	<ul style="list-style-type: none"> • Understanding and use of two dimensional array • Syntax to declare and initialize a 2-D array • read and print the elements of 2-D array • access a particular element of 2-D array • Program based on 2-D array 	ITF102-2, ITF102-3, ITF102-4.
15	Study of strings and string manipulation functions	<ul style="list-style-type: none"> • Understanding string • declaration and initialization of string • reading and printing a string from and to terminal. • String- handling Functions - strcmp(), strlen(), strcpy(), strcat(), strdup(), strlwr(), strrev() • Programs on strings and string handling functions 	ITF102-2, ITF102-3, ITF102-4, ITF102-5.
16	Study of Structure	<ul style="list-style-type: none"> • Understanding and syntax of structure • size of structure • declaration and initialization of structure • declaring a structure variable • accessing members of structure • array as a member of structure 	ITF102-2, ITF102-3, ITF102-4, ITF102-6

		<ul style="list-style-type: none"> • Program based on structure and arrays in structure 	
17	Study of Arrays of Structure	<ul style="list-style-type: none"> • syntax of arrays of structure • accessing members of structure • Program based on array of structure 	ITF102-2, ITF102-3, ITF102-4, ITF102-6
18	Study of Pointer	<ul style="list-style-type: none"> • Understanding pointer • basic difference between variable and pointer • declaration of pointer • Initializing pointer variable • program to access address of variable 	ITF102-2

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION

c) Assessment Criteria for Term work :

i) Continuous Assessment of Practical Assignments :

Every practical assignment shall be assessed for 25 marks as per following criteria :

Domain	Particulars	Marks out of 50
Cognitive	Understanding	05
	Application	05
Psychomotor	Operating Skills	05
Affective	Discipline and punctuality	05
	Decency and presentation	05
TOTAL		25

ii) Progressive Skills Test :

Criteria for Progressive skill Test :

Sr. No.	Criteria	Marks allotted
1	Attendance	5
2	Preparedness for practical	4
3	Algorithm	4

4	Flow chart	4
5	C program	4
6	Logical Approach	4
	Total	25

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	10
2	Logical Approach	10
3	Flowchart and Algorithm	10
4	Programming Skill	10
5	Presentation	10
	Total	50

Assessment at semester end practical exam as per Pro-forma II.

INSTRUCTIONAL STRATEGIES:**Instructional Methods :**

- 1) Lectures and discussions.
- 2) Laboratory experiences and laboratory interactive sessions.
- 3) Time bound assignments.

Teaching and Learning resources:

1. Books
2. Transparencies
3. Power Point Presentation
4. Self-learning

REFERENCE MATERIAL:**a) Books / Codes**

Sr. No.	Author	Title
1.	E.Balgurusamy	Programming in ANSI C
2.	YashwantKanetkar	Let us C
3	Gottfried	Programming with C
4	kerninghan& Ritchie	The C Programming language

b) Websites

- ✓ www.cprogramming.com
- ✓ www.learn-c.org
- ✓ www.tutorialspoint.com/cprogramming

COURSE ID:08

Course Name : WEB PAGE DESIGNING
Course Code : ITF103
Course Abbreviation : FWPD

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL

Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	2	4
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each to be converted out of 10 marks	<ul style="list-style-type: none"> 25 marks for each practical One PST of 25 marks 	Term End Online Theory Exam (01 hour)	--	As per Proforma-II	
Marks	10	--	40	--	25I	75

RATIONALE:

E-commerce is the buzz word in the business sector all over the world. World Wide Web is the basic technology for e-commerce and HTML is the medium for creating web pages. This subject aims at designing and developing web pages. It also serves as a prerequisite for Scripting Technology subject.

COMPETENCY**Design static website**

Cognitive : i) Design and write code simple web pages

ii) Describe characteristics of CSS for effective formatting web pages.

Psychomotor : i) Surfing different types of web sites. ii) Implementation of JavaScript

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality

COURSE OUTCOMES:

ITF103-1: Define terminologies and tags of Web design.

ITF103-2: Select tags and list types for web page.

ITF103-3: Classify hyperlink type.

ITF103-4: Design user Input form using table tag.

ITF103-5: Develop simple static website using java script.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[**Note : Correlation levels :** 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowled ge	PO 2 Discipli ne knowled ge	PO 3 Experim ents and practice	PO 4 Enginee ring Tools	PO 5 The engineer and society	PO 6 Environ ment and sustaina bility	PO 7 Ethics	PO 8 Individu al and team work:	PO 9 Communi cation	PO 10 Life- long learning	PSO1 Design and develop ment	PSO2 Databas e and Network manage ment
Competency: Design static website	-	2	2	-	-	-	-	2	-	-	2	-
ITF103-1: Define terminologies and tags of Web design.	-	1	-	-	-	-	-	1	-	-	1	-
ITF103-2: Select tags and list types for web page	-	2	2	1	-	-	-	2	-	-	2	-
ITF103-3: Classify hyperlink type.	-	3	3	2	-	-	-	1	-	1	3	-
ITF103-4: Design user Input form using table tag.	-	3	3	2	-	-	-	3	-	2	3	-
ITF103-5: Develop simple static website using java script	-	3	3	2	-	-	-	3	-	3	3	-

CONTENT:

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF103-1 : Define terminologies of Web design			
1	INTRODUCTION TO HTML 1.1 Terminologies used in Web Design: WWW, Web site, 1.2 Web page, Web Server, Web Browser, Search Engine, URL, Domain, Hyperlink 1.3 HTML Versions 1.4 Components of HTML: Tags – closed tags and open tags, Attributes, Elements 1.5 Structure Tags: !DOCTYPE, HTML, HEAD, TITLE, BODY tags, HTML5 semantic elements, control attributes 1.6 Block Level Elements : Headings, Paragraphs, Breaks, Divisions, Centered Text, Block Quotes, Preformatted text, Address. 1.7 Text Level Elements : Bold, Italic, Teletype, Underline, Strikethrough, Superscript, subscript. 1.8 Colors and Backgrounds- • The text color: color attribute of FONT tag, text attribute of BODY tag. • Background color: bgcolor attribute of BODY tag. • Background images: background attribute of BODY tag. 1.9 Horizontal Rules. 1.10 Special characters(HTML Symbols) 1.11 Adding comments 1.12 The Meta tag	06	06
Course Outcome ITF103-2 : Select tags and list types for web page.			
2	CREATING LISTS 2.1 Ordered Lists: tag and its attributes 2.2 Unordered Lists: tag and attributes 2.3 Definition Lists: <DL> tag 2.4 Nested Lists	2	04

Course Outcome ITF103-3: Classify hyperlink type.			
3	LINKING HTML DOCUMENTS 3.1 URL : Types of URLs, Absolute URLs, Relative URLs 3.2 The Anchor Tag and its attributes 3.3 Changing link colors: link, alink, vlink attributes of BODY tag. 3.4 Linking : 3.4.1 To document in the same folder. 3.4.2 To document in the different folder. 3.4.3 To document on the web. 3.4.4 To specific section within the document. 3.4.5 Inserting E-mail links	2	04
4	IMAGES AND COLORS 4.1 Image formats : gif, jpeg, png 4.2 The inline image: an IMG tag, alternate text, image alignment, HSPACE, VSPACE, wrapping text, height and width of images. 4.3 Image as a link. 4.4 Image maps	2	04
Course Outcome ITF103-4 : Design user Input form using table tag.			
5	TABLES & FRAMES 5.1 Creating basic tables: TABLE, TR, TH, TD tags. 5.2 Formatting tables: border, cellspacing, cellpadding, width, height, align, bgcolor attributes. 5.3 Adding captions: CAPTION tag. 5.4 Formatting contents in the table cells : align, valign, bgcolor, height, width, nowrap attributes. 5.5 Spanning rows and columns: rowspan and colspan attributes. 5.6 Introduction to frames : What is frame?, Advantages and disadvantages of frame 5.7 iframe tag with target attribute	4	04
6	FORMS 6.1 Creating basic form: FORM tag, action and method attributes. 6.2 Form fields: Single line text field, password field, multiple line text area, Radio buttons, check boxes. 6.3 Pull down menus: SELECT and OPTION tags.	4	04

	6.4 Buttons: Submit, Reset and generalized buttons. 6.5 Formatting technique: Using table to layout form.		
Course Outcome ITF103-5 : Develop simple static website using java script			
7	STYLE SHEETS 7.1 Adding style to the document: Linking to style sheets, Embedding style Sheets, Using inline style. 7.2 Style sheet properties: font, text, box, color and background properties. 7.3 HTML CLASS	2	04
8	INTRODUCTION TO JAVASCRIPT 8.1 Benefits of JavaScript 8.2 Embedding JavaScript in HTML document. 8.3 Variables, Constants, Adding comments. 8.4 Operators: Assignment, Arithmetic and Comparison operators. 8.5 Control structures and looping: if, if..else, for, for..in, while, do..while, break and continue. 8.6 Event handling : onClick, onMouseOver, onMouseOut, onSubmit, onReset, onFocus, onBlur, onSelect events	06	06
9	MULTIMEDIA 9.1 Text animation with MARQUEE element 9.2 Using EMBED tag to add multimedia 9.3 HTML5 Graphic and Multimedia Element <SVG> , <canvas>, <audio>,<Video>	02	02
10	HOSTING THE WEBSITEPublishing Publishingthe site, Outsourcing web hosting, Virtual Hosting	02	02

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Applica-tion		
1	Introduction To Html	02	02	02	ITF103-1	06
2	Creating Lists	01	01	02	ITF103-2	04
3	Linking Html Documents	01	02	01	ITF103-3	04
4	Images And Colors	02	01	01	ITF103-3	04
5	Tables & Frames	01	02	01	ITF103-4	04
6	Forms	01	01	02	ITF103-4	04
7	Style Sheets	01	01	02	ITF103-5	04
8	Introduction To Javascript	01	01	04	ITF103-5	06
9	Multimedia	01	00	01	ITF103-5	02
10	Hosting The Website publishing	00	01	01	ITF103-5	02
TOTAL		11	12	17		40

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only

Laboratory experiments and related skills to be developed :

Sr. No.	Title of Experiment	Skills to be developed	Course outcome
1.	To study basics of web designing and components of HTML	1.To understand basic terminologies used in web designing 2.To understand components of HTML 3.To write a simple web page using HTML	ITF103-1
2.	To design a web page and apply text level tags.	1.To apply various text level tags in web pages	ITF103-1
3.	To design a web page and apply block level tags.	1.To apply various block level tags in web pages	ITF103-2
4.	To include horizontal	1. To understand use of <HR> tag and its attributes.	ITF103-2

	rules with various attributes and special characters in web page.	2.To understand adding special characters in a web page	
5.	To design a web page to set background color, background image, document wide text color, different text color for different paragraph	<ol style="list-style-type: none"> 1. To apply background color for a web page. 2. To use an image as a background for a web page. 3. To set color for the text on web page. 4. To set different text colors for different paragraphs 	ITF103-2
6.	To include ordered and unordered lists in a web page	<ol style="list-style-type: none"> 1. To understand use of tag and its attributes. 2. To understand use of tag and its attributes. 3. To understand <DL > tag 4. To Apply all list tags 	ITF103-2
7.	To design a web page with various links. and set colors for links, active links and visited links	<ol style="list-style-type: none"> 1. To add hyperlinks - <ul style="list-style-type: none"> • To document in the same folder. • To document in the different folder. • To document on the web. • To specific section within the document. 2. To set colors for hyperlinks, active links and visited link 	ITF103-3
8	To include images with different alignments and wrapped text in web page, image as link in a web page	<ol style="list-style-type: none"> 1. To understand concept of various attributes of tag. 2. To use image as a hyperlink 	ITF103-3
9	To create HTML table, format contents in a table cells and span the rows and columns.	<ol style="list-style-type: none"> 1. To understand use of <TABLE> tag and its attributes. 2. Apply formatting contents in tables on web page 3 Apply colors in tables on web page 4. Merging cells in tables on web page 	ITF103-4
10	To create basic frames using different attributes, To design a web page	<ol style="list-style-type: none"> 1.To understand use of frames in layout of web page. 2. Apply <iFRAME> tag and its attributes 	ITF103-4

	using frame targeting.		
11	To create a basic form using form controls	1. To understand use of <FORM> element and its attributes. 2. Apply form input controls like text field, password field and multiple line text field controls. 3. To use pull down menu in web pages 4. To use buttons in web pages	ITF103-4
12	To use table to layout form with the different form controls and generalized buttons.	1. To understand concept of <TABLE> tag and its attributes. 2. Apply table tags to layout form with different form controls	ITF103-4
13	To create web page and apply style sheet properties (Font, text and box properties)	1. To understand the concept of style sheet. 2. Adding style sheets to a document, linking to a Style Sheet, embedding and importing style sheets. 3. Use font, text and box properties of style sheets	ITF103-5
14	To create a web page to get water mark effect using style rules.	1. To use color and background properties of style sheets.	ITF103-5
15	To write java script using control structure and looping.	1. To understand use of variables, constants, functions in 2. Apply conditional statements like – if..else and its variants, switch statements in script code 3. Apply looping constructs – for, while, do..while in script code	ITF103-5
16	To write java script using event handlers.	1. To understand concept of event handling in JavaScript. Apply onSubmit, onReset, onFocus, onBlur, onSelect events in JavaScript to webpage	ITF103-5
17	Development of Mini Project(Static website)	1. Development of static informative websites as per user requirement. For example- 1) Website for Sweet mart 2) Website for Hardware shop	ITF103-5

• **Progressive Skills Test :**

Criteria for Continuous Assessment of Practical work and Progressive skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical	02
3	Neat & complete Diagram.	03
4	Observations & computer handling skill	02
5	Use of toolbar, menu bar and short cut keys.	03
6	Logical thinking and approach	05
7	Oral Based on Lab work and completion of task	05
TOTAL		25

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1.	Technical ability	10
2.	Communication skill	05
3.	Logical approach	10
	TOTAL.	25

Assessment at semester end practical exam as per Pro-forma II.**INSTRUCTIONAL STRATEGIES:****Instructional Methods:**

1. Lectures cum Discussions
2. Regular Home Assignments.
3. Laboratory experiences and laboratory interactive sessions

Teaching and Learning resources:

1. Chalk board
2. O.H.P.
3. Slide
4. Self-learning Tutors

REFERENCE MATERIAL:**a) Books / Codes**

Sr. No.	Author	Title
1.	Thomas A. Powell	The Complete Reference HTML
2.	Steven Holzner	HTML Black Book
3.	Ivan Bayross	HTML, DHTML, JavaScript,

b) Websites

1. <http://www.w3schools.com/html/>

2. <http://www.html.net/tutorials/html/>

3. <http://www.tutorialspoint.com/javascript/>

COURSE ID: 9**Course Name : BASIC ELECTRONICS****Course Code : ITF 104****Course Abbreviation : FBTX****TEACHING AND EVALUATION SCHEME:****Pre-requisite Course(s) : NIL****Teaching Scheme: MPECS 2016**

Scheme component	Hours / week	Credits
Theory	2	4
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	Average of two tests of 10 marks each	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (02 hours)	--	As per Proforma-II	
Marks	10	--	40	--	50	100

RATIONALE:

Although industrial electronics is specialized field of electronics engineering, a grasp of certain fundamental principles and concepts are essential pre- requisitions for it. This subject deals with the most basic devices and circuits on which the further development of subject depends.

COMPETENCY**Understand fundamental concepts of electronics components****Cognitive : 1)** State the principles and operations of various electronic devices.

2) Identify the values of resistors from its color code

3) Read the data sheets of diode and transistors.

4) To built up simple electronic circuits

Psychomotor :1)Draw the characteristics of basic components like diode, transistor etc.

2) Test values of various resistors, diode and transistors.

3) Design and develop simple electronic circuits on breadboard.

Affective :Attitude of i) precision ii) accuracy iii) safety iv) punctuality**COURSE OUTCOMES:****ITF104-1:** State types of components, operation & its applications**ITF104-2:** Describe semiconductor Theory and construction, operation and characteristics of diodes**ITF104-3:** Understand the operating principle of BJT and its applications**ITF104-4:** Illustration of basic elements to develop DC power supply**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX****[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]**

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowled ge	PO 2 Discipli ne knowled ge	PO 3 Experim ents and practice	PO 4 Enginee ring Tools	PO 5 The engineer and society	PO 6 Environ ment and sustaina bility	PO 7 Ethics	PO 8 Individu al and team work:	PO 9 Commu nication	PO 10 Life- long learning	PSO1 Design and develop ment	PSO2 Databas e and Network manage ment
Competency: Understand fundamental concepts of electronics components	3	3	3	2	2	-	-	1	1	1	2	2
ITF104-1: State types of components, operation & its applications	3	3	1	1	2	-	1	1	1	2	1	2

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowled ge	PO 2 Discipli ne knowled ge	PO 3 Experim ents and practice	PO 4 Enginee ring Tools	PO 5 The engineer and society	PO 6 Environ ment and sustaina bility	PO 7 Ethics	PO 8 Individu al and team work:	PO 9 Commu nication	PO 10 Life- long learning	PSO1 Design and develop ment	PSO2 Databas e and Network manage ment
ITF104-2: Describe semiconductor Theory and construction, operation and characteristics of diodes	3	3	3	3	2	-	1	1	1	2	2	2
ITF104-3: Understand the operating principle of BJT and its applications	2	3	3	2	1	-	1	1	1	2	2	2
ITF104-4: Illustration of basic elements to develop DC power supply	3	3	2	3	3	-	1	1	1	2	2	2

CONTENT:

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF104-1 : State types of components, operation & its applications			
1	Study of basic components (R,L,C) 1.0Components-discrete, non discrete, Active, passive 1.1Concept of Resistor, Types of resistors, Materials used for resistors, Definition of liner and non linear resistors 1.2 Resistors general specifications-Maximum voltage rating, power rating ,temperature coefficient ,tolerance,	04	12

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	ohmic range, operating Temperature 1.3 Construction, specifications, application of carbon composition Resistor ,carbon film resistor, Standard wire wound resistor 1.4 Resistor colour coding with three, four, five Bands 1.5 Classification of capacitors, Types of dielectric 1.6 Fixed capacitors-construction, specification, application of disc ceramic capacitor 1.7 Aluminum electrolytic capacitor, Tantalum electrolytic capacitor 1.8 Inductor specifications –self inductance ,mutual inductance, coefficient of coupling, inductive reactance 1.9 Construction, application of air core, iron core, ferrite core Inductor		
Course Outcome ITF104-2 : Describe semiconductor Theory and construction, operation and characteristics of diodes			
2	Semiconductor Diode 2.0 Conductor, Insulator, semiconductor 2.0.1 Intrinsic semiconductor : Si , Ge 2.0.2 Doping 2.0.3 Extrinsic semiconductor : P type , N type 2.1 P.N. junction diode – Ge& Si 2.1.1 Constructional features. 2.1.2 Operating principle. 2.1.3 Characteristics 2.1.4 Applications. 2.2 Zener diode 2.2.1 Constructional features. 1.2.2 Operating principles.	04	08

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	1.2.3 Characteristics 1.2.4 Application such as Zener Diode as Voltage Regulator		
Course Outcome ITF101-3 : Understand the operating principle of BJT and its applications			
3	Bipolar Junction Transistor (BJT) 3.0 Introduction 3.1 Constructional features 3.2 Operating principles of NPN & PNP Transistor 3.3 Transistor configurations & Modes of operation 3.4 Transistor as a Switch 3.5 Need of Transistor Biasing 3.5.1 Types of biasing (only types, no description) 3.6 Study of single stage amplifier (Construction, Operation ,waveform and Applications)	04	08
Course Outcome ITF104-4 : Illustration of basic elements to develop DC power supply			
4	DC Power Supply 4.0 Rectifiers- Half wave/ full wave/ Bridge 1.Working Principles 2.Average value 3.Ripple factor 4.Rectifier efficiency (Only Theory, No numerical) 4.1 Filters 1.Shunt capacitor filter	04	12

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	2.Series inductor filter 3.LC & CLC filter 4.2 Voltage Regulators 4.2.1 Block diagram of regulated power supply 4.2.2Transistor Series voltage Regulator 4.2.3Transistor Shunt voltage Regulator 4.2.4 Study of IC78XX and 79XX series of fixed voltage regulators		

Specification table for setting question paper for semester end theory examination :

SR.NO.	Name of the Topic	Distribution Of Marks (level wise)			Total Marks
		Knowledge	Comprehension	Applications	
1	Study of basic components	04	04	04	12
2	Semiconductor diode	04	02	02	08
3	Bipolar junction Transistor(BJT)	04	02	02	08
4	DC power supply	06	03	03	12

Laboratory experiences and related skills developed.

Sr.no	Laboratory experiments	Skills developed
1	Study of Resistance, Capacitor, inductor and its types	1)Testing & identification of different types of resistors ,capacitor and inductor

		2) Measure the values of resistors and capacitors with colour code method and using multimeter
2	Characteristics of PN junction diode	1) Connect the various component as per the circuit diagrams using proper size wires 2) Write the forward & reverse voltage & current Draw the forward & reverse characteristics
3	Characteristics of Zener diode.	3) Connect the various component as per the circuit diagrams using proper size wires 4) Write the forward & reverse voltage & current Draw the forward & reverse characteristics
4	Zener diode as voltage regulator and regulation characteristics	1) Connect the various component as per the circuit diagrams using proper size wires 2) Write the percentage of regulation
5	To Study RC coupled Amplifier	1) To observe the frequency response of RC coupled amplifier
6	Waveform observation of half wave rectifier.	1) Make proper connection as per circuit diagram 2) To show the waveform on C.R.O.
7	Waveform observation of centre - tapped full wave rectifier	1) Make proper connection as per circuit diagram 2) To show the waveform on C.R.O.
8	Waveform observation of Bridge - full wave rectifier	1) Make proper connection as per circuit diagram 2) To show the waveform on C.R.O.
9	Study of capacitor filter	1) Make proper connection as per circuit diagram 2) To show the waveform on C.R.O.
10	Study of IC 78XX and 79XX	1) Make the proper connections and measure the regulated output voltage

Instructional Strategies:

- 1) Lectures
- 2) Demonstration
- 3) Group discussion
- 4) Tutorial

5) Self learning.

Criteria for Progressive Assessment of Practical and skill test:

<i>Particulars</i>	<i>Marks</i>
1. Attendance	10
2. Correct figures/circuit diagrams/drawings	08
3. Proper observations and result table	08
4. Sample calculations with relevant formulae	08
5. Proper graphs and phasor diagrams	08
6. Procedure/workmanship/safety	08
Total	50

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Correct figures / diagrams/ Flow chart	20
2	Result table / calculations / graphs	20
3	Safety / use of proper tools / workmanship	10
	Total	50

Assessment at semester end practical exam as per Pro-forma II.

Reference Books:

1. Electronic Components and Materials by Dhir
2. Electronics Devices & Circuits - By A. Motorshead
3. Electronics Principles - By Malvino
4. Principles of Electronics - By V. K. Mehta.
5. Basic Electronics - By B. L. Theraja.

COURSE ID: 10

Course Name : **ELEMENTS OF PRACTICAL ELECTRICITY**
Course Code : **ITF105**
Course Abbreviation : **FEPE**

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : *<nil>*

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	1	3
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	--	i. 25 marks for each practical ii. One PST of 25 marks	--	--	As per Proforma-II	
Marks	--	--	--	--	50	50

RATIONALE:

A person working in any field needs to be aware of the mode / ways of application of electricity in his field. He must be well conversant with the basic skills of maintaining the supply system to the machines used by him. This becomes much more important for an information technologist as this reduces his dependence on others for trivial works of electricity to be carried out such as replacing the fuse, calculating the load, inspecting a power supply, deciding wiring systems along with the components & load requirements etc. This course arms the candidate with the

basic knowledge & skills in using electricity and related components for his machines such as computers and related devices.

COMPETENCY :

Maintain the computer electric supply network in healthy condition.

COURSE OUTCOMES :

ITF105-1 Use basic principles of electrical engineering in respect of DC and AC circuits to implement computer supply systems.

ITF105-2 Use the relevant supply system for computers.

ITF105-3 Install the proper wiring system with required earthing.

ITF105-4 Use the relevant transformers and measuring instruments in computer laboratories.

ITF105-5 Use the relevant computer peripheral motors and computer supply devices.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[**Note : Correlation levels** :1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and Development	PSO2 Network and Database Management
Competency: Maintain the computer electric supply network in healthy condition.	3	2	2	2	-	2	1	3	3	3	2	-
ITF105-1 Use basic principles of electrical engineering in respect of DC and AC circuits to implement computer supply systems.	3	1	2	2	-	2	-	1	2	3	-	-
ITF105-2 Use the relevant supply system for computers.	3	1	3	2	-	2	1	2	3	3	-	-
ITF105-3 Install the proper wiring system with required earthing.	3	1	3	2	-	2	1	3	2	3	1	-

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and Development	PSO2 Network and Database Management
ITF105-4 Use the relevant transformers and measuring instruments in computer laboratories.	2	1	2	2	-	2	1	2	2	3	1	-
ITF105-5 Use the relevant computer peripheral motors and computer supply devices.	2	1	2	2	-	2	1	1	2	3	1	-

Course Contents:

Sr. no	Topics Subtopics	Teaching (Hours)
1	Fundamentals :- 1.1. Heating & magnetic effects of electric current. 1.2. Application of the above in computing devices such as HD, FD, CD (Photo effect). 1.3. Ohms law. 1.4. Resistor, Capacitor – symbol, properties	2
2	D.C. Circuits / Devices :- 2.1 Voltage & Current source. 2.2 Kirchhoff's laws, Maximum power transfer Theorem. 2.3 Magnetic coils – their field (Magnitude & direction).	2
3	A.C. Circuits / Devices :- 3.1 Concepts of alternating quantity. 3.2 Cycle, Frequency, Period, Phase, Max-value, RMS value & Average value.	3

Sr. no	Topics Subtopics	Teaching (Hours)
	3.3 Concepts of reactance (Inductive & Capacitive) 3.4 Concept of impedance, power factor 3.5 Simple calculations.	
4	Electrical supply systems:- 4.1 D. C. systems. 4.2 Single phase A.C. 4.3 Three phase A.C.,- 3 wire, 4 wire 4.4 Stabilizers (specification selection) 4.5 Voltage regulators (specification selection) 4.6 SMPS (specification selection) 4.7 Inverters (specification selection) 4.8 UPS – online & offline (specification selection)	2
5	Wiring systems & Earthing:- 5.1 Types of wiring and their applications. 5.2 Selection of wiring systems & wires for computer systems. 5.3 Protective devices for the systems. 5.4 Importance of Earthing for equipment's. 5.5 Components of Earthing systems. 5.6 Implementation of Earthing systems.	2
6	Measuring Instruments:- 6.1 Voltmeter, Ammeter, Multimeter- applications. 6.2 Wattmeter, (Power measuring circuits for single & three phase loads) 6.3 Energymeter, - application (1 phase & 3 phase).	1
7	Single phase Transformer (small Transformer) 7.1 Principle. 7.2 Parts & Construction of small transformer. 7.3 Application for the above.	2

8	Electric motors:- 8.1 Motors used in computers & related peripherals such as stepper motors etc. 8.2 Introduction to induction motors of single phase & three phase type along with their applications.	2
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Laboratory work:

1	Verify Ohm's law
2	Verify Kirchhoff's current law
3	Verify Kirchhoff's voltage law
4	Measure resistance, inductance & impedance of given coil using Voltmeter, Ammeter & Multimeter.
5	Verify Maximum power transfer theorem.
6	Measure power using Wattmeter.
7	Connect energy meter in single-phase circuit.
8	Prepare specification of SMPS, Inverter, UPS (any one)
9	Visit to Earthing arrangement of Lab/Institute
10	Basic Components of Energy Bill- Connected load, sanctioned load, Billed demand, power factor, energy rates applicable

Criteria for assessments of weekly practical work

Punctuality / Attendance	05
Diagrams / neatness	05
Calculation / observations	10
Workmanship / Safety / Habits	05
Total	25

Instruction strategies:-

- Lectures / Discussion
- Regular Home Assignments.
- Lab. Experiences / works
- Group tasks.

Resources:-

- Chalk – board
- Charts
- Models

Reference Books

- 1) Basic Electrical Engg. (V. N. Mittal)
- 2) Electrical Technology (Edward Hughes)

Criteria for assessment at semester end oral exam:

Sr. no	Criteria	Marks allotted
1	Logical concepts of electricity, V,I, W	5
2	Ability to suggest supply systems such as SMPS,UPS etc..	10
3	Clarity of ideas for use instruments, such as ammeter, voltmeter, wattmeter, multimeter.	15
4	Safety awareness with special reference to supplies	20
		50

*Assessment as per Proforma II: includes the marks of Continuous assessment (TW), Progressive skill test and term end oral/practical.

LEVEL-II LIFE SKILLS AND PROFESSIONAL SKILLS COURSES

COURSE ID : 11**Course Name : GENERIC SKILLS****Course Code : CCF201****Course Abbreviation : FGNS****TEACHING AND EVALUATION SCHEME:****Pre-requisite Course(s) : <nil >****Teaching Scheme:**

Scheme component	Hours / week	Credits
Theory	02	04
Practical	02	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory	Practical **	TW	
Detailsof Evaluation	- Nil -	One mid-semester Skill Test(2 hrs) * of 25 marks	- Nil -	Term End Practical Exam (2 hrs)	Pro-forma VI	
Marks	- Nil -	--	- Nil -	50	25	75

** *Practical Examination to be conducted by internal examiner (course teacher) and external examiner (course teacher of different classfrom the Institute) and marks to be entered as per Proforma V.*

RATIONALE:

Acquisition of technical and entrepreneurial competencies is founded on certain generic skills that are fundamentally essential for all disciplines of technology. Considering the age group and socio-economical background of the students of the Institute, a set of minimum essential generic skills has been identified and categorized as i) Concentration skills, ii) Language skills, iii) Learning Skills, iv) Aesthetic Skills, v) Behavioral Skills and vi) Creativity Skills. These generic skills will be studied and practiced in this course. Communication Skills form another major category of generic skills which shall be studied in separate course named *Communication Skills*. For mastery and perfection in these skills, consistent practice and an integrated application is necessary in all subjects of the Programme. Generic skills are essential to improve the overall quality of learning of the student for all the subjects.

COMPETENCY :

Apply generic skills to achieve refinement in overall development of personality as follows:

Cognitive : Understanding and applying generic skills in various situations

Psychomotor : i) Use of proper concentration ii) analyzing routine activity for formal and informal learning iii) Use of correct vocabulary. iv) use of aesthetic skills in all dimensions of life.

Affective : Attitude of i) concentration ii) confidence iii) manners iv) neatness v) aesthetic presentation

COURSE OUTCOMES :

CCF201-1 Enlist and appreciate generic skills necessary for a technician

CCF201-2 Attain concentration through thought analysis, omkar, pranayam, prayer and meditation

CCF201-3 Analyze his own learning process with reference to domain analysis and FIPN model

CCF201-4 Exhibit language skills viz. vocabulary, recitation, sentence making skills.

CCF201-5 Exhibit learning skills, studying skills and technical skills viz. calculating, graphic skills

CCF201-6 Exhibit aesthetic skills, behavioral skills and creativity skills

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[**Note : Correlation levels :** 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Database and Network management
Competency: Apply generic skills to learn to achieve refinement in overall development of personality as follows:	2	-	-	-	1	-	2	2	2	3	-	-
CCF201- Enlist and appreciate generic skills necessary for a technician	2	-	-	-	1	-	-	2	2	2	1	1
CCF201-2 Attain concentration through thought analysis, omkar, pranayam, prayer and meditation	2	-	-	-	1	-	1	2	2	2	1	1
CCF201-3 Analyze his own	2	-	-	-	1	-	2	2	2	3	1	1

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Database and Network management
learning process with reference to domain analysis and FIPN model												
CCF201-4 Exhibit language skills viz. vocabulary, recitation, sentence making skills	2	-	-	-	1	-	2	2	2	2	-	-
CCF201-5 Exhibit learning skills, studying skills and technical skills viz. calculating, graphic skills	2	-	-	-	1	-	2	2	2	2	-	-
CCF201-6 Exhibit aesthetic skills, behavioral skills and creativity skills	2	-	-	-	1	-	1	2	2	2	-	-

CONTENT:**F. THEORY :**

Sr. No.	Topics / Sub-topics	Lectures (Hours)
Course Outcomes CCF201-1 Enlist and appreciate generic skills necessary for a technician		
1	Overview of generic skills 1.1 Definition of generic skills, life skills, soft skills. Difference between generic skills and specialized skills 1.2 Important generic skills for technicians: Concentration skills, learning skills, language skills, communication skills, aesthetic skills, behavioral skills, creativity skills 1.3 Importance of generic skills	02
Course Outcomes CCF201-2 Attain concentration through thought analysis, omkar, pranayam, prayer and meditation		

2	Concentration Skills 2.1 Concentration of mind : Meaning and importance. Hurdles and common remedies. 2.2 Thoughts : Intensity, speed and duration of thoughts. Positive, negative and neutral thoughts. Emotions. Management of thoughts. 2.3 Concentration skills : Breathing exercises and <i>pranayam</i> 2.4 Concentration skills : Chanting <i>omkar</i> 2.5 Concentration skills : Prayer - Daily input of positive Thoughts 2.6 Concentration skills : Meditation	06
Course Outcomes CCF201-3 Analyze his own learning process with reference to domain analysis and FIPN model		
3	Learning Skills 3.1 Fundamentals of Learning : Definition, characteristics and rewards of learning. Affective, cognitive and psychomotor domains of learning. Barriers in learning. FIPN analysis. 3.2 Process of Learning : Reception, understanding, consolidation, retrieval, internalization, application, reinforcement and enhancement 3.3 Learning Skills: Skills of observing, listening, reading, notes taking, memorizing, problem solving, graphic, experimenting, surveying, calculating skills, Cognitive skills. 3.4 Studying skills : Planning and scheduling, Methods of study as per nature of subject content. 3.5 Self-motivation: Meaning and importance. Improving self-motivation through activities like inspiring case studies, web search & presentation, technical quiz/games, group studying, making videos, industry exposure	08
Course Outcomes CCF201-4 Exhibit language skills viz. vocabulary, recitation, sentence making skills		
4	Language Skills 4.1 Vocabulary. Pronunciation. Spellings. Recitation.	06

	4.2 Listening and recitation. 4.3 Word games.	
	Course Outcomes CCF201-6 Exhibit aesthetic skills, behavioral skills and creativity skills	
5	Aesthetic Skills 5.1 Sense of aesthetics. Appearance. Neatness. Decency. Sense of colours and graphics 5.2 Application of aesthetics in appearance, work, note book and paper writing, submission work	02
	Course Outcomes CCF201-6 Exhibit aesthetic skills, behavioral skills and creativity skills	
6	Behavioral Skills 6.1 Manners and etiquettes. Discipline. Sincerity. Morales. Politeness. Social and civic sense. Assertion without aggression.	04
Course Outcomes CCF201-6 Exhibit aesthetic skills, behavioral skills and creativity skills		
7	Creativity Skills 7.1 Meaning and importance of creativity. 7.2 Doing things creatively.	04
	TOTAL	32

G. TERM WORK**Practical Exercises and related skills to be developed:**

The following practical exercises shall be conducted as Term Work detailed in the *Workbook on Generic Skills* developed by the Institute in practical sessions of batches of about 22 students:

Sr. No.	Title of the Lab work	Skills / Competencies to be developed	Course Outcome
1.	Introduction Game	Self-expression, inter-personal rapport	CCF201-1
2.	Concentration Skills - 1: Chanting of Omkar	Concentration	CCF201-2
3.	Concentration Skills - 2: Breathing exercises	Concentration	CCF201-2
4.	Concentration Skills - 3: Prayer	Concentration, recitation, positive thinking	CCF201-2
5.	Concentration Skills - 4: Meditation	Concentration, thought management	CCF201-2
6.	Language Skills - 1 : Vocabulary Exercise	Vocabulary improvement	CCF201-4
7.	Language Skills - 2 : Recitation Exercise	Pronunciation, language acquaintance	CCF201-3 & 4
8.	Language Skills - 3 : Grammar	Language skills	CCF201-3 & 4
9.	Learning Skills - 1 : Domain Analysis of an activity	Understanding learning domains	CCF201-3 & 4
10.	Learning Skills - 2 : FIPN Analysis of Learning	Learning analysis	CCF201-3 & 4
11.	Learning Skills - 3 : Reading and Notes taking	Effective reading and notes taking	CCF201-3 & 4
12.	Learning Skills - 4 : Listening and Notes taking	Effective listening and notes taking	CCF201-3 & 4
13.	Learning Skills - 5 : Studying Skills	Effective self-studying	CCF201-5
14.	Technical Skills - 1 : Calculating Skills	Efficient use of calculator	CCF201-5

15.	Technical Skills - 1 : Text-graphic Conversion	Graphic and language skills	CCF201-5
16.	Aesthetic Skills	Attitude of aesthetic presentation	CCF201-6
17.	Behavioral Skills	Behavior, mannerism and etiquettes	CCF201-6
18.	Creativity Skills	Attitude of creativity and innovation	CCF201-6
19.	Self-motivated Activities	Self-motivation Skills	CCF201-6

C. INDUSTRIAL EXPOSURE:(Included in *Workbook on Generic Skills*)

SN	Mode of Exposure	Topic
1.	Self-motivated Activities	Industrial survey, information collection, Biographies of industrialists, etc.
2.	Recitation Exercises	Articles on industrial scenario and issues
3.	Domain Analysis	Analysis of field / industrial activities

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION**d) Term work :****i) Continuous Assessment of Practical Assignments:**Every practical assignment shall be assessed for 25 marks as per criteria given in *Workbook on Generic Skills*.

Domain	Particulars	Marks out of 25
Cognitive	Understanding	02
	Application	02
Psychomotor	Presentation Skills	04
	Drafting skills	05
Affective	Discipline and punctuality	06
	Decency	06
TOTAL		25

ii) Progressive Skill Test:One mid-term *Progressive Skill Test* of 25 marks shall be conducted as per criteria given in *Workbook on Generic Skills*Final marks of termwork shall be awarded as per *Assessment Pro-forma VI*

e) Term-end Practical Examination :

Term-end Practical Examination shall be conducted by internal examiner (course teacher) and external examiner (course teacher of different class from the Institute) as per the following criteria :

Skills >	Concentration Skills	Language Skills	Learning Skills	Technical Skills	Aesthetic, behavioral and creativity skills	Total	Marks converted out of ...
Marks >	20	20	20	20	20	100	50

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

1. Lectures cum Demonstrations
2. Classroom practices

Teaching and Learning resources:

1. Chalk board
2. LCD presentations
3. Audio presentations
4. Item Bank

REFERENCE MATERIAL :**a) Books / Journals / IS Codes**

Sr. No.	Author	Title	Publisher
1.	K. Sudhesh	Development of Generic Skills	Nandu Printers & Pub,M'bai
2.	Kulkarni/Sharma	Independent Study Techniques	
3.	E.H.McGrath	Basic Managerial Skills for all	McGraw Hill Pub., New Delhi
4.	Sahukar&Bhalla	The book of Etiquette and Manners	Pustak Mahal, New Delhi
5.	Jeanne E.O.	Human Learning	Pearson Publishers, Mumbai
6.	Kenneth/Dubois	Learning to Learn	Pearson Publishers, Mumbai
7.	Fred Luthans	Organizational Behavior	McGraw-Hill Higher Edu.

b) Websites

- i) www.mindtools.com
- ii) www.samcerto.com
- iii) www.stress.org.uk

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COURSE ID: 12

Course Name : COMMUNICATION SKILLS
Course Code : CCF202
Course Abbreviation : FCMS

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : <nil >

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	02	04
Practical	02	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End			Total
	Theory	Practical	Theory	Practical *	TW	
Detailsof Evaluation	Average of two tests of 20 marks each to be converted out of 10 marks	One mid-term Skill Test(2 hrs)	Term End Theory Exam (1½ hours)	Term End Practical Exam (2 hours)	As per Proforma II.	
Marks	10	--	40	25	--	75

* Practical Examination to be conducted by internal examiner (course teacher) and external examiner (course teacher of different class from the Institute) and marks to be entered as per Proforma II.

RATIONALE:

Communication being an integral part of every personal and professional human activity, communication skills plays a fundamental role in education as well as technology. As a unanimous feedback from the industry in general, technicians need to be specially strengthened in generic communication skills for their effectiveness in profession and career. Considering the age group and socio-economical background of the students of the Institute, this course has been designed with a skill-oriented content with some necessary theoretical foundation. For mastery and perfection in these skills, consistent practice and integrated application is necessary in all subjects of the Programme.

COMPETENCY :

Apply principles of communication to communicate in formal and informal scenario as follows:

Cognitive : Understanding and applying principles of communication in various situations

Psychomotor : i) Use of correct pronunciation, tone, accent & intonation ii) writing formal letters, drafts, reports etc. iii) Use of correct nonverbal code in formal & informal situations
iv) Speaking in formal & informal situations

Affective : Attitude of i) perfection ii) iii) confidence iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :

CCF202-1 Identify his/her communication barriers

CCF202-2 converse and convince by speaking, deliver prepared & extempore speech

CCF202-3 write letters, reports, resume in correct language

CCF202-4 Make effective use of body language & graphic communication

CCF202-5 Prepare and present simple media aided presentation

CCF202-6 Prepare and face mock interview

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[**Note : Correlation levels** : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Database and Network management
Competency Apply principles of communication to communicate in formal and informal scenario	2	-	-	-	1	-	2	2	3	2	-	-
CCF202-1 Identify his/her communication barrier	2	-	-	-	-	-	-	-	2	2	-	-
CCF202-2 converse and convince by speaking, deliver prepared & extempore speech	2	-	-	-	-	-	2	2	3	3	-	-
CCF202-3 write letters, reports, resume in correct language	2	-	-	-	-	-	2	3	2	3	-	-
CCF202-4 Make effective use	2	-	-	-	-	-	2	2	2	2	-	-

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Database and Network management
of body language & graphic communication												
CCF202-5 Prepare and present simple media aided presentation	2	-	-	-	-	-	-	2	2	2	-	-
CCF202-6 Prepare and face mock interview	2	-	-	-	1	-	-	3	2	2	-	-

CONTENT:**H. THEORY :**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	COURSE OUTCOME CCF202-1 Identify his/her communication barriers		
1	Fundamentals of Communication 1.1 Definition of communication by Newman and Peter Little. Importance communication 1.2 Model of communication: Sender-Message-Channel-Receiver-Feedback cycle. Encoding and decoding 1.3 Principles of effective communication 1.4 Types of communication 1.5 Barriers in communication	08	12
	COURSE OUTCOME CCF202-2 Converse and convince by speaking, deliver prepared & extempore speech		
2	Oral Communication 2.1 Principles and characteristics of oral communication. 2.2 Tone, pronunciation and accents. Grammar. 2.3 Spoken English: Dialogue, conversation, prepared and	06	06

	extempore speech, discussion, debate, feedback		
	COURSE OUTCOME CCF202-3 Write letters, reports, resume in correct language		
3	Written Communication 3.1 Principles and characteristics of written communication. 3.2 Writing reports, letters, resume and notes.	06	06
	COURSE OUTCOME CCF202-4 Make effective use of body language & graphic communication		
4	Non-verbal communication 4.1 Principles and characteristics of non-verbal Communication. 4.2 BodyLanguage:visual, tactile, auditory, cultural. Silence. 4.3 GraphicCommunication: Visual illustration, technical graphic communication.	04	06
	COURSE OUTCOME CCF202-5Prepare and present simple media aided presentation		
5	Media Aided Presentation 5.1 Media aids for presentation: strengths and precautions 5.2 Planning, preparing and making a presentation 5.3 Use of presentation media: OHP, computer, MS PowerPoint,LCD, board, charts	04	06
	COURSE OUTCOME CCF202-6Prepare and face mock interview		
6	Interview Techniques 6.1 Preparing for an interview 6.2 Taking a mock interview and facing an interview	04	04
	Total	32	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination:

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course outcome	Total Marks
		Remember	Understand	Application		
1	Fundamentals of Communication	02	06	04	CCF202-1	12
2	Oral Communication	02	02	02	CCF202-2	06
3	Written Communication	02	02	02	CCF202-3	06
4	Non-verbal Communication	02	02	02	CCF202-4	06
5	Media aided presentation	02	02	02	CCF202-5	06
6	Interview Techniques	00	02	02	CCF202-6	04
	Total >>	10	16	14		40

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

I. TERM WORK**Practical Exercises and related skills to be developed:**

The following practical exercises shall be conducted as Term Work as detailed in the *Workbook on Communication Skills* developed by the Institute in practical sessions of batches of about 22 students:

Sr No.	Title of Practical Exercise	Skills / Competencies to be developed	Course Outcome
1.	Characteristics of Communication Process	Analysis of communication process	CCF202-1
2.	My Communication Barriers	Self analysis	CCF202-1
3.	Verbal Communication : Vocabulary	Improvement in vocabulary	CCF202-2 &3
4.	Oral Communication : Prepared Speech	Preparing and delivery	CCF202-2
5.	Oral Communication : Extempore Speech	Creative thinking and speaking	CCF202-2
6.	Oral Communication :	Listening, thinking and speaking	CCF202-2

	Conversation		
7.	Oral Communication : Group Discussion	Listening, thinking and convincing	CCF202-2
8.	Oral Communication : Group Debate	Listening, thinking and convincing	CCF202-2
9.	Written Communication : Drafting Skills	Drafting	CCF202-3
10.	Written Communication : Writing formal and Informal Letters	Drafting	CCF202-3
11.	Written Communication : Writing Reports	Drafting with comprehension	CCF202-3
12.	Written Communication : Writing Scripts	Drafting	CCF202-3
13.	Non-verbal Communication : Graphic Communication	Graphic skills	CCF202-4
14.	Non-verbal Communication : Body Language	Body language	CCF202-4
15.	Using Presentation Aids	Using presentation aids	CCF202-5
16.	Interview Techniques	Facing interview	CCF202-6

J. INDUSTRIAL EXPOSURE:(Included in *Workbook on Communication Skills*)

SN	Mode of Exposure	Topic
1.	Oral and Written Communication Exercises	Industrial situations
2.	Recitation Exercises	Articles on industrial scenario and issues
3.	Interview Techniques Exercises	Industrial situations

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION**f) Assessment Criteria for Term work :****i) Continuous Assessment of Practical Assignments:**

Every practical assignment shall be assessed for 25 marks as per criteria given in *Workbook on Communication Skills*.

Domain	Particulars	Marks out of 25
Cognitive	Understanding	02
	Application	02
Psychomotor	Presentation Skills	04
	Drafting skills	05
Affective	Discipline and punctuality	06
	Decency	06
TOTAL		25

ii) Progressive Skill Test:

One mid-term *Progressive Skill Test* of 25 marks shall be conducted as per criteria given in *Workbook on Communication Skills*

Final marks of termwork shall be awarded as per *Assessment Pro-forma II*.

g) Assessment Criteria for Term-end Practical Examination:

Term-end Practical Examination shall be conducted by internal examiner (course teacher) and external examiner (course teacher of different class from the Institute) as per the following criteria

Item >	Oral	Speech	Body Language	Language Grammar	Letter Writing	Total	Marks out of
Marks >	20	20	20	20	20	100	25

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

1. Lectures cum Demonstrations
2. Classroom practices

Teaching and Learning resources:

1. Chalk board
2. LCD presentations
3. Audio presentations
4. Item Bank

REFERENCE MATERIAL :**a) Books / Journals / IS Codes**

Sr. No.	Author	Title	Publisher
1.	K. Sudhesh	Development of Generic Skills	Nandu Printers & Pub, M'bai
2.	B.V.Pathak	Communication Skills	NiraliPrakashan
3.	Burgoon Michael	Human Communication	SAGE Publications Inc.
4.	Geofrey Leech and Jansvartvik	A communicative Grammar of English	Pearson Education ESL
5.	Elizabeth Hiemey	101 ways to better communication	Pustak Mahal
6.	Thomas Huckin and Leslie	Technical Writing and Professional Communication	McGraww Hill College Division

b) Websites

- i) www.clrp.cornell.edu/workshops/pdf/communication_skills-web.pdf
- ii) http://depssa.ignou.ac.in/wiki/images/c/ca/Communication_skills_in_English.pdf www
- iii) <http://www.cgg.gov.in/Handbook%20on%20Communication%20Skills.pdf>
- iv) <http://www.stf-media.com/31-0-Presentations.html>

* * *

COURSE ID: 13

Course Name : PROFESSIONAL PRACTICES
Course Code : CCF203
Course Abbreviation : FPRP

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : <nil>

Teaching Scheme: MPECS-2016

Scheme component	Hours / week	Credits
Theory	01	03
Practical	02	

Evaluation Scheme:

Component	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory	TW	OR*	
Details and Duration	--	One mid-term Skill Test(2 hrs)	No Term End Theory Exam	As per proforma V	Oral Exam.	
Marks	--	--	--	25	50 I	75

* Oral Examination to be conducted by internal examiner (course teacher) and external examiner (course teacher of different class from the Institute) and marks to be entered as per Proforma V.

RATIONALE:

The course *Professional Skills* is in continuation of the courses *Generic Skills* and *Communication Skills* studied in semester I and II respectively. In order to be a successful technician in industry, a diploma holder is required to acquire certain professional skills. These skills shall be studied in this course. An overview and awareness about the world of industry has been provided in Chapter 1. Professional skills like leadership skills, team building, stress and conflict management, time management have been dealt with. Aptitude tests have been introduced. A study of major technological projects in the respective programme discipline has been included in the syllabus. Term work assignments of the course provide the student on-field activities as well as self-learning activities providing professional exposure in order to help develop professional skills.

COMPETENCY :

Apply principles of organizational behavioral science for professional skill as follows:

Cognitive : Understanding and applying principles of professional practices in various situations

Psychomotor : i) Use of correct pronunciation, tone, accent & intonation

ii) writing formal letters, drafts, reports etc

iii) Use of correct nonverbal code in formal & informal situations

iv) Speaking in formal & informal situations

Affective : Attitude of i) perfection ii) iii) confidence iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :

CCF203-1 Develop awareness about industrial scenario of world and India

CCF203-2 Acquire professional skills like leadership, stress and conflict management, team building skills

CCF203-3 Identify major technological project in program discipline.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :[**Note : Correlation levels** :1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowled ge	PO 2 Discipli ne knowled ge	PO 3 Experim ents and practice	PO 4 Enginee ring Tools	PO 5 The engineer and society	PO 6 Environ ment and sustaina bility	PO 7 Ethics	PO 8 Individu al and team work:	PO 9 Communi cation	PO 10 Life- long learning	PSO1 Design and develop ment	PSO2 Databas e and Network manage ment
Competency Apply principles of organizational behavioral science for professional skill as follows:	-	2	-	-	2	-	2	3	3	3	-	-
CCF203 -1 Develop awareness about industrial scenario of world and India	-	2	-	-	2	-	-	2	2	2	-	-
CCF203 -2 Acquire professional skills like leadership, stress and conflict management, team building skills	-	-	-	-	2	-	2	3	3	3	-	-
CCF203 -3 Identify majo technological project in program discipline	-	2	-	-	2	-	1	2	2	2	-	-

CONTENT:**A) THEORY :**

Sr. No.	Topics / Sub-topics	Lectures (Hours)
<i>CCF203-1 Develop awareness about industrial scenario of world and India</i>		
1	Industrial Development of India 1.4 Introduction to industrial revolution in the world 1.5 Brief history of industry in India 1.6 Broad categories of industries : Manufacturing industry, service industry 1.7 Present industrial scenario of India : Small scale, medium scale and major industries in the programme discipline 1.8 Major issues related to industrialization	04
<i>CCF203-2 Acquire professional skills like leadership, stress and conflict management, team building skill</i>		
2	Profession and Professional Skills 2.1 Difference in profession, occupation, business 2.2 Leadership : definition, styles and skills 2.3 Team Building : Types of teams. Characteristics of good team and effective teamwork 2.4 Conflict management : Definition and causes of conflict. Methods of resolution - negotiating, compromising, withdrawal, forcing, engagement 2.5 Self SWOT analysis as a professional technician 2.6 Aptitude test 2.7 Emotion management and Interpersonal skills Use of yogic processes like Yogasanas, Yog Nidra, Breathing Exercises and Pranayam, Omkar, Meditation for effective handling of Emotion & Interpersonal relations.	06
<i>CCF203-3 Identify major technological project in program discipline</i>		

Sr. No.	Topics / Sub-topics	Lectures (Hours)
3	Industrial Personalities and Major Projects a. Pioneers of Industrial development of India : Brief biography of Sir M. Visvesaraya and JRD Tata b. Biography and contribution of two great industrial personalities from programme discipline c. Study of 5 major technological projects in the programme discipline	06
	Total	16

B) TERM WORK

Practical Exercises and related skills to be developed:

The term work shall consist of a journal containing write ups by students on the following assignments conducted in practical sessions of batches of about 22 students :

Sr No.	Title of Practical Exercise	Skills / Competencies to be developed	COURSE OUTCOMES
1.	Information Search through internet on Industrial Scenario of India	Information search and interpretation skills	CCF203-1
2.	Information Search through actual visit to MIDCs on classification of industries	Information search and interpretation skills	CCF203
3.	Biography and contribution of Sir M. Visverayya and J.R.D.Tata	Information search and presentation skills	CCF203-3
4.	Biography and contribution of two eminent industrialists from programme discipline	Information search and presentation skills	CCF203-3
5.	Individual SWOT analysis as a professional technician	Self-analysis skills	CCF203-2
6.	Leadereship	Leadership skills	CCF203-2
7.	Stress and Conflict Management	Stress and conflict management skills	CCF203-2
8.	Aptitude test	Self-testing skills	CCF203-2
9.	Case study of a major technological project	Case study skills	CCF203-1,2,3

	in the programme discipline		
10	Breathing Exercises, Pranayam, Omkar chanting and Meditation.	Attaining calmness of mind and balance of Emotions.	CCF203-2

C. INDUSTRIAL EXPOSURE :

SN	Mode of Exposure	Topic
1.	Theory inputs and practical survey	TW Exercise No. 1 and 2
2.	Study of biographies of industrialists	TW Exercise No. 3 and 4
3.	Case study of major industrial project	TW Exercise No. 9

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION**a) Assessment Criteria for Term work :****i) Continuous Assessment of Practical Assignments:**

Every practical assignment shall be assessed for 25 marks

ii) Progressive Skill Test:

One mid-term *Progressive Skill Test* of 25 marks shall be conducted.

Final marks of termwork shall be awarded as per *Assessment Pro-forma V*

b) Term End Oral Examination :

Term-end Oral Examination shall be conducted by internal examiner (course teacher) and external examiner (course teacher of different class from the Institute).

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

1. Lectures cum Demonstrations
2. Classroom practices

Teaching and Learning resources:

1. Chalk board
2. LCD presentations
3. Audio presentations

REFERENCE MATERIAL :**a) Books / Journals / IS Codes**

Sr. No.	Author	Title	Publisher
1.	EH McGrath, SJ	Basic Managerial Skills for all	McGraw Hill
2.	Prakash Iyer	The Secret of Leadership : Stories to Awaken, Inspire and Unleash the Leader Within	

b) Websites

- i) *en.wikipedia.org/wiki/Leadership*

LEVEL-III BASIC TECHNOLOGIES COURSES

COURSE ID :14**Course Name : APPLIED MATHEMATICS****Course Code : ITF301****Course Abbreviation :FAMT****TEACHING AND EVALUATION SCHEME :****Pre-requisite Course(s) : CCF106****Teaching Scheme :**

Scheme component	Hours / week	Credits
Theory	03	04
Tutorial	01	

Evaluation Scheme :

Component Details and Duration	Progressive Assessment		Term End		Total
	Theory	Tutorials	Theory	Practical	
	Average of two tests of 20 marks each	As mentioned in the syllabus	Term End Theory Exam (03 hours)	NIL	
Marks	20	--	80		100

RATIONALE:

Mathematics is an important pre-requisite for the development and understanding of engineering and technological concepts. For an engineer and technologist, knowledge of Mathematics is an effective tool to pursue and to master the applications in the engineering and technological fields. Applied mathematics is designed for its applications in engineering and technology. It includes integration, differential equation,. The connection between applied mathematics and its applications in real life can be understood and appreciated. Integral calculus helps in finding the area, mean value R. M. S value etc . Differential equation is used in finding curve, rectilinear motion.

COMPETENCY:

The course should be taught and implemented with the aim to develop the course outcomes (CO's) for the student to acquire the competency needed to apply the mathematical techniques for engineering subjects.

- 1. Cognitive:** understanding and applying principles of mathematics to engineering problems
- 2. Psychomotor:** To prepare charts displaying the area of irregular shapes using the concept of integration,

To understand concept of complex numbers and hyperbolic functions

3. Attitude: discipline, consistency, hard work , to concentrate ,accuracy, punctuality, aesthetics

COURSE OUTCOMES:

ITF301-1 Apply the concept of integration to find the area ,Mean value and Root Mean Square values

ITF301-2 Solve Differential equation of first order and first degree by various methods and use it to solve various geometrical problems and application to rate and motion of a particle

ITF301-3 To understand and solve examples of complex numbers and hyperbolic functions

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Database and Network management
ITF301.1	3	2	-	2	-	-	-	2	1	3	-	-
ITF301.2	3	2	-	-	-	-	-	1	1	3	-	-
ITF301.3	3	2	-	-	-	-	-	1	1	3	-	-

CONTENT :**C) THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
ITF301-1 Apply the concept of integration to find the area ,Mean value and Root Mean Square values			
1	Indefinite Integrals Definition, Standard formulae 1.1 Rules of Integration(without proof), Examples 1.2 Integration by substitution, 1.3 Integration by parts, 1.4 Integration by partial fractions	12	20
ITF301-1 Apply the concept of integration to find the area ,Mean value and Root Mean Square values			
2	Definite Integrals 2.1 Definition, Examples 2.2 Properties of Definite Integration (without proof), Examples based on properties	06	10
ITF301-1 Apply the concept of integration to find the area ,Mean value and Root Mean Square values			
3	Application of Integration 3.1 Area under the curve and 3.2 Area between two curves 3.3 Mean value & R.M.S. value of a function	06	10
	Total	24	40
.Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
ITF301-2 Solve Differential equation of first order and first degree by various methods			
4	Differential equations 4.1 Definition of differential equation 4.2 Order & degree of Differential equations 4.3 Solutions of Differential equations of first order & first degree of following types 4.3.1 Variables separable 4.3.2 Homogenous Equation 4.3.3 Exact equations 4.3.4 Linear Equations	08	16
ITF301-2 Solve Differential equation of first order and first degree by various methods and use it to solve various geometrical problems and application to rate and motion of a particle			
5	Applications of Differential Equations 5.1 Geometrical application-To find equation of curve 5.2 Application to rates-Displacement, velocity and acceleration of a moving particle	04	04
ITF301-3 To understand and solve examples of complex numbers and hyperbolic functions			

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
6	Complex numbers 6.1 Definition , Algebra of complex numbers , simple examples 6.2 Argand diagram , Polar form ;Exponential form; 6.3 De-Moivre's Theorem, Roots of a complex number 6.4 Euler's Theorem 6.5 Hyperbolic functions ,Relation between trigonometric function and hyperbolic function 6.6 separation into real and imaginary parts	12	20
	Total	24	40
1.Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination:

Topic No.	Name of topic	Distribution of marks (level wise)			Total Marks
		Remember	Comprehension	Application	
1	Indefinite Integrals	4	6	10	20
2	Definite Integrals	2	2	6	10
3	Application of Integration	--	--	10	10
4	Differential equations	2	4	10	16
5	Application of diff.equations	--	--	04	04
6	Complex Numbers	4	4	08	20

TUTORIALS

Note: Tutorials are to be used to get enough practice [One batch for 20 Students]

Sr No.	Topic	Tutorial Content (10 problems in each tutorial)
1	Indefinite Integrals	To evaluate Integration using standard formulae, To evaluate Integration using Substitution Method
2	Indefinite Integrals	To evaluate Integration of Various forms.
3	Indefinite Integrals	To evaluate Integration using by Parts rule and Partial fraction method
4	Definite Integrals	To evaluate Define Integration for various forms and using properties.
5	Application of Integration	Apply Integration concepts to find Area ,Mean value, RMS value
6	Differential equations	To determine Order and Degree of D.E.. Examples on V.S. form , Homogeneous form
7	Differential equations	Examples on Linear of D.E and Exact D.E.
8	Aplication of D.E.	Examples on Rates and geometrical applications
9	Complx numbers(1)	Examples of complex numbers
10	Complx numbers(2) Hyperbolic functions	Examples of hyperbolic functions

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

1. Lectures and Demonstrations
2. Tutorials

Teaching and Learning resources:

1. Chalk board
2. Item Bank
3. Charts

REFERENCE MATERIAL :**a) Books:**

Sr. No.	Author	Title	Publisher
1.	G.V. Kumbhojkar	Engineering Mathematics III	PhadakePrakashan, Kolhapur
2.	Patel, Rawal,	Applied Mathematics	NiraliPrakashan,Pune
3.	P.M.Patil and others	Applied Mathematics	Vision Publication, Pune
4.	Sameer Shah	Applied Mathematics	Tech-Max Publication, Pune
5.	P.N.Wartikar	Applied mathematics	Pune vidyarthiGriha Prakashan , pune
6	H.K.Dass	Higher engineering mathematics	S .Chand publication
7	B.S.Grewal	Higher engineering Mathematics	Khanna publication, New Delhi

b) Website

- i) www.khanacademy.org
- ii) www.easycalculation.com
- iii) www.math-magic.com

COURSE ID: 15

Course Name : DIGITAL ELECTRONICS
Course Code : ITF 302
Course Abbreviation : FDTE

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	3	5
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	iii. 25 marks for each practical iv. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-II	
Marks	20	--	80	--	50	150

RATIONALE:

In the present era, applications of digital circuits are prevalent in consumer products right from calculators, digital diaries, digital watches, computers, mobile phones, to industrial products. So the digital technique has been introduced as a core technology subject. It will enable the students to assemble, design, test logical circuits such as ALU, Mux, Demux, A/D and D/A converters. It deals with topics ranging from logic gates to combinational and sequential logic circuits and memories. It lays a foundation for the knowledge of microprocessors and computers.

COMPETENCY :

Understand and use number system and gate logic for programming.

Cognitive : Understanding and applying logic to design digital circuits

Psychomotor : i) Designing combinational circuits using K-map techniques
 ii) Creating circuits on breadboard from circuit diagram and tests the output

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :**ITF302-1** Understand all number systems and its conversions**ITF302-2** Solve problems on K-map, Sum of products, Product of Sum**ITF302-3** Implement logic of K-map to design combinational circuits**ITF302-4** Describe various sequential circuits and its types**ITF302-5** Distinguish various types of memories**ITF302-6** Conversion of analog to digital signal and vice versa using respective circuits**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :**[**Note : Correlation levels** : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs										PSO1 Design And development	PSO2 Database and network management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency- Understand and use number system and gate logic for programming.	3	3	2	1	2	-	1	1	1	2	1	-
ITF302-1 Understand all number systems and its conversions	3	3	2	1	2	-	1	1	1	2	1	-
ITF302-2 Solve problems on K-map, SOP, POS	3	3	-	-	2	-	1	1	1	2	-	-
ITF302-3 Implement logic of K-map to design combinational circuits	3	3	3	2	2	-	1	2	1	2	-	-
ITF302-4 Describe various sequential circuits and its types	2	2	2	1	1	-	1	1	1	1	-	-
ITF302-5 Distinguish various types of memories	3	3	1	1	3	1	1	2	1	1	-	-
ITF302-6 Conversion of analog to digital signal and vice versa using respective circuits	3	3	2	1	2	-	1	1	1	2	1	-

CONTENT:

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF302-1 Understand all number systems and its conversions			
1	NUMBER SYSTEMS & CODES 1.1 Introduction to Number systems- Binary number System, Decimal number System. 1.2 Octal no system, Hexadecimal no. System. 1.3 Decimal to binary, hexadecimal, octal conversion 1.4 Binary to decimal, Hexadecimal, octal conversion. 1.5 Hexadecimal to decimal, binary, octal conversion. 1.6 Octal to Decimal, binary, hexadecimal conversion. 1.7 Binary arithmetic 1.7.1 Addition. 1.7.2 Subtraction 1.9 Binary subtraction using 1's & 2's complement 1.10 BCD subtraction using 9's and 10's complement 1.11 Study of different codes. 1.11.1 Gray code. 1.11.2 Alphanumeric code. 1.11.3 Extended BCD interchange code. 1.11.4 ASCII codes	8	14
Course Outcome ITF302-2 Solve problems on K-map, Sum of products, Product of Sum			
2	LOGICAL GATES & BOOLEAN ALGEBRA 2.1 Study of Logic Gates i.e. AND, OR, NOT, NAND, NOR, EX-OR 2.2 Commutative, Associative and distributive Laws. 2.3 Demorgan's theorem	6	10

	2.4K-Map representation of logical functions. 2.5K-Map reduction techniques 2.6Sum of Product & Product of Sum reduction techniques		
Course Outcome ITF302-3 Implement logic of K-map to design combinational circuits			
3	COMBINATIONAL LOGIC CIRCUITS. 3.1 Full & Half adder. 3.2 Full adder using Half adder. 3.3 Parallel binary adder. 3.4 Study of 4 bit binary adder. IC7483 3.5 Half & Full Subtractor. 3.6 Study of ALU IC74181. 3.7 Multiplexer, Demultiplexer 3.8 Encoder, Decoder	10	16

Section -II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF302-4 Describe various sequential circuits and its types			
4	SEQUENTIAL LOGIC DESIGN 4.1 Introduction - definition, concept of Latch etc. 4.2 Circuit diagram, truth table and working of RS flip flop, D-flip, flop, T flip-flop. 4.3 Race around condition in J-K flip flop. 4.4 Level triggered flip flop. 4.5 Introduction to registers. 4.6 Shift registers, universal Registers. 4.7 SISO, SIPO, PISO, PIPO modes of operation of shift registers.	10	16

	4.8 Bidirectional shift registers 4.9 Applications of shift registers. 4.10 Introduction to counters 4.11 Classification of counters 4.12 Ripple up counter 4.13 Ripple down counter 4.14 Ripple up down counter 4.15 Mod N ripple counter		
Course Outcome ITF302-5 Distinguish various types of memories			
5	MEMORIES 5.1 Introduction 5.2 Classification 5.3 Memory organization & operation. 5.4 Introduction to different types of memories such as RAM, ROM, EPROM, EEPROM, PROM etc. (static & dynamic)	08	10
Course Outcome ITF302-6 Conversion of analog to digital signal and vice versa using respective circuits			
6	DATA CONVERTERS 6.1 Circuit diagram, working and the expression for output voltage of binary weighted register DAC 6.2 Principle of working of R-2R ladder DAC 6.3 Principle of working of Dual Slope ADC 6.4 Study of ICs 0808, 0809.	06	14

Specification table for setting question paper for semester end theory examination

Section / Topic no.	Name of topic	Distribution of marks (level wise)			Total marks
		Knowledge	Comprehension	Application	
I / 1	Number System & codes	08	06	00	14
I / 2	Logical gates & Boolean algebra	06	04	00	10
I / 3	Combination Logic circuits.	04	06	06	16
II / 4	Sequential Logic Design	00	06	06	12
II / 5	Memories	06	08	02	16
II / 6	Data converters	06	06	02	14

Laboratory experiences and related skills developed.

Sr. no	Laboratory experience	Skills developed	CO
1	Number System	1) To understand Number System. 2) To understand conversion among number systems	<i>ITF302-1</i>
2	Study of Logic Gates & demorgan's theorem	1) To understand all Logic Gates. 2) To understand demorgan's 1 st theorem 3) To understand demorgan's 2 nd theorem	<i>ITF302-2</i>
3	Full & Half adder	1) To understand Full & Half adder circuit operation. 2) To understand input and output of Full & Half adder.	<i>ITF302-1</i>
4	Adder / Subtractor	1) To understand Adder circuit operation. 2) To understand input and output of adder. 3) To understand Subtractor circuit operation. 4) To understand input and output of Subtractor.	<i>ITF302-3</i>
5	Multiplexers, DeMultiplexers	1) To understand Multiplexers circuit operation. 2) To understand input and output of Multiplexers adder. 3) To understand Multiplexers circuit operation.	<i>ITF302-4</i>
6	Flip-Flop	1) To understand RS, Master Slave RS, D, T Flip-Flop. 2) To understand input and output of Multiplexers RS, Master Slave RS, D, T Flip-Flop.	<i>ITF302-4</i>

7	Ripple Up Down Counter	1) To understand Ripple Up Down Counter circuit operation. 2) To understand input and output of Ripple Up Down Counter.	ITF302-4
8	DAC/ADC	1) To understand DAC/ADC circuit operation. 2) To understand input and output of DAC/ADC.	ITF302-6

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	5
2	Preparedness for practical	10
3	Correct figures / diagrams	10
4	Observation tables	10
5	Result table / calculations / graphs	10
6	Safety / use of proper tools	5
		50

Criteria for assessment at semester end practical exam

Sr. no	Criteria	Marks allotted
1	Correct figures / diagrams	15
2	Observation tables	10
3	Result table / calculations / graphs	15
4	Safety / use of proper tools	10
	Total	50

Assessment as per Performa-II.

Instructional strategies:

- 1) Lectures and discussions.
- 2) Laboratory experiences and laboratory interactive sessions.
- 3) Time bound assignments.

Teaching and Learning resources, including references:

- 1) Chalk-board.
- 2) Demonstrative kits.

3) Demonstrative charts.

Books:

1. Digital Principals :Malvino
2. Digital Computers Fundamentals : P.C. Bartee
3. Digital Electronics :: R.P. Jain
4. TTL CMOS Data Handbook

COURSE ID: 16

Course Name : DATA COMMUNICATION
Course Code : ITF303
Course Abbreviation : FDTC

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	4	5
Tutorial	1	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma - II	
Marks	20	--	80	--	50	150

RATIONALE:

Communication plays a vital role in various fields like business, academics, defense, budget research, engineering, medicine. In the present Industrial & commercial environment, the technician is expected to use digital communication skillfully.

The primary purpose of this course is to give an elementary but sound fundamental understanding of how data communication work, its basic components, how they work and basic knowledge of applications of Internet.

COMPETENCY

Explain analog and digital communication techniques.

Cognitive: i) Show how data communication works

ii) Describe data communication basic components, how they work.

Psychomotor: i) Investigate hardware & software components of a communication system ii) drawing data communication models iii) Digital & Analog communication

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality

COURSE OUTCOMES:**ITF303-1:** Explain the concepts of data communication and networking**ITF303-2:** Describe analog and digital signal.**ITF303-3:** Describe digital to analog and analog to analog conversion**ITF303-4:** Classify line coding schemes, transmission modes, conversion and block coding techniques**ITF303-5:** Illustrate Protocols for Noiseless and Noisy Channels**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX**[**Note : Correlation levels :** 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs										PSO1 Design and Development	PSO2 Networking and Database Management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Explain analog and digital communication techniques.	1	2	-	-	1	-	-	1	-	2	-	-
ITF303-1 Explain the concepts of data communication and networking	1	2	-	-	1	-	-	1	-	1	-	-
ITF303-2: Describe analog and digital signal.	-	1	-	-	-	-	-	1	-	1	-	-
ITF303-3: Describe digital to analog and analog to analog conversion	-	1	-	-	-	-	-	1	-	1	-	-
ITF303-4 Classify line coding schemes, transmission modes, conversion and block coding techniques	-	1	-	-	-	-	-	1	-	2	-	-
ITF303-5: Illustrate Protocols for Noiseless and Noisy Channels	-	1	-	-	-	-	-	1	-	2	-	-

CONTENT:**K. THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF303-1 :Explain the concepts of data communication and networking			
1	INTRODUCTION TO DATA COMMUNICATION 1.1 Characteristics of Data communication 1.2 Communication System Components 1.3 Data Representation 1.4 Data Flow 1.5 Network Communication Model 1.5.1 OSI Model(Introduction)	08	12
Course Outcome ITF303-2 :Describe analog and digital signal.			
2	DATA & SIGNALS 2.1 Analog & Digital 2.1.1 Analog and Digital Data 2.1.2 Analog and Digital Signals 2.1.3 Periodic and Non Periodic Signals 2.2 Periodic Analog Signals 2.2.1 Sine wave 2.2.2 Phase 2.2.3 Wavelength 2.2.4 Time and Frequency Domain 2.2.5 Bandwidth 2.3 Digital signals 2.3.1 Bit rate 2.3.2 Bit Lengths 2.3.3 Transmission of digital Signals 2.4 Transmission Impairments 2.4.1 Attenuation 2.4.2 Distortion 2.4.3 Noise	12	14
Course Outcome ITF303-3: Describe digital to analog and analog to analog conversion.			
3	ANALOG TRANSMISSION 3.1 Digital to analog Conversion 3.1.1 Aspects of digital to analog conversion	10	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	3.1.2 Amplitude Shift Keying 3.1.3 Frequency Shift Keying 3.1.4 Phase Shift Keying 3.2 Analog to Analog Conversion 3.2.1 Amplitude Modulation 3.2.2 Frequency Modulation 3.2.3 Phase Modulation 3.3 Frequency Division Multiplexing 3.4 Wavelength Division Multiplexing 3.5 Synchronous Time Division Multiplexing		
SECTION- II			
<i>Course Outcome ITF303-4 : Classify line coding schemes, transmission modes, conversion and block coding techniques</i>			
4	DIGITAL TRANSMISSION 4.1 Characteristics of Line coding schemes 4.2 Line coding scheme 4.2.1 Unipolar-NRZ 4.2.2 Polar-NRZ-L NRZ-I 4.2.3 Bipolar-AMI 4.2.4 Multilevel 4.2.5 Multiline Transmission MLT-3 4.3 Analog to Digital Conversion -Pulse Code Modulation(Introduction) -Delta Modulation(Introduction) 4.4Transmission Modes -Parallel Transmission -Serial transmission	10	14
5	ERROR DETECTION AND CORRECTION 5.1 INTRODUCTION 5.1.1 Types of error 5.1.2 Redundancy 5.1.3 detection Versus Correction 5.2 Block coding 5.2.1 Error detection 5.2.2 Error Correction 5.2.3 Hamming distance 5.2.4 Minimum Hamming Distance 5.3 Linear Block Code 5.3.1 Minimum Distance for Linear Block Code	12	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	5.3.2 Simple parity check codes 5.3.3 Hamming codes 5.4 Cyclic Codes 5.4.1 Cyclic Redundancy check 5.4.2 Advantages of cyclic codes 5.5 Checksum- Idea, One's complement		
Course Outcome ITF303-5 : Illustrate Protocols for Noiseless and Noisy Channels			
6	DATA LINK CONTROL 6.1 Framing 6.2 Flow and Error Control 6.3 Protocols For Noiseless channel 6.3.1 Simplest Protocol 6.3.2 Stop-and-Wait Protocol 6.4 Protocols for Noisy channel 6.4.1 Stop-and-Wait Automatic Repeat Request 6.4.2 Go-Back-N Automatic Repeat Request 6.4.3 Selective Repeat Automatic Repeat Request 6.4.5 Piggybacking	10	12
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination:

Section / Topic no.	Name of topic	Distribution of marks			Total marks
		Knowledge	Comprehension	Application	
I / 1	Introduction to Data Communication	04	06	02	12
I / 2	Data and Signals	06	04	04	14
I / 3	Analog Transmission	06	04	0	14
I / 4	Digital Transmission	06	04	04	14
II / 5	Error Detection and Correction	04	04	06	14
II/6	Data Link Control	04	04	04	12

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

L. TERM WORK

Term work shall consist of the following:

iii) Laboratory experiments and related skills to be developed :

Sr. No.	Title of Experiment	Skills to be developed	CO
1.	Data and Communication Model.	<ul style="list-style-type: none"> • Understanding Data • Data Representation • Data Flow 	ITF303-1
2.	Analog Data & Signals	<ul style="list-style-type: none"> • Understanding Characteristics of Signal • Period, Frequency, Phase, Wavelength • Calculation of Bandwidth..Examples 	ITF303-2
3.	Digital Data & Signals	<ul style="list-style-type: none"> • Understanding Characteristics of Signal • Bit Rate, Bit Length, Baseband and broadband Transmission • Calculation Examples 	ITF303-2
4.	Transmission Impairments	<ul style="list-style-type: none"> • Understanding Factors which affects Communication • Attenuation, Unit of attenuation, Distortion, Noise. • Methods to detect these Factors 	ITF303-2
5.	Digital Transmission	<ul style="list-style-type: none"> • Understanding Coding Scheme and Transmission Mode for digital transmission • Line Coding • Block Coding • Transmission Modes 	ITF303-4
6.	Analog Transmission	<ul style="list-style-type: none"> • Understanding aspects of Digital to Analog Conversion • Examples 	ITF303-3
7.	Serial Transmission	<ul style="list-style-type: none"> • Demonstration of serial transmission using COM port 	ITF303-4
8.	Modems	<ul style="list-style-type: none"> • Understanding Role of Modem • Functions of Modem • Operation of Modems • Types of Modem and Examples 	ITF303-4
9.	Error Detection and Correction	<ul style="list-style-type: none"> • Error Detection V/S Correction • Hamming Distance • Linear Codes, Cyclic Code • Examples 	ITF303-4
10.	Flow Control and Error Control	<ul style="list-style-type: none"> • Understanding Flow and Error Control • Protocols for Flow and Error Control 	ITF303-5
11	Case Study	<ul style="list-style-type: none"> • Case Study of Example Network(Like Telephone Networks , switching Network, Wireless Network) • Technical Report 	ITF303-1-5

iv) Progressive Skills Test :**Criteria for Continuous Assessment of Practical work and Progressive skill Test:**

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	10
2	Preparedness for practical	10
3	Neat & complete Diagram.	10
5	Logical thinking and approach	10
6	Oral Based on Lab work and completion of task	10
TOTAL		50

Assessment at semester end practical exam as per Pro-forma II.

Criteria for assessment at semester end oral exam:

Sr. no	Criteria	Marks allotted
1.	Technical ability	20
2.	Communication skill	10
3.	Logical approach	20
	TOTAL	50

INSTRUCTIONAL STRATEGIES :**Instructional Methods:**

1. Lectures cum Discussions
2. Regular Home Assignments.
3. Laboratory experiences and laboratory interactive sessions

Teaching and Learning resources:

1. Chalk board
2. Slides
3. Self-learning Tutors

REFERENCE MATERIAL:**a) Books / Codes**

Sr. No.	Author	Title	Publisher
1.	BehrouzForouzan	Data Communication and networking	The McGraw-Hill
2.	stallings	Data Communication and networking	Pearson Education India

b) Websites

<http://my.safaribooksonline.com>

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COURSE ID: 17

Course Name : Object Oriented Programming Using C++
Course Code :ITF304
Course Abbreviation : FCPP

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	3	7
Practical	4	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (External)	
Details of Evaluation	Average of two tests of 20 marks each	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma - I	
Marks	20	--	80	--	50E	150

RATIONALE:

Object oriented programming has become the preferred approach for most software projects. Object oriented programming concepts are useful for constructing complex physical systems. Instead of viewing the program as a series of steps to be carried out, it views as a group of objects that have certain properties and can take appropriate actions. Among the Object oriented programming languages available, C++ is most widely used language. Different programs based on Inheritance, polymorphism, encapsulation, overriding requires knowledge of C++. This subject acts as a base for languages JAVA, VC++ & UML.

COMPETENCY

Apply Basic POP and OOP concepts to solve given problems

Cognitive: Understand concept of object oriented programming in various applications.

Psychomotor: i) Use C++ editor on Windows and/or Linux platform

ii) Compile and debug C++ program

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES:

ITF304-1: Explain the concepts of object oriented programming, and related functions.

ITF304-2: Develop C++ programs using classes and objects.

ITF304-3: Implement constructor, destructor and operator overloading in C++ program.

ITF304-4: Implement Inheritance in C++ program.

ITF304-5: Express concept of pointers with its types & describe virtual function.

ITF304-6: Develop C++ programs to perform file operations.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs										PSO1 Design and development	PSO2 Database and Network management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
COMPETENCY- Apply Basic POP and OOP concepts to solve given problems	1	2	3	2	-	-	-	2	1	2	2	-
ITF304-1 Explain the concepts of object oriented programming, and related functions.	1	2	3	2	-	-	-	2	-	3	1	-
ITF304-2 Develop C++ programs using classes and objects.	-	2	3	2	-	-	-	2	-	2	2	-
ITF304-3 Implement constructor, destructor and operator overloading in C++ program.	-	2	3	2	-	-	-	2	-	2	3	-
ITF304-4 Implement Inheritance in C++ program.	-	2	3	2	-	-	-	2	-	2	2	-
ITF304-5 Express concept of pointers with its types & describe virtual function.	-	2	3	2	-	-	-	2	-	2	2	-
ITF304-6 Develop C++ programs to perform file operations.	-	2	3	2	-	-	-	2	-	2	2	-

CONTENT:**THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
ITF304- 1 Explain the concepts of object oriented programming, and related functions..			
1	PRINCIPLE OF OBJECT ORIENTED PROGRAMMING 1.1 What is OOP? 1.2 Applications of OOP 1.3 Beginning with C++ 1.3.1 A simple C++ program 1.3.2 Structure of C++ program 1.3.3 Creating source file 1.3.4 Compiling & linking 1.4 Tokens, Expressions and control structures 1.4.1 Tokens, keywords, identifiers, Basic data types, Derived data types, Symbolic Constants, Type Compatibility, Declaration of variables, Operators in C++, Scope Resolution operator, Memory management operators manipulators and type cast operator, operator precedence 1.4.2 Control structures.	06	08
2	FUNCTIONS IN C++ 2.1 Introduction 2.2 The main function 2.3 Function prototype 2.4 Default arguments, constant arguments 2.5 Call by value 2.6 Call by Reference 2.7 Return by Reference 2.8 Inline function 2.9 Function overloading	06	08
ITF304-2: Develop C++ programs using classes and objects.			
3	CLASSES & OBJECTS 3.1 Introduction 3.2 Specifying a class, defining member function, a C++ program with a class, Making a outside function inline, Nesting of member function, Private member functions, Arrays within class	08	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	3.3 Memory allocation for Objects ,Static data member, static member function, Arrays of Objects, Objects as a function argument, Friendly functions, Returning object		
<i>ITF304-3Implement constructor, destructor and operator overloading in C++ program.</i>			
4	CONSTRUCTORS & DESTRUCTORS 4.1 Introduction 4.2 Constructors , Parameterized constructors, Multiple constructors in a class, Constructors with Default arguments 4.3 Dynamic initialization of objects. 4.4 Copy Constructor 4.5 Destructors	04	10
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Subtopics	Lectures (Hours)	Theory Evaluation (Marks)
5.	OPERATOR OVERLOADING 5.1 Introduction 5.2 Defining operator overloading, Overloading unary operator, Overloading binary operator using friends, Manipulation of strings using operators, Rules for overloading,	06	12
<i>ITF304-4Implement Inheritance in C++ program.</i>			
6	INHERITANCE : EXTENDING CLASSES 6.1 Introduction 6.2 Concept of Inheritance, Defining derived classes, Types of inheritance(single, multilevel, multiple, Hierarchical, hybrid), making a private member inheritance, 6.3 Virtual base classes, abstract classes,	06	10
<i>ITF304-5 Express concept of pointers with its types & describe virtual function.</i>			
7	POINTERS, VIRTUAL FUNCTION & POLYMORPHISM 7.1 Introduction 7.2 Concept of Pointers,	06	10

	(Pointer declaration, pointer operator, Address operator, pointer expressions, and pointer arithmetic), Pointers to objects, THIS pointer, pointer to derived classes, 7.3 Virtual function, pure virtual function,		
ITF304-6 Develop C++ programs to perform file operations.			
8	CONSOLE I/O OPERATIONS AND FILE HANDLING 8.1 Introduction 8.2 C++ streams, C++ stream classes, 8.3 unformatted I/O operations, 8.4 formatted I/O operations – width() , precision(), fill() 8.5 Managing output with manipulators 8.6 Working with Files 8.6.1 Introduction 8.6.2 classes for file stream operations, opening and closing a file, 8.6.3 detecting End-of-file, more about open () : file modes, 8.6.4 sequential input and output operations - put() and get() Function - write() and read () Function	06	08
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination:

Section / Topic no.	Name of topic	Distribution of marks			Total marks
		Knowledge	Comprehension	Application	
I / 1	Principal of Object Oriented Programming	04	02	02	08
I / 2	Classes & Objects	04	02	02	08
I / 3	Functions in c++	04	06	04	14
I / 4	Constructors & Destructors	02	04	04	10
II / 5	Operator overloading	04	04	04	12
II/6	Inheritance : Extending classes	02	04	04	10
II/7	Pointers, virtual function & polymorphism	02	04	04	10
II/8	Managing Console I/O Operations	02	02	04	08

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

M. TERM WORK

Term work shall consist of the following:

v) Laboratory experiments and related skills to be developed :

The following practical exercises shall be conducted as in practical sessions of batches of about 20 students :

Sr. No.	Title of Experiment	Skills to be developed	CO
01	Comparative study of POP & OOP	<ol style="list-style-type: none"> 1. Definition of POP 2. Definition of OOP 3. Characteristics of POP & OOP 4. Basic concepts of OOP 	ITF304-1
02	Program to Input And Output data	<ol style="list-style-type: none"> 1. Understanding Input & Output Stream 2. Syntax for cin and cout 3. Simple C++ Program 	ITF304-1
03	Program to create an object of a class	<ol style="list-style-type: none"> 1. Definition of class and Object 2. Study of access specifiers 3. Syntax for class declaration 4. Use of Dot operator 5. Syntax of object creation 6. Program using class & Objects 	ITF304-2
04	Program to create and manipulate array of object	<ol style="list-style-type: none"> 1. Understanding Array of objects 2. Syntax for declaration of array of objects 3. Implementation of this concept. 	ITF304-2
05	Program to access Static member variables	<ol style="list-style-type: none"> 1. Understanding static member variable 2. Syntax to declare static member variable 3. Program using static member variable 	ITF304-2
06	Program using object as function argument	<ol style="list-style-type: none"> 1. Understanding Object as Argument to function 2. Syntax for function Declaration having object as argument. 3. Understanding Call by Value & Pass by Reference 4. Implementation of object as function argument. 	ITF304-1,2
07	Program to define a class with constructor and destructor.	<ol style="list-style-type: none"> 1. Definition of Constructor 2. Characteristics of constructor 3. Definition of Destructor 4. Characteristics of Destructor 5. Syntax for Declaration of Constructor & destructor function 6. Program based on constructor and destructor. 	ITF304-3
08	Program using constructor with default argument	<ol style="list-style-type: none"> 1. Understanding constructor with default arguments 2. Syntax for default arguments 3. Program using constructor with default argument 	ITF304-3
09	Program to overload unary and binary operator	<ol style="list-style-type: none"> 1. Understanding operator overloading 2. Rules for overloading unary operators 3. Rules for overloading binary operators 	ITF304-3

		<ol style="list-style-type: none"> Operators cannot be overloaded Syntax for declaration of operator overloading function Programs for overloading various operators. 	
10	Program to implement single and hierarchical Inheritance.	<ol style="list-style-type: none"> Definition of inheritance Understanding Base and Derived classes. Definition of single inheritance Definition of hierarchical inheritance Three visibility modes in inheritance Syntax to derive a class from base class. Programs based on single and hierarchical inheritance 	ITF304-4
11	Program to implement Multiple Inheritance with virtual base class.	<ol style="list-style-type: none"> Definition of Multiple Inheritance and Virtual base class. Syntax to declare a base class as virtual. Programs based on Multiple Inheritance with virtual base class. 	ITF304-4
12	Program to overload a function	<ol style="list-style-type: none"> Definition of function overloading Compile time and Runtime polymorphism Syntax for Function overloading Implementation of function overloading 	ITF304-3
13	Program to implement run time polymorphism	<ol style="list-style-type: none"> Understanding Late Binding & Dynamic binding Definition of virtual Function. Rules for declaring virtual Function Syntax to declare virtual Function Implementation of virtual Function 	ITF304-5
14	Program using Pointer	<ol style="list-style-type: none"> Understanding pointers in C Declaration and definition of pointers in C Implementation of pointers in C 	ITF304-5
15	Program using Pointer to string	<ol style="list-style-type: none"> Declaration and definition of pointers in C++ Understanding pointers to string concept Syntax to Declare pointers to string with example Implementation of pointers to string 	ITF304-5
16	Program using Pointer to object	<ol style="list-style-type: none"> Understanding Pointer to object Syntax to declare a pointer to object Implementation of pointers to object 	ITF304-5
17	Program using 'this' Pointer	<ol style="list-style-type: none"> Use and Definition of this pointer Program using 'this' pointers 	ITF304-5
18	Program to format output using manipulators	<ol style="list-style-type: none"> What is manipulators. Use of manipulators List of manipulators Implementation 	ITF304-6
19	Program for file Processing	<ol style="list-style-type: none"> Study of I/O Streams use and Syntax of open() & close() method study of various modes for opening a file. Program for reading writing from/to file. 	ITF304-6

20	A mini project based on oop using c++ (with group of four students.)	<ol style="list-style-type: none"> 1. what is project 2. A small applications using c++:- <ul style="list-style-type: none"> - Implementing DOS commands using command line arguments e.g. copy ,type, copy con., - Student data management – Using Structure & arrays, - Develop games using classes 	ITF304-1..6
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vi) Progressive Skills Test :

Criteria for Continuous Assessment of Practical work and Progressive skill Test :

Sr. No.	Criteria	Marks allotted
1	Attendance	5
2	Preparedness for practical	5
3	C++ program	5
4	Logical Approach	5
5	Presentation	5
6	Multiple Choice Questions Test	25
	Total	50

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end practical exam as per Pro-forma I.

INSTRUCTIONAL STRATEGIES :

Instructional Methods :

- 1) Lectures and discussions.
- 2) Laboratory experiences and laboratory interactive sessions.
- 3) Time bound assignments.

Teaching and Learning resources:

5. Books
6. Transparencies
7. Power Point Presentation
8. Self-learning

REFERENCE MATERIAL:**c) Books / Codes**

Sr. No.	Author	Title	Publisher
1.	E BALAGURUSAMY	Object Oriented Programming with C++	Tata McGraw-Hill Education
2.	Robert Lafore	Object Oriented Programming in Turbo C++	Galgotia Publications
3	YashwantKanetkar.	Let us C ++	BPB PUBLICATIONS
4	John R Hubbard	Programming with C++	Tata McGraw-Hill Education

d) Websites for mini project

- a. www.sourcecodesworld.com
- b. www.softteam.com
- c. www.cplusplus.com/od/beginner/tutorial1

COURSE ID: 18

Course Name : DATABASE MANAGEMENT SYSTEM
Course Code : ITF305
Course Abbreviation : FDBM

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	4	8
Practical	4	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (External)	
Details of Evaluation	Average of two tests of 20 marks each	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma - I	
Marks	20	--	80	--	50E	150

RATIONALE:

The essential requirement of any organization maintaining database system is the knowledge and hands-on experience of powerful database management system. Also the need of today's software development is competence in a GUI based front end tool, which can connect to relational database engine. The database management system is a collection of programs that enables to store, modify and extract information from a database. This course gives the students the ability to understand the design of DBMS and use any RDBMS package as a backend for developing database applications.

COMPETENCY

Design and implement normalized database structure and solve SQL, PL/SQL queries

Cognitive: The students will be able to:

1. Identify the concept of Relational Database system
2. Define program data independence, database schema and database instances and analyze different data models.

3. Execute different SQL queries and PL / SQL programs.

Psychomotor: i) Installation of database software ii) Execute SQL queries iii) Draw E-R diagram

Affective: Attitude of i) precision ii) accuracy iii) punctuality

COURSE OUTCOMES:

ITF305-1: State the importance and advantages of DBMS and describe the structure of DBMS.

ITF305-2: Explain the concept of relational algebra and implement set operations.

ITF305-3: Create PL/SQL code using Control Structure, Functions and Triggers

ITF305-4: Explain the need of normalization and state various forms of normalization.

ITF305-5: Define the properties of transaction management and understand the concepts of concurrency control and recovery.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[**Note : Correlation levels :** 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and Development	PSO2 Networking and database management
Competency: design and implement normalized database structure and solve SQL,PL/SQL queries	-	2	2	2	-	-	-	2	-	3	2	2
ITF305-1: State the importance and advantages of DBMS and describe the structure of DBMS.	-	1	-	-	-	-	-	2	-	2	-	-
ITF305-2: Explain the concept of relational algebra and implement set operations.	-	1	-	-	-	-	-	2	-	2	-	-
ITF305-3: Create PL/SQL code using Control Structure,	-	1	3	2	-	-	-	3	-	3	2	2

Functions and Triggers.												
ITF305-4: Explain the need of normalization and state various forms of normalization.	-	2	-	-	-	-	-	1	-	3	-	2
ITF305-5: Define the properties of transaction management and describe concepts of concurrency control and recovery.	-	2	-	-	-	-	-	2	-	3	-	2

CONTENT:**Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF305-1: State the importance and advantages of DBMS and describe the structure of DBMS.			
1	INTRODUCTION TO DBMS 1.1 Purpose of Database System 1.2 DBMS vs. File system 1.3 Instances and Schemas 1.4 Data Models: 1.4.1 Entity Relationship Model 1.4.2 Relational Model 1.5 Data Definition Language, Data Manipulation Language 1.6 Database Administrator and Database Users 1.7 Entity sets, Relationship set, Attributes, types of attributes, domain, Mapping Cardinalities, concept of database keys	08	10
Course Outcome ITF305-2: Explain the concept of relational algebra and implement set operations.			
2	RELATIONAL MODEL 2.1 Structure of Relational Database 2.2 Database Schema 2.3 Query languages 2.4 Relational Algebra 2.4.1 Fundamental Operations	04	06
3	SQL 3.1 Introduction to SQL queries 3.2 Creating, Inserting, Updating, Deleting tables 3.3 Integrity constraints – primary key, foreign key, NULL constraints 3.4 Arithmetic, Logical, Relational operators 3.5 Aggregate functions, Mathematical functions, Date	10	12

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	functions,String functions 3.6Sub queries, concept of join, 3.7 View – need, creating, updating and deleting database view 3.8 concept of index		
Course Outcome ITF305-3 : Create PL/SQL code using Control Structure, Functions and Triggers			
4	PL / SQL 4.1 PL/ SQL block structure 4.2 Variables 4.3 PL/SQL control structures 4.4 Cursors – Types, Attributes 4.5 Triggers – Use of database trigger 4.6 Stored procedures and functions – Advantages, Syntax for creating 4.7 Exception handling in PL/SQL	10	12
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Subtopics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF305-4 : Explain the need of normalization and state various forms of normalization			
5.	NORMALIZATION 5.1 Purpose of normalization 5.2 Functional dependencies and decomposition 5.3 Normalization using 1NF, 2NF, 3NF, BCNF	06	08
Course Outcome ITF305-5: Define the properties of transaction management and understand the concepts of concurrency control and recovery.			
6	QUERY PROCESSING AND TRANSACTION PROCESSING 6.1 Overview of query processing 6.1.1 Parsing and Translation 6.1.2 Optimization	10	12

	6.1.3 Evaluation 6.2 Measures of query cost 6.3 Concept of transaction 6.4 Transaction states 6.5 Concurrent executions 6.6 Serializability 6.7 Recoverability		
7	CONCURRENCY CONTROL 7.1 Lock based Protocols 7.1.1 Locks- shared mode and exclusive mode lock 7.1.2 Granting of locks 7.2 Two phase locking protocol 7.3 Time stamp based protocol 7.4 Validation based Protocol	08	10
8	RECOVERY 8.1 Failure classification 8.2 Data access 8.3 Log based Recovery 8.3.1 Deferred database modification 8.3.2 Immediate database modification 8.3.3 Checkpoints	08	10
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination:

Section / Topic no.	Name of topic	Distribution of marks			Total marks
		Knowledge	Comprehension	Application	
I / 1	Introduction To DBMS	5	2	3	10
I / 2	Relational Model	2	2	2	06
I / 3	SQL	4	4	4	12
I / 4	PL / SQL	4	2	6	12
II / 5	Normalization	4	2	2	08
II/6	Query Processing And Transaction Processing	4	4	4	12
II/7	Concurrency Control	4	4	2	10
II/8	Recovery	4	4	2	10

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

N. TERM WORK

Term work shall consist of the following:

vii) Laboratory experiments and related skills to be developed :

(**Note:** Practical exercises should be done on the recent version of any RDBMS package like Oracle, Microsoft SQL server, IBM DB2 or Mysql etc.)

Sr. No.	Title of Experiment	Skills to be developed	CO
01	Study of database design	1) Study of database schema 2) Designing ER diagram for any database	ITF305-1
02	Study of Relational Algebra operations	1) Study of fundamental operations of relational algebra 2) Queries based on relational algebra	ITF305-2
03	Creating database	1) Creating database 2) Creating table 3) Inserting, updating and deleting records 4) Displaying records 5) Applying integrity constraints	ITF305-2
04	Modifying table structure	1) Using Alter table command 2) Using Rename command	ITF305-2
05	Operators	1) Executing SQL queries using Arithmetic, Logical, Mathematical operators 2) Grouping data from tables	ITF305-2
06	Functions	1) Executing SQL queries using String functions 2) Executing SQL queries using Date functions	ITF305-2
07	Functions	1) Executing SQL queries using Group functions 2) Executing SQL queries using Mathematical functions	ITF305-2
08	Subqueries, Joins	1) Executing subqueries 2) Joining tables	ITF305-2
09	Index	1) Understanding use of Index 2) Creating an index and Dropping an Index	ITF305-2
10	Views	1) Creating view 2) Inserting, Updating, Deleting records using view 3) Deleting view	ITF305-2
11	PL/SQL Control Structures	1) Understanding PL/SQL block structure 2) Using conditional controls in PL/SQL	ITF305-3
12	PL/SQL Control Structures	1) Understanding PL/SQL block structure 2) Using iterative controls in PL/SQL	ITF305-3
13	Cursors	1) Understanding types of cursor and cursor attributes 2) Using explicit cursor	ITF305-3
14	Stored Procedures and functions	1) Understanding creating and deleting stored procedures and functions 2) Example programs	ITF305-3
15	Database Triggers	1) Understanding the concept of trigger and its types 2) Creating a trigger	ITF305-3

		3) Applying trigger 4) Deleting trigger	
16	Transaction	1) Understanding concept of transaction 2) Commit and Rollback statement	ITF305-4 and ITF305-5
17	Normalization	1) Understanding the concept of normalization 2) Understanding 1NF, 2NF, 3NF and BCNF	ITF305-4
18	Designing Example Database	Students should design any example database like Hospital Management, Library Management, Student section etc.	ITF305-1 to ITF305-5

viii) Progressive Skills Test :**Criteria for Continuous Assessment of Practical work and Progressive skill Test :**

Sr. No.	Criteria	Marks allotted
1	Attendance at regular practical	10
2	Technical preparation	10
3	Logical Thinking and Approach	20
4	Application	10
	TOTAL	50

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical ability	20
2	Communication skill	10
3	Logical approach	20
	TOTAL.	50

Assessment at semester end practical exam as per Pro-forma I.

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

- 1) Lectures and discussions.
- 2) Laboratory experiences and laboratory interactive sessions.
- 3) Time bound assignments.

4) Group tasks

Teaching and Learning resources:

- 9. Books
- 10. Transparencies
- 11. Power Point Presentation
- 12. Self-learning

REFERENCE MATERIAL:

e) Books / Codes

Sr. No.	Author	Title	Publisher
1.	Silberschatz, Korth, Sudarshan	Database System Concepts (4 th edition)	Tata McGraw-Hill
2.	Ivan Bayross	SQL, PL/SQL	BPB Publication
3	Bipin Desai	An Introduction To Database System	BPB Publication
4	G.K.Gupta	Database Management Systems	Tata McGraw-Hill

COURSE ID: 19

Course Name : **COMPUTER NETWORK**
Course Code : **ITF306**
Course Abbreviation : **FCON**

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : **NIL**
Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	3	5
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma - II	
Marks	20	--	80	--	50	150

RATIONALE:

In today's age of Information Technology many applications send information from one place to another place. Computer network organizes this information in such a way that it can be sent anywhere over wide geographical area and output remote information at a push of button. This indicates the type of networks used. Here we study basic concept of networking, its applications, topologies, network devices, protocol used, OSI reference model, TCP/IP model, IP addressing and various types of the communication protocols.

COMPETENCY:Analyze basic principles and purpose of network components.

Cognitive:Understanding basic concepts of network components.

Psychomotor:i) Setup IP address to PC ii) Identify topologies and cables used in local network
iii) Categorize network devices.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctualityv) aesthetic presentation

COURSE OUTCOMES:**ITF306-1:** Classify types of networks and topologies.**ITF306-2:** Identify network devices and describe their functions.**ITF306-3:** Distinguish Different cabling standards used in network**ITF306-4:** Summarize IEEE Standards**ITF306-5:** Explain working of TCP/IP protocol**ITF306-6:** Describe Remote Logging Electronic Mail and File Transfer Protocol**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :****[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]**

Competency and Cos	Programme Outcomes POs and PSOs										PSO1 Design and development	PSO2 Networking and database management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Analyze basic principles and purpose of network components	-	2	1	1	1	-	-	-	-	1	2	3
ITF306-1 Classify types of networks and topologies	-	2	1	2	-	-	-	-	-	3	1	2
ITF306-2 Identify network devices and describe their functions	-	2	1	3	1	-	-	-	-	3	1	2
ITF306-3 Distinguish Different cabling standards used in network	-	1	1	3	-	1	-	-	-	2	1	2
ITF306-4 Summarize IEEE Standards	-	1	-	-	-	-	-	-	-	2	1	2
ITF306-5 Understand working of TCP/IP protocol	-	1	2	2	1	-	-	-	-	2	3	2
ITF306-6 Describe Remote Logging, Electronic Mail and File Transfer Protocol	-	1	1	2	-	-	-	-	-	2	1	2

CONTENT:**O. THEORY :****Section I**

Sr. No .	Topics / Sub-topics	Theory (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF306-1:Classify types of networks and topologies.</i>			
1	NETWORKING BASICS 1.1 Introduction to Computer Networking 1.2 Network Services 1.3 Application of Computer Networks 1.4 Advantages and disadvantages of Computer Network 1.5 Active and Passive Network 1.5 Network Architecture- 1.5.1 Client Server Network 1.5.2 Peer-to Peer Network 1.5.3 Centralized and distributed Computing	04	10
2	Line configuration 2.1 Point to point, Multi point; 2.2 Topology – Mesh, Star, Tree, Bus, Ring, Hybrid; 2.3 Network criteria-Categories of network, Classification of network, LAN, MAN, WAN.	04	08
<i>Course OutcomeITF306-2:Identify network devices and describe their functions.</i>			
3	Network Reference Model and Network Devices 3.1 OSI reference model 3.2 TCP/IP reference model 3.3 Comparison of OSI ,TCP/IP model 3.4 Network devices(<u>Introduction & Functionalities</u>) 3.4.1 Repeaters 3.4.2 Hubs- Types 3.4.3 Bridges-Types 3.4.4 Switches (Multiport bridges)	06	12

Sr. No.	Topics / Sub-topics	Theory (Hours)	Theory Evaluation (Marks)
	3.4.5 Routers (Gateways) 3.4.6 Network interface card		
Course Outcome ITE306-3: Distinguish Different cabling standards used in network			
4	Transmission media 4.1 Guided – UTP, STP, coax Standards- Introduction 4.2 Unguided-Radio Wave, Microwave, Infrared 4.3 Fiber optics –Principle, Advantages and Disadvantages,	10	10

SECTION-II

Sr. No.	Topics / Sub-topics	Theory (Hours)	Theory Evaluation (Marks)
Course Outcome ITE306-4: Summarize IEEE Standards			
5	IEEE Standards 5.1 IEEE Standards 5.2 Standard Ethernet 5.2.1 MAC Sub layer 5.3 Categories of Standard Ethernet, 10base5, 10base2, 10base-T; 1Base5, 100Base-T 5.4 Bridge Ethernet ,Switched Ethernet ,fast Ethernet 5.5 Gigabit Ethernet, Ten-Gigabit Ethernet	08	10
Course Outcome ITE306-5: Understand working of TCP/IP protocol			
6	TCP/IP Fundamentals 6.1 TCP/IP Protocol suite 6.2 IPv4 Addresses 6.2.1 Address Space 6.2.2 Notations 6.2.3 Classful Addressing	08	16

Sr. No .	Topics / Sub-topics	Theory (Hours)	Theory Evaluation (Marks)
	6.2.4 Classless Addressing 6.2.5 Network Address Translation(NAT) 6.3 Transport Layer – UDP – TCP (Introduction and Functionality only) 6.4 Socket Programming 6.4.1Socket and Socket based communication. 6.4.2TCP/IP Socket Programming 6.4.3UDP Socket Programming		
Course Outcome ITF306-6:Describe Remote Logging,Electronic Mail and File Transfer Protocol			
7	Remote Logging, Electronic Mail and File Transfer 7.1 Remote Logging 7.1.1 TELNET 7.2 Electronic Mail 7.2.1 Architecture 7.2.2 User Agent 7.2.3 MIME 7.2.4 SMTP 7.2.5 POP and IMAP 7.2.6 Web-Based Mail 7.3 File Transfer 7.3.1 FTP 7.3.2 Anonymous FTP	08	14
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination

Section / Topic no.	Name of topic	Distribution of marks (level wise)			Total marks
		Knowledge	Comprehension	Application	
I / 1	Networking Basic	02	04	04	10
I / 2	Line Configuration	04	04	02	08
I / 3	Network Reference Model And Network Device	04	06	02	12
I / 4	Transmission Media	04	04	02	10
II / 5	IEEE Standard	06	04	02	12
II / 6	TCP/IP Fundamentals	04	06	04	14
II / 7	Remote Logging, Electronic Mail And File Transfer	04	06	04	14

P. TERM WORK

Term work shall consist of the following :

ix) Laboratory experiments and related skills to be developed :

Sr No.	Title of Practical Exercise	Skills / Competencies to be developed	COURSE OUTCOMES
11.	Compare different network topologies	Definition of topology. To understand different types of topologies i.e LAN, MAN, WAN.	ITF306-1
12.	Layout of lab network	To study and draw type of topology used for computer lab networking.	ITF306-1
13.	Compare Network devices	Use and comparison of different network devices used i.e. Hub, switches, router etc.	ITF306-1
14.	Files sharing	To understand step by step procedure used for files sharing.	ITF306-1
15.	Device sharing	To understand step by step procedure used for device sharing	ITF306-2
16.	Create a network cable using RJ45 connectors	To understand how to connect connectors to network cable using crimping tool.	ITF306-3
17.	IP addressing	Assign IP addresses to identify the systems on the network	ITF306-3
18.	Internet connection	Ways to connect internet Media used i.e modem and Broadband	ITF306-4
19.	Creating TCP/IP Socket Programming	Implement TCP based Socket based Client and server programming in C.	ITF306-5
20.	Configuring TCP/IP connection	TCP/IP network configuring	ITF306-5
21.	Remote Logging, Electronic Mail FTP protocol.	Introduction to File Transfer, Remote Logging and Electronic mail	ITF306-6

22.	Visit Report	Report based on visit to business system and industrial factory	ITF306-1 to 5
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x) Progressive Skills Test :

Criteria for Continuous Assessment of Practical work and Progressive skill Test :

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical	05
3	Observations & computer handling skill	05
4	Use of toolbar, menu bar and short cut keys.	05
5	Oral Based on Lab work and completion of task	05
TOTAL		25

Assessment at semester end practical exam as per Pro-forma II.

Criteria for assessment at semester end oral exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end oral exam as per Pro-forma II.

Instructional strategies:

1. Lectures and discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources, including references:

1. Books
2. Transparencies
3. Power Point Presentation

Text Books:

1. Data Communication and Networking- Behrouz , Forouzan TMH 1999
2. Computer Networks –Tanenbaum Fourth edition

COURSE ID: 20

Course Name : OPERATING SYSTEM
Course Code : ITF307
Course Abbreviation : FOPS

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : <nil>

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	03	05
Practical	02	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination	
Details of Evaluation	Average of two tests of 20 marks each	iii. 25 marks for each practical iv. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-II	
Marks	20	--	80	--	50	150

RATIONALE:

Operating system is the interface between the user and the computer system. Its function is to co-ordinate processes and to manage I/O devices and memory. This is core technology subject and the knowledge of which is absolutely essential for Computer Engineers. It familiarizes the students with the functions and services provided by operating system.

This subject gives overview of UNIX and Windows operating system as a case study.

COMPETENCY:

Understand internal architecture of operating system with its services and functions.

Cognitive: i) Understand the various modern trends in operating system.

ii) Learn process management, memory management, file management and various trends in operating system.

Psychomotor: i) Installation of operating system ii) Use of Windows commands.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) Effectiveness.

COURSE OUTCOMES:

The student will be able:

ITF307-1: Explain the different types of Operating System.

ITF307-2: Recognize the services provided by Operating System and Classify the Operating System structure.

ITF307-3: Describe the concept of Process Management.

ITF307-4: Apply various CPU Scheduling Algorithms on given processes.

ITF307-5: Describe File System and Memory Management.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[Note: Correlation levels: 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” :no correlation]

Competency and Cos	Programme Outcomes POs and PSOs										PSO1 Design and development	PSO2 Network and database management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Understand internal architecture of operating system with its services and functions..	3	-	-	1	1	-	-	-	-	1	-	-
ITF307-1 Explain the different types of Operating System.	-	2	-	-	-	-	-	1	-	2	-	-
ITF307-2 Recognize the services provided by Operating System and Classify the Operating System structure.	-	2	1	1	-	-	-	1	-	2	-	-
ITF307-3 Describe the concept of Process Management.	-	2	1	1	-	-	-	-	-	2	-	-
ITF307-4 Apply various CPU Scheduling Algorithms on given processes.	-	3	2	2	-	-	-	-	-	3	2	-
ITF307-5 Describe Memory Management, File Management, I/O management.	1	1	2	1	-	-	-	-	-	2	-	-

CONTENT :**A) THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF307-1 Analyze the different types of Operating System.</i>			
01	Introduction To Operating System 1.1 What is an O.S?, Evolution, Generation 1.2 Mainframe Systems – Batch, Multi programmed, Multitasking, Time sharing, Desktop. 1.3 Parallel systems 1.4 Real time system. 1.5 Distributed system 1.6 Clustered System	6	10
<i>Course Outcome ITF307-2 Recognize the services provided by Operating System and Classify the Operating System structure.</i>			
02.	Operating System Structure 2.1 System Components 2.1.1 Process Management 2.1.2 Main Memory Management 2.1.3 File Management 2.1.4 I/O Management 2.1.5 Secondary storage management 2.1.6 Networking 2.1.7 Protection system 2.1.8 Command Interpreter System 2.2 Operating System Services 2.3 System Calls–Process control, File management, Device Management, Information Maintenance, communication. 2.4 System Programs 2.5 System structure 2.5.1 Simple structure 2.5.2 Layered approach 2.5.3 Monolithic 2.5.4 Microkernel 2.6 Booting	10	16
<i>Course Outcome ITF307-3 Describe the concept of Process Management.</i>			
03	Process Management 3.1 Process Concept – Process, Process State, Process Control Block, Thread 3.2 Process Scheduling – Scheduling queues, schedulers, context switch 3.3 Operations on Process: creation, termination. 3.4 Inter process communication.	8	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	3.5 Thread – overview, benefits, user and kernel threads 3.6 Multithreading Models - Many to one, one to one, many to many.		
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF307-4 Apply various CPU Scheduling Algorithms on given processes.			
04	SCHEDULING 4.1 Scheduling – Objectives, concept, criteria, CPU and I/O burst cycle. 4.2 Types of Scheduling-Pre-emptive, Non pre-emptive. 4.3 Scheduling Algorithms. first come first served (FCFS), Shortest job first (SJF), Round Robin (RR), Priority. 4.4 Other Scheduling. Multilevel, Multiprocessor, real time. 4.5 Dead Locks 4.5.1 System Model 4.5.2 Necessary conditions for deadlock 4.5.3 Resource Allocation Graph 4.6 Method for Handling Deadlocks 4.7 Deadlock Prevention & Detection. 4.8 Recovery from Dead Locks	06	12
Course Outcome ITF307-5 Describe Memory Management, File Management, I/O management.			
05	MEMORY MANAGEMENT 5.1 Address Binding 5.2 Logical V/S Physical Address Space 5.3 Dynamic Loading 5.4 Swapping 5.5 Contiguous Memory Allocation. 5.6 Paging 5.6.1 Basic Method 5.7 Segmentation. 5.7.1 Basic Method 5.7.2 Hardware	06	10

06	FILE MANAGEMENT 6.1 File system & file concept 6.1.1 File Attributes 6.1.2 File Operations 6.1.3 File Types 6.2 Access methods-sequential access and direct access 6.3 Directory structure 6.3.1 Single Level Directory 6.3.2 Two Level Directory 6.3.3 Tree Structured Directory 6.4 Protection 6.5 File system structure--organization 6.6 Contiguous allocation method of disk space	06	08
07	I/O MANAGEMENT 7.1 I/O Hardware 7.1.1 Polling 7.1.2 Interrupt 7.1.3 DMA 7.2 Application I/O interface 7.2.1 Block and character devices 7.2.2 Network devices 7.2.3 Clocks and timers 7.2.4 Blocking and non-blocking I/O 7.3 Kernel I/O subsystem 7.3.1 I/O scheduling 7.3.2 buffering 7.3.3 caching 7.4 I/O Request Handling	06	10
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Applica-tion		
1	Introduction To Operating System	06	02	02	ITF307-1	10
2	Operating System Structure	08	04	04	ITF307-2	16
3	Process Management	04	06	04	ITF307-3	14
4	Scheduling	04	04	04	ITF307-4	12
5	Memory Management	06	02	02	ITF307-5	10
6	File Management	04	02	02	ITF307-5	08
7	I/O Management	04	04	02	ITF307-5	10
TOTAL		36	24	20		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

B) TERM WORK**Practical Exercises and related skills to be developed :**

Sr No.	Title of Practical Exercise	Skills / Competencies to be developed	Course Outcome
01	Bootting Process	1. Studying bootting process 2. BIOS configuration	ITF307-2
02	Installation	1.Installation of Windows 2.Installation of drivers 3.Configuration of Computersystem	ITF307-1
03	System Information	1.Studying system information 2.Checking whether particular device is working properly or not 3.Installing drivers of various devices	ITF307-7
04	Disk Partitioning	1.Partitioning the hard disk 2.Understanding the FAT	ITF307-5
05	Disk Maintenance	1.Study and use of utilities like ScanDisk, Disk Cleanup, Disk Defragmenter, disk scheduling	ITF307-5
6	Troubleshooting	1.Installing corrupted system 2.Reinstallation of Windows	ITF307-1
7	Operations on Process	Create parent and child processes using fork system call	ITF307-3
8	System process	1.Understanding process status – ps command	ITF307-3

		2.Understanding system process	
9	Multithreading Concept	Create multiple threads and execute them simultaneously	ITF307-3
10	Scheduling Algorithms	Implementation of FIFO and Priority Scheduling algorithms	ITF307-4
11	Case Study	1.Study of windows & Unix Operating system	ITF307-1 TO ITF307-5

C) INDUSTRIAL EXPOSURE :

SN	Mode of Exposure	Topic
1.	Field examples of course application	Every chapter of theory syllabus
2.	Field examples of course application	Term-work assignment

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION**Criteria for Continuous Assessment of Practical work and Progressive skill Test :**

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical	05
3	Observations & computer handling skill	05
4	Use of toolbar, menu bar and short cut keys.	05
5	Oral Based on Lab work and completion of task	05
TOTAL		25

Criteria for assessment at semester end oral exam:

Sr. no	Criteria	Marks allotted
1.	Technical ability	20
2.	Communication skill	10
3.	Logical approach	20
	TOTAL.	50

Assessment at semester end practical exam as per Pro-forma II.

INSTRUCTIONAL STRATEGIES :**Instructional Methods :**

1. Lectures and Discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources :

1. Chalk board
2. LCD presentations Slides
3. Demonstrative Video Files

REFERENCE MATERIAL :**a) Books / Journals / IS Codes**

Sr. No.	Author	Title	Publisher
1.	AviSilberschatz	Applied Operating system concept	Willy
2.	Sumitabha Das	UNIX System V.4 Concepts and Applications	
3.	Achyut S. Godbole	Opearating Systems	

b) Websites

- i. <http://codex.csyale.edu>

COURSE ID:21

Course Name : COMPUTER ARCHITECTURE AND MAINTENANCE
Course Code : ITF308
Course Abbreviation :FCAM

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : <nil >

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	03	05
Practical	02	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination		Total
	Theory	Practical	Theory Examination	Oral Examination	
Details of Evaluation	Average of two tests of 20 marks each	v. 25 marks for each practical vi. One PST of 25 marks	Term End Theory Exam (03 hours)	As per Proforma-II	
Marks	20	--	80	50	150

RATIONALE:

The aim of the subject is to teach the basic working of the computer motherboard, peripherals and add-on cards. The subject helps the students to do the maintenance of the Computer, peripherals and its add-on cards. The students will be able to select the proper peripheral as per their specification and requirement. The subject is practical oriented and will develop the debugging skills in the students.

COMPETENCY:

Understand System board components, input devices, output devices of computer.

Cognitive: Understand working of computer's hardware and software.

Psychomotor: i) Assemble the computer ii) Troubleshoot of computer.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES:

The student will be able:

ITF308-1 State basic functions of computer's hardware & software

ITF308-2 Categorize several system-board components

ITF308-3 Differentiate physical memory and virtual memory

ITF308-4 Perform hard disk operations

ITF308-5 Perform maintenance procedures for computer peripherals.

ITF308-6 Discuss working of input devices, output devices and power suppliers

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[Note: Correlation levels: 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs											PSO1 Design and development	PSO2 Networking and database management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning			
Competency: Understand System board components, input devices, output devices of computer	-	1	2	2	2	-	-	1	-	1	-	-	
ITF308-1 State basic function of computer's hardware & software	-	2	2	2	-	-	-	1	-	2	-	-	
ITF308-2 Categorize several system-board components	-	-	2	2	-	-	-	1	-	-	-	-	
ITF308-3 Differentiate physical memory and virtual memory	-	2	3	2	-	-	-	-	-	-	-	-	
ITF308-4 Perform hard disk operations	-	1	2	1	-	-	-	-	-	-	-	-	
ITF308-5 Perform maintenance procedures for computer peripherals.	-	1	2	2	2	-	-	-	-	-	-	-	
ITF308-6 Discuss working of I/O devices and power supplies	-	3	1	-	-	-	-	-	-	-	-	-	

CONTENT :**D) THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF308-1</i> State basic functions of computer's hardware & software			
1	Understanding PC hardware and software 1.1 Hardware 1.1.1 Hardware Used for Input And Output 1.1.2 Hardware Inside The Computer Case 1.1.3 The System Board 1.1.4 Primary Storage Devices 1.1.5 Secondary Storage Devices 1.1.6 Interface Cards 1.1.7 The Electrical System 1.2 Software 1.2.1 Three Types Of Software And Their Jobs 1.2.2 Operating System -Starting Up OS, Interfacing With An OS	08	12
2.	Software And Hardware Together 2.1 The Boot Process 2.2 Types Of System Resources 2.3 The Boot Process Step By Step 2.4 How Software Manages Hardware 2.5 ISA Bus 2.6 Memory Addresses 2.7 I/O Addresses 2.8 DMA Channels 2.9 Protecting Data, Software And Hardware	06	10
<i>Course Outcome ITF308-2</i> Categorize several system-board components			
3	System Board 3.1 Types Of System Board 3.2 System Clock 3.3 CPU And Chipset(Attribute Only) 3.4 Pentium And It's Competitors 3.5 ROM BIOS 3.6 Flash ROM 3.7 RAM 3.8 On-Board Ports 3.9 CMOS Chip Setup	06	10
<i>Course Outcome ITF308-3</i> Differentiate physical memory and virtual memory			
4	Memory Management 4.1 Physical Memory-ROM, RAM, SIMM, DIMM	04	08

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	4.2 Virtual Memory 4.3 Using HIME.SYS.EMM386.EXE 4.4 Real Mode Vs. Virtual Mode 4.5 Upgrading Memory 4.6 Installing Memory		
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF308-4 Perform hard disk operations.			
5	Hard Drives 5.1 Hard Drive Technology 5.2 IDE Technology 5.3 Formatting Hard Drive 5.4 IDE Drives (Enhanced IDE) 5.5 SCSI Technology 5.6 Comparing SCSI and EIDE 5.7 Hard Drive Partitions 5.8 Logical Drives 5.9 FAT and Root Directory 5.10 DOS Commands to Manage a Hard Drive MKDIR, CHDIR, RMDIR, TREE, ATTRIB, MIRROR, UNFORMAT, PATH 5.11 Fragmentation 5.12 Disk Compression 5.13 Disk Caching	08	12
Course Outcome ITF308-5 Perform maintenance procedures for computer peripherals.			

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
6	Troubleshooting 6.1 Troubleshooting Tools 6.2 Isolate Computer Problem and Device 6.3 Troubleshooting Power Supply 6.4 Troubleshooting System Board 6.5 Troubleshooting OS and Hard Drive 6.6 Problem after Computer Boots 6.7 Problems with Keyboard and Monitor 6.8 Troubleshooting Printer Problem	06	10
Course Outcome ITF308-6 Discuss working of I/O devices and power suppliers			
7	Supporting I/O Devices 7.1 Using Ports 7.1.1 USB 7.1.2 UART Chip 7.1.3 Parallel Ports 7.2 Keyboard-connector 7.3 Monitors 7.4 Video Cards	06	10
8	Electricity And Power Supplies 8.1 Basic Electricity 8.2 Voltage, Current, Resistance, Power 8.3 AC and DC Current 8.4 Hot, Neutral And Ground 8.5 ESD And EMI 8.7 Power Supply 8.8 Voltage Supply To An System Board 8.9 UPS-Types Of UPS	04	08
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Applica-tion		
1	Understanding PC hardware and software	06	04	02	ITF308-1	12
2	Software And Hardware Together	04	04	02	ITF308-1	10
3	System Board	04	04	02	ITF308-2	10
4	Memory Management	02	02	04	ITF308-3	08
5	Hard Drives	04	02	06	ITF308-4	12
6	Troubleshooting	02	02	06	ITF308-5	10
7	Supporting I/O Devices	04	04	02	ITF308-6	10
8	Electricity And Power Supplies	02	02	04	ITF308-6	08
TOTAL		28	24	36		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

E) TERM WORK**Practical Exercises and related skills to be developed :**

Sr No.	Title of Practical Exercise	Skills / Competencies to be developed	Course Outcome
1	Motherboard Layout	1. Understanding various Motherboard components 2. Understand various Motherboard chips 3. Understand Bus structure	ITF308-1 To ITF308-2
2	CMOS setup of Pentium	1. Understand peripheral devices configuration of system	ITF308-2
3	Hard Disk Partitioning	1. Understand FDISK utility	ITF308-3
4	Study Of HDD	1. Identify various components of HDD & write its functions	ITF308-3
5	Display Cards	1. Study and installation of any one display cards: VGA or SVGA display cards	ITF308-3
6	Installation of peripheral devices	1. Installation of scanner, printers and Modems	ITF308-5
7	Study of SMPS	1. Understands components and connectors of SMPS	ITF308-6

8	Study of Diagnostic software (any one)	1. Understanding diagnostic techniques using any software like Norton utilities, Microsoft device manager	ITF308-5
9	Fault findings	1. Problems related to monitor. 2. Problems related to CPU.	ITF308-5
10	Assembling of PC and Installation of Operating System	1. Assembling various components of PC 2. Installation of OS	ITF308-2 to 6

F) INDUSTRIAL EXPOSURE :

SN	Mode of Exposure	Topic
1.	Field examples of course application	Every chapter of theory syllabus
2.	Field examples of course application	Term-work assignment

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION**Criteria for Continuous Assessment of Practical work and Progressive skill Test :**

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical	05
3	Observations & computer handling skill	05
4	Use of toolbar, menu bar and short cut keys.	05
5	Oral Based on Lab work and completion of task	05
TOTAL		25

Criteria for assessment at semester end oral exam:

Sr. no	Criteria	Marks allotted
1.	Technical ability	20
2.	Communication skill	10
3.	Logical approach	20
	TOTAL.	50

Assessment at semester end practical exam as per Pro-forma II.

INSTRUCTIONAL STRATEGIES :

Instructional Methods :

1. Lectures and Discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources :

1. Chalk board
2. LCD presentations Slides
3. Demonstrative Video Files

REFERENCE MATERIAL :

a) Books / Journals / IS Codes

Sr. No.	Author	Title	Publisher
1.	Jean Andrews	Enhanced guide to managing and maintaining your PC	Thomson
2.	Mark Minasi	PC upgrade and maintenance guide	BPD
3.	Scott Mueller	Upgrading and repairing PC	Pearson Education

b) Websites

- i. <http://www.karbosguide.com/>
- ii. <http://computernetworkingnotes.com/>
- iii. <http://www.freecomputermaintenance.com/category/computer-maintenance-tutorials/>

COURSE ID: 22

Course Name : PROGRAMMING USING .NET
Course Code : ITF309
Course Abbreviation : FPRD

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	2	6
Practical	4	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (External)	
Details of Evaluation	--	i. 25 marks for each practical ii. One PST of 25 marks	--	As per proforma–VI	As per proforma–IV	
Marks	--	--	--	50	50	100

RATIONALE:

.NET Framework (pronounced dot net) is a software framework developed by Microsoft that runs primarily on Microsoft Windows. It includes a large library and provides language interoperability (each language can use code written in other languages) across several programming languages. Programmers develop software by combining their own source code with .NET Framework and other libraries. .NET Framework is intended to be used by most new applications created for the Windows platform.

COMPETENCY

Apply techniques of programming using .Net to develop application program as follows:

Cognitive: Understanding and applying structure and syntax of programming concepts

Psychomotor: i) Use software to write and execute .net programs ii) Developing simple applications
iii) Developing database related applications

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :

ITF309-1:Describe .net framework environment to develop programs.

ITF309-2:Develop programs using function and object oriented concepts.

ITF309-3: Create database connectivity for program implementation.

ITF309-4:Construct program using data adapter.

ITF309-5: Implement programs on data binding.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Networking and database management
Competency: Apply techniques of programming using .net to develop application program	1	2	3	3	1	-	-	2	-	1	3	3
ITF309-1 Describe .net framework environment to develop programs.	-	2	2	2	-	-	-	1	-	2	2	1
ITF309-2 Develop programs using function and object oriented concepts.	-	2	3	3	1	-	-	2	-	2	3	1
ITF309-3 Create database connectivity for program implementation	-	2	3	3	-	-	-	3	-	2	3	2
ITF309-4 Construct program using data adapter	-	2	3	2	-	-	-	2	-	2	3	2
ITF309-5 Implement program on data binding	-	2	3	3	-	-	-	3	-	3	3	3

CONTENT:

Sr. No.	Topics / Sub-topics	Lectures (Hours)
Course Outcome ITF309-1 Describe .net framework environment to develop program .		
1	INTRODUCING TO .NET 1.1 What Is the .NET Framework? 1.2 What's in the .NET Framework? 1.3 Comparison of VB.NET & C#.NET 1.3 Writing Applications Using the .NET Framework 1.4 CIL and JIT 1.5 Assemblies 1.6 Managed Code 1.7 Garbage Collection 1.8 Fitting It Together 1.9 Linking 1.10 What Is C#? 1.11 Applications You Can WrITF with C#	03
2	BASICS OF .NET 2.1 The Visual Studio Development Environment 2.2 Toolbox controls & properties 2.3 Basic C# Syntax 2.4 Basic C# Console Application Structure 2.5 Variables 2.6 Expressions 2.7 Boolean Logic 2.8 The goto Statement 2.9 Branching 2.10 Looping 2.11 Type Conversion 2.12 Complex Variable Types	04
Course Outcome ITF309-2 Develop programs using function and object oriented concepts.		
3	FUNCTIONS, DEBUGGING AND ERROR HANDLING 1.1 Defining and Using Functions 1.2 Variable Scope 1.3 The Main() Function 1.4 Struct Functions 1.5 Overloading Functions 1.6 Using Delegates 1.7 Debugging in Nonbreak (Normal) Mode 1.8 Debugging in Break Mode 1.9 Error Handling	04

4	4 IMPLEMENTATION OF OBJECT ORIENTED PROGRAMMING 4.1 OOP in Desktop Applications 4.2 Class Definitions in C# 4.3 System.Object 4.4 Constructors and Destructors 4.5 OOP Tools in Visual Studio 4.6 Class Library Projects 4.7 Interfaces Versus Abstract Classes 4.8 Struct Types 4.9 Shallow Copying Versus Deep Copying 4.10 Member Definitions 4.11 Interface implementation 4.12 Partial class definition 4.13 Partial method definition	04
Course Outcome ITF309-3 Create database connectivity for program implementation		
5	Introducing ADO.NET 5.1 Why ADO.NET? 5.2 Understanding ADO.NET Architecture 5.3 Data Providers As APIs 5.4 Introducing the Data Provider Connection Classes 5.5 Connecting to SSE with SqlConnection 5.6 Improving Use of Connection Objects 5.7 Connecting to SSE with OleDbConnection	04
6	DATA READERS 6.1 Understanding Data Readers in General 6.2 Using Ordinal Indexers 6.3 Using Column Name Indexers 6.4 Using Typed Accessor Methods 6.5 Getting Data About Data 6.6 Getting Data About Tables 6.7 Using Multiple Result Sets with a Data Reader	06
Course Outcome ITF309-4 Construct program using data adapter		
7	DATASETS AND DATA ADAPTERS 7.1 Understanding the Object Model 7.2 Working with Datasets and Data Adapters 7.3 Populating a Dataset with a Data Adapter 7.4 Filtering and Sorting in a Dataset 7.5 Using Data Views 7.6 Refining Data with a Data View 7.7 Modifying Data in a Dataset 7.8 Propagating Changes to a Data Source 7.9 Concurrency	04

Course Outcome ITF309-5 Implement problems on data binding		
8	DATA BINDING 8.1 What's Data Binding? 8.2 Performing Simple Data Binding 8.3 Performing Complex Data Binding 8.4 Understanding Data Binding 8.5 Synchronizing Controls with a Data Source 8.6 Using a Binding Manager 8.7 Updating from a Data Grid	03

Laboratory experiments and related skills to be developed:

The following practical exercises shall be conducted as Term Work as detailed in the *Laboratory Manual for programming using .net* developed by the Institute in practical sessions of batches of about 22 students :

Sr. No.	Title of Experiment	Skills to be developed	CO
1	Introduction to .NET Environment	3) Study of .net environment 4) Writing and running a VB.net program 5) Getting help	ITF309 - 1
2	Data Types and Operators	1) Study of various data types and operators in VB.net 2) Variable Declaration	ITF309 - 2
3	Control Structures	6) If....end if statement, 7) For....Next loop 8) Do While loop 9) While loop 10) Exit statement	ITF309 - 2
4	Numeric Functions	3) Using numeric functions in .net – Log, Sin, Cos etc.	ITF309 - 2
5	String Functions	4) Using String functions in .net – Mid, InStr, Replace etc.	ITF309 - 3
6	Textbox, command button and Label controls Using .net	3) Textbox – use of properties, methods and events 4) Label - use of properties, methods 5) Command button - use of properties, methods and events	ITF309 - 3
7	Option button, Checkbox using .Net	1) Difference in use of Option button, Checkbox 2) Option button - use of properties, methods and events 3) Checkbox - use of properties, methods and events	ITF309 - 3
8	Listbox and Combobox using .Net	1) Listbox - use of properties, methods and events 2) Combobox - use of properties, methods and events	ITF309 - 3

9	Implementation of Controls in .net	1) Design registration form of college using text box, text area, radio list, check list, button etc. 2) Simple application for following function: (1) Login (2) Surfing (3) Logout	ITF309 - 3
10	Implementation of OOP	1) Design form, make it a class, create its object and access it from another form. 2) Design student class, marks class, inherits it in result class and access it using form	ITF309 - 3
11	Study Of Components	Using components create: 1) Advertisement (using Ad rotator) 2) Book example (using Next function) 3) find capabilities of browser (Browser object capabilities)	ITF309 - 4
12	Database using ADO	1) ADO control – Properties, Methods 2) DAO control – Properties, Methods 3) Connection object, Command Object, Recordset object 4) Working with one and multiple tables	ITF309 - 4
13	Database Manipulation	1) Inserting, updating, deleting records	ITF309 –5
14	Form Creation Using ADO	1) Design employee details with help of database (back-end) using data adapter, data reader and datasets. Use data grid to display result. 2) Generation of database (data table) of employee or student with help of data tables of .Net.	ITF309 – 4,5
15	Online Application	Online application (student, employee, product, shopping mall) <ul style="list-style-type: none"> • Using dataset, data reader. • Same application using data table and data row. (use data grid to display data) • Bind the data to data grid using properties / templates. • Display details (student, employee, product, etc.) using data list. (4 cols per line) • Use control validation in application. 	ITF309 –4 ITF309 - 5
16	Database Implementation	1) Design Application which sends email.	ITF309 –4 ITF309 –5
17	Miniproject	1)Mini project of minimum 2 students. Design the mini project by integrating all the experiment performed as mentioned in the curriculum. 2)Set up and deployment of mini project.	ITF309 – 1 to ITF309 - 5

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION**h) Assessment Criteria for Term work :****i) Continuous Assessment of Practical Assignment:****Criteria for Continuous Assessment of Practical work and Progressive skill Test :**

Sr. No.	Criteria	Marks allotted
1	Attendance	5
2	Preparedness for practical	5
3	Programming concepts	5
4	Logical Approach	5
5	Presentation	5
6	Multiple Choice Questions Test	25
	Total	50

Final marks of term work shall be awarded as per *Assessment Pro-forma VI*.

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1.	Technical ability	20
2.	Communication skill	10
3.	Logical approach	20
	TOTAL.	50

Assessment at semester end practical exam as per Pro-forma IV**INSTRUCTIONAL STRATEGIES :****Instructional Methods :**

1. Lectures
2. Practical

Teaching and Learning resources :

1. Chalk board

2. LCD presentations
3. Presentation Slides
4. Demonstrative video files

REFERENCE MATERIAL :

a) Books / Journals / IS Codes

- i. Beginning Visual C# 2012 Programming – Karly Watson, Jacob wibe hammer
- ii. Beginning.C.Sharp.2005.Databases.From.Novice.to.Professional –James Hamalston
- iii. .Net Framework --- Anthony Jones

b) Web SITES

- xii) <http://www.tutorialspoint.com/csharp/>
- xiii) <http://www.completecsharptutorial.com/>
- xiv) <http://csharp.net-tutorials.com/>
- xv) <http://zetcode.com/lang/csharp/>
- xvi) <http://www.homeandlearn.co.uk/csharp/csharp.html>

COURSE ID: 23

Course Name : DATA STRUCTURE
Course Code : ITF310
Course Abbreviation :FDST

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : ITF102 /ITF304

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	03	07
Practical	04	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (External)	
Details of Evaluation	Average of two tests of 20 marks each	ii. 25 marks for each practical iii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	Proforma-I	
Marks	20	--	80	--	50E	150

RATIONALE:

For efficient implementation of algorithms, proper organization and structuring data is essential. The primary objective of this course is to provide the student with an advanced treatment of computer programming with an emphasis on design and implementation of abstract data structures.

The coding language is C/C++.

COMPETENCY:

Understand elementary data structure and applying different techniques to them.

Cognitive: Understanding elementary data structure and applying different techniques to them.

Psychomotor: i) Use Turbo C editor ii) Use compilation & debugging commands of Turbo C.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES:**ITF310-1:**Describe concepts and operations on data structure.**ITF310-2:** Apply different searching and sorting techniques on data.**ITF310-3:**Develop programs for implementing stack and queue.**ITF310-4:** Implement programs using concept of Linked List and Tree.**ITF310-5:** Solve problems using concept of Graph and Hashing functions.**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX****[Note: Correlation levels:1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]**

Competency and Cos	Programme Outcomes POs and PSOs										PSO1 Design and development	PSO2 Networking and database management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Understand elementary data structure and applying different techniques to them.	2	-	3	-	-	-	-	-	-	1	3	-
ITF310-1 Describe concepts and operations on data structure.	-	2	1	1	-	-	-	-	-	1	2	1
ITF310-2 Apply different searching and sorting techniques on data.	1	2	3	2	-	-	-	-	-	1	2	1
ITF310-3 Develop programs for implementing stack and queue.	1	2	3	2	-	-	-	-	-	2	3	1
ITF310-4 Implement programs using concept of Linked List and Tree.	1	2	3	2	-	-	-	-	-	2	3	1
ITF310-5 Solve problems using concept of Graph and Hashing functions.	1	2	3	2	-	-	-	-	-	2	2	1

CONTENT:

Section I

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF310-1 Describe concepts and operations on data structure.			
1	Introduction to Data Structure 1.1 General Concept of Data - Data, Data Types and their classification, Data variables, Constant and their storage representation 1.2 Data Structure and their Types, Abstract data types, Pseudo code 1.3 operations on data structures – insertion, deletion, searching, traversing, sorting 1.4 Recursion-Direct, Indirect recursion 1.5 Algorithms 1.5.1 Complexity of algorithms in terms of time and space	05	06
Course Outcome ITF310-2 Apply different searching and sorting techniques on data.			
2	Sorting & Searching 2.1 Sorting-An Introduction 2.2 Sorting Techniques – 2.2.1 Bubble Sort 2.2.2 Selection Sort 2.2.3 Quick Sort 2.2.4 Insertion Sort 2.2.5 Merge Sort 2.3 Searching-An Introduction 2.3.1 Importance of searching 2.3.2 Linear Search 2.3.3 Binary Search	07	12

Course Outcome ITF310-3 Develop programs for implementing stack and queue.			
3	Stack 3.1 Definition & Example of Stack, Stack as an Abstract Data Type 3.2 Primitive operations of stack 3.3 Representation of Stack through Arrays 3.4 Applications of stack 3.5 INFIX, POSTFIX & PREFIX representation. 3.6 Stack and Recursion- Factorial & Fibonacci sequence using recursion.	07	10
4	Queues 4.1 Definition & Example of Queue, Queue as an Abstract Data Type 4.2 Representation of Queue 4.3 Applications of Queue 4.4 Operations on queue: Searching, Insertion, Deletion. 4.5 Circular Queue 4.6 Priority Queue 4.7 Double Ended Queue	05	12
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF310-4 Implement programs using concept of Linked List and Tree.			
5	Linked List 5.1 Definition & Example of Linked List 5.2 Terminologies Node, Address, Pointer, Information, Next, Null Pointer, Empty list etc. 5.3 Operations on list - Searching, Insertion and Deletion 5.4 Types of lists - Linked list and Circular list(Operation), Doubly linked list(Introduction)	08	12

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	5.5 Implementation of stack, queue using linked list		
6	Trees 6.1 Terminology- tree, node, leaf node, father, Binary Tree, Binary Search Tree, height of tree, descendant, ancestor, strictly binary tree, degree, level of node, complete binary tree 6.2 Applications of trees 6.3 Operation on binary tree-copy, equal 6.4 Operations on Binary Search Tree – Insertion, searching, deletion 6.5 Traversing methods- Pre-order, In-order and Post-order	06	10
<i>Course Outcome ITF310-5Solve programs using concept of Graph and Hashing functions.</i>			
7	GRAPH 7.1 Terminology - graph, node (vertices), arcs (edge), Directedgraph, in-degree, out-degree, adjacent, Successor, Predecessor, weight, weighted graph, path, Length, cycle, connected graph, multigraph, complete Graph, strongly connected graph 7.2 Sequential Representation of Graphs 7.3 Warshall's Shortest Path algorithm, Depth first search, Breadth first search	06	10
8	Hashing 8.1 Basic concept of hashing 8.2 Hash functions 8.3 Collision Resolution by linear probing 8.2 Inserting ,Deleting and Searching items using hash Tables	04	08
	Total	24	40

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Applica-tion		
1	Introduction to data structure	02	02	04	ITF310-1	08
2	Searching & Sorting	04	04	04	ITF310-2	12
3	Stacks	02	04	04	ITF310-3	10
4	Queues	02	04	04	ITF310-4	10
5	Linked List	04	04	04	ITF310-5	12
6	Trees	04	02	04	ITF310-5	10
7	Graphs	04	02	04	ITF310-6	10
8	Hashing	02	02	04	ITF310-6	08
TOTAL		24	24	32		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

G) TERM WORK**Practical Exercises and related skills to be developed:**

Sr No.	Title of Practical Exercise	Skills / Competencies to be developed	Course Outcome
1	Implementation of Bubble sort	1.Definition of sorting 2.Understanding of Bubble sort , 3.Implementation of Bubble sort .	ITF310-2
2	Implementation of Insertion Sort	1.Understanding concept of Insertion Sort 2.Implementation of Insertion Sort	ITF310-2
3	Implementation of Selection Sort	1.Understanding concept of Selection Sort 2.Implementation of Selection Sort	ITF310-2
4	Implementation of Quick Sort	1.Understanding concept of Quick Sort 2.Implementation of Quick Sort	ITF310-2
5	Implementation of Merge Sort	1.Understanding concept of merge Sort 2.Implementation of merge Sort	ITF310-2
6	Linear and Binary Search	1.Definition of searching 2.Understanding concept of Linear and Binary Search 3.Comparison between Linear Search and Binary Search 4.Implementation of Linear and Binary Search	ITF310-2
7	Stack using array	1.Understanding LIFO structure of stack 2.Implementation of push and pop operations of Stack using array	ITF310-3
8	Recursion using stack	1.Understanding the use of stack in recursion 2.Calculating factorial and Fibonacci sequence using stack	ITF310-3
9	Linear Queue using array	1.Understanding FIFO structure of linear queue 2.Implementation of operations on linear queue using array	ITF310-3
10	Circular Queue using array	1.Comparison between linearqueue and circular queue 2.Implementation of operations on circular queue using array	ITF310-3
11	Priority Queue	1.Understanding concept and applications of priority	ITF310-3

	using array	queue 2.Implementation of operations on priority queue using array	
12	Dequeue using array	1.Understanding concept of dequeue 2.Implementation of operations on dequeue using array	ITF310-3
13	Implementation of linear list	1.Understanding and implementation of insertion, deletion, searching operations on linear linked list	ITF310-4
14	Implementation of circular list	1.Understanding and implementation of insertion, deletion, searching operations on circular list	ITF310-4
15	Stack using linked list	1.Implementation operations of Stack using linked list	ITF310-4
16	Queue using linked list	1.Implementation of operations on queue using linked list	ITF310-4
17	Binary tree	1.Understanding definition and terminologies of binary tree 2.Implementation of insertion, deletion, search operations on binary search tree 3.Implementations of binary tree traversal	ITF310-5
18	Graph	1.Understanding the concept and terminologies of graph 2.Implementation of shortest path algorithm for graph	ITF310-5
19	Hash functions	1.Understanding hashing and implementation of a hash function 2.Understanding and implementation of collision resolution	ITF310-5

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION**Criteria for Continuous Assessment of Practical work and Progressive Skill Test:**

Sr. no	Criteria	Marks allotted
1	Attendance	10
2	Algorithm	10
3	Technical preparation	10
4	Logical thinking and approach	10
5	Implementation	10
	Total	50

iii) Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Implementation	15
4	Presentation	10
	Total	50

Assessment at semester end practical exam as per Pro-forma I

INSTRUCTIONAL STRATEGIES :**Instructional Methods :**

1. Lectures and Discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.
4. Group tasks

Teaching and Learning resources :

1. Chalk board
2. LCD presentations Slides
3. Demonstrative Video Files

REFERENCE MATERIAL :**a) Books / Journals / IS Codes**

Sr. No.	Author	Title	Publisher
1.	Samarjeetkaur, Sandhir Sharma, P.P. Singh	Data structure – complete Course Book	Deep & Deep Publications Private Ltd.
2.	Langsam ,Augenstein , Tenenbaum	Data structures using C And C++	
3.	Lipschutz	Data structures (SCHAUM's OUTLINES)	

* * *

COURSE ID: 24 (A)

Course Name : MICROPROCESSOR
Course Code : ITF311
Course Abbreviation : FMIP

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	3	4
Practical	1	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (03 hours)	As per proforma - III	--	
Marks	20	--	80	50	--	150

Rationale:

Microprocessors are essential constituent of controllers in all the modern production processes. They are also principle part of the computer hardware. As such the study of principles, operations and applications of microprocessors form an essential part of making a hardware engineer. The contents of this subject are devised to fulfill this requirement.

COMPETENCY: Understand 8085 and 8086 Microprocessors in detail

Cognitive: i) Understand features, architecture, execution process, instructions for programming and Interfacing of 8085 and 8086 microprocessor

Psychomotor: i) Install Keil and flash magic software on PC

ii) Write down various programs of 8085 and execute it on 8085 programmers kit

iii) See the correct output on LCD screen of 8085 kit using keil and flash magic software

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES:**Student should able to:****ITF311-1** Understand features and architecture of 8085 microprocessor**ITF311-2** Illustrate concept of 8086 16 bit processor architecture, pipelining and memory segmentation**ITF311-3** Understand addressing modes, instruction format and all instructions of 8085**ITF311-4** Develop assembly language programs using tools like editor, assembler, linker and debugger**ITF311-5** Explain procedure and Macros**ITF311-6** Describe I/O mapped I/O and memory mapped I/O interfacing**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :****[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]**

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design And development	PSO2 Database and network management
Competency: Understand and 8085 and 8086 Microprocessors in detail	3	3	2	2	3	-	1	2	2	3	2	1
ITF311-1 Understand features and architecture of 8085 microprocessor	3	3	2	2	3	-	1	2	2	2	1	1
ITF311-2 Illustrate concept of 8086 16 bit processor architecture, pipelining and memory segmentation	3	3	2	2	3	-	1	2	2	3	-	-
ITF311-3 Understand addressing modes, instruction format and all instructions of 8085	3	3	2	3	3	-	1	3	3	3	-	-
ITF311-4 Develop assembly language programs using tools like editor, assembler, linker and debugger	2	3	3	3	3	-	1	3	3	3	-	-
ITF311-5 Explain procedure and Macros	2	2	1	1	2	-	1	1	1	2	-	-
ITF311-6 Describe I/O mapped I/O and memory mapped I/O interfacing	3	3	3	3	3	-	1	3	3	3	-	-

CONTENTS:**A) THEORY:****Section I**

Sr. no.	Topics Subtopics	Teaching (Hours)	Theory evaluation Marks
ITF311-1 <i>Understand features and architecture of 8085 microprocessor</i>			
1	Basics of Microprocessor 1.1 Evolution of Microprocessor and types 1.2 Silent features of 8085 Microprocessor, architecture of 8085 (Block diagram), register organization, limitations of 8-bit Microprocessor.	08	08
ITF311-2 <i>Illustrate concept of 8086 16 bit processor architecture, pipelining and memory segmentation</i>			
2	16-bit Microprocessor 8086 2.1 Silent features of 8086 Microprocessor, architecture of 8086 (Block diagram, signal description), register organization, concepts of pipelining, memory segmentation and memory address generation. 2.2 Minimum and Maximum Mode operation and diagram	08	16
ITF311-3 <i>Understand addressing modes, instruction format and all instructions of 8085</i>			
3	8086 Instruction set 3.1 Machine Language Instruction format, addressing modes 3.2 Instruction set (Arithmetic, logical, data transfer, bit manipulation, string, program control transfer, process control)	08	16
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. no.	Topics Subtopics	Teaching (Hours)	Theory evaluation Marks
ITF311-4 Develop assembly language programs using tools like editor, assembler, linker and debugger			
4	The art of assembly Language Programming 4.1 Program development steps defining problem, algorithms flowchart, initialization checklist, choosing instructions, converting algorithms to assembly language programs. 4.2 Assembly Language Programming Tools Editors, Assembler, Linker, Debugger. 4.3 Assembler directives, model of 8086 assembly language programming, programming using assembler.	08	20
ITF311-5 Explain procedure and Macros			
5	Procedure and Macro 5.1 Defining Procedure (Directives used, FAR and NEAR, CALL and RET instructions) 5.2 Defining Macros. 5.3 Assembly Language Programs using Procedure and Macros.	08	12
ITF311-6 Describe I/O mapped I/O and memory mapped I/O interfacing			
6	System Interfacing 6.1 Interfacing Techniques (I/O mapped I/O, Memory mapped I/O, memory and I/O addressing, 8086 addressing, and address decoding, memory interfacing as Even and Odd bank)	08	08
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination

Section / Topic no.	Name of topic	Distribution of marks (level wise)			Total marks
		Knowledge	Comprehension	Application	
I / 1	Basics of Microprocessor	4	2	2	08
I / 2	16-bit Microprocessor 8086	6	6	4	16
I / 3	8086 Instruction set	6	6	4	16
I / 4	The art of assembly Language Programming	8	8	4	20
II / 5	Procedure and Macro	4	4	4	12
II / 6	System Interfacing	4	2	2	08

Laboratory experiences and related skills developed.

1) Basics of Assembler, linker, debugger, editor

2) Write an Assembly Language Program to

- I. Add / Sub two 16 bit numbers.
- II. Find sum of series of numbers.
- III. Multiply two 16 bit unsigned/ signed numbers.
- IV. Divide two unsigned/ signed numbers (32/16 , 16/8, 16/16, 8/8)
- V. Add / Sub / Multiply / Divide two BCD numbers.
- VI. Find smallest/ largest number from array of n numbers.
- VII. Arrange numbers in array in ascending/ descending order.
- VIII. Perform block transfer data using string instructions / without using string instructions.
- IX. Compare two strings using string instructions / without using string instructions.
- X. Display string in reverse order, string length, Concatenation of two strings.

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	10
2	Preparedness for practical	10
3	Correct figures / diagrams	10
4	Logical Thinking and Approach	10
5	Application	10
	Total	50

Criteria for assessment at semester end Termwork:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end as per Pro-forma III.

Instructional strategies:

- 1) Lectures and discussions.
- 2) Laboratory experiences and laboratory interactive sessions.
- 3) Time bound assignments.

Teaching and Learning resources, including references:

- 2) Chalk-board.
- 3) Transparencies
- 4) Presentation Slides
- 5) Demonstrative video files
- 6) Books:
 1. Microprocessor interfacing & applications : Douglas Hall
 2. Advanced Microprocessor & peripherals: A.K. Ray & K.M. Bhurchandi
 3. Microprocessor architecture & applications : R. Gaonkar.

COURSE ID:24 (B)

Course Name : **COMPUTER GRAPHICS**
Course Code : **ITF312**
Course Abbreviation : **FCOG**

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : **NIL**
Teaching Scheme: **MPECS 2016**

Scheme component	Hours / week	Credits
Theory	3	4
Practical	1	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each to be converted out of 10 marks	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (01 hour)	As per Performa - III		
Marks	20	--	80	50		150

RATIONALE:

Computer system is set up to allow the user to interact with the system through a graphical user interface, where information on the display screen is conveyed in both textual and graphical forms. Everyone should be aware of this rapidly expanding technology. Computer graphics is a complex and diversified technology. The output product of Computer Graphics is a pictorial image. Hence the computer has become a new tool for the artist and animator. Computer graphics is an extremely effective medium for communication between man and machine through pictures, charts and diagrams. Thus one can understand the information contents of a displayed diagram or perspective view much faster than the table of numbers.

COMPETENCY: Drawing flow chart for different shapes drawing algorithm.

Cognitive: i) To understand basic Graphics primitives.

ii) To implement graphics primitives on the screen using C/C++ Compiler.

iii) To solve the design problems.

Psychomotor: i) Learn algorithm for line and circle drawing.

ii) Study 2-dimensional and 3-dimensional transformation.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality

COURSE OUTCOMES:

Students should be able to:

ITF312-1: Describe display devices, functions and its applications.

ITF312-2: Write line, circle, and polygon Algorithms.

ITF312-3: Compare 2D and 3D transformation with principles of transformation

ITF312-4: Apply clipping and curves Algorithms.

ITF312-5: State advantages of Graphics standards.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs										PSO1 Design & development	PSO2 Networking & database management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency:	2	-	-	-	-	1	-	-	-	-	3	-
ITF312-1: Describe display devices, functions and its applications.	-	2	-	1	-	-	-	-	-	-	1	1
ITF312-2: Write line, circle, and polygon Algorithms.	2	2	-	-	-	-	-	-	-	-	2	1
ITF312-3 Compare 2D and 3D transformation with principles of transformation	2	2	-	-	-	-	-	-	-	2	2	1
ITF312-4 : Apply clipping, and curves Algorithms	2	2	-	-	-	-	-	-	-	2	2	1
ITF312-5 State advantages of graphics standards.	1	1	-	-	-	-	-	-	-	-	2	1

CONTENT:

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF312-1: Discuss display devices, functions and its applications.			
1	Basics of CG 1.1 Display devices, Primitive operations 1.2 The Display-file Interpreter 1.3 Display file structure , Graphics file formats , Text mode graphics function, Graphic mode 1.4 Graphics functions Shapes, colors, Co-ordinate systems, Applications of computer graphics	06	10
Course Outcome ITF312-2: Write line, circle, and polygon Algorithms.			
2	Line, circle, and polygon. 2.1 Basic concepts in line drawing, Line drawing algorithms: DDA algorithms, Bresenham's algorithm 2.2 Circle generating algorithms: DDA circle drawing algorithm, Bresenham's circle drawing algorithm, midpoint circle algorithm 2.3 Polygons – Types of polygons, Polygon representation, Entering polygons, polygon filling: Flood fill, scan-line Algorithm	08	14
Course Outcome ITF312-3 : Compare 2D and 3D transformation with principles of transformation			
3	Transformations 3.1 Principles of Transformations 3.2 2D transformation: scaling, Reflection, shearing, Rotation, Translation n, Rotation about an arbitrary point.. 3.3 3D Transformation: scaling, rotation, translation, rotation about arbitrary axis	10	16

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
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Section II

Sr. No.	Topics/ Sub-topics	Lectures(Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF312-4 :Analyze clipping, and curves Algorithms.</i>			
4	Windowing & clipping 4.1 Viewing transformation, Normalization transformation 4.2 Line clipping: Cohen-Sutherland, Line clipping algorithm, midpoint subdivision algorithm 4.3 Polygon clipping: Sutherland – Hodgeman Polygon clippingalgorithm	11	18
5	Curves 5.1 Curve generation: arc generation using DDA algorithm. 5.2 Characteristics of B-Spline, Bezier curves.	6	10
<i>Course Outcome ITF312-5 : Describened of graphics standards</i>			
6	Raster graphics and interactive graphics 6.1 Raster scan display, Random scan display 6.2 Need for graphics standards 6.3 Advantages of Graphics standards	7	12

Specification table for setting question paper for semester end theory examination:

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Application		
1	Basics of CG	04	04	02	ITF312-1	10
2	Line, circle, and polygon.	04	06	04	ITF312-2	14
3	Transformations	06	04	06	ITF312-3	16
4	Windowing & clipping	06	06	06	ITF312-4	18
5	Curves	04	04	02	ITF312-4	10
6	Raster graphics and interactive Graphics	06	06	-	ITF312-5	12
Total		30	30	20		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

Laboratory experiments and related skills to be developed:

Sr. No.	Title of Experiment	Skills to be developed	Course outcome
1.	Study of graphics Functions	1. Plotting of Pixels 2. Drawing Lines, Shapes, applying Colours	ITF312-1
2.	Study of DDA algorithm for line drawing	1. Understanding DDA Line Drawing Algorithm 2. Implementation of DDA algorithm for line drawing	ITF312-2
3.	Program to Draw a Line using Bresenham's algorithm	1. Understanding Bresenham's Line Drawing Algorithm 2. Implementation of Bresenham's algorithm for line drawing	ITF312-2
4.	Study of DDA algorithm for circle drawing	1. Understanding DDA Circle Drawing Algorithm 2. Implementation of DDA algorithm for drawing Circle	ITF312-2
5.	Study of Bresenham's algorithm of circle drawing	1. Understanding Bresenham's Circle Drawing Algorithm Implementation of Bresenham's algorithm for drawing Circle	ITF312-2
6.	Study of Scan conversion algorithm for Polygon filling	1. Understanding Scan conversion algorithm 2. Implementation of Scan conversion algorithm	ITF312-2
7.	Write Program for 2-D transformations -> Translation	1. Principles of transformation 2. Understanding translation 3. Implementation of Translation	ITF312-3
8	Write Program for 2-D transformations -> scaling,	1. Understanding Scaling and rotation 2. Implementation of Rotation and Scaling	ITF312-3

	Rotation,		
9	Write Program for 2 D transformations shearing and Translation program	1. Study of Shearing 2. Implementation of shearing & Translation	ITF312-3
10	Write program for rotation about an arbitrary point.	1. Understanding Rotation about an arbitrary point 2. Implement program for rotation about an arbitrary point	ITF312-3
11	Study of Cohen- Sutherland algorithm for line clipping	1. Understanding Cohen- Sutherland algorithm for line clipping. 2. Implementation of Cohen- Sutherland algorithm for line	ITF312-4
12	Study of mid-point subdivision algorithm for line clipping.	1. Understanding midpoint subdivision algorithm 2. Implementation of mid-point subdivision algorithm	ITF312-4
13	Study of Sutherland-Hodgeman algorithm for Polygon clipping.	1. Understanding Polygon Clipping 2. Implementation of Sutherland-Hodgeman algorithm for polygon clipping.	ITF312-4

Criteria for Continuous Assessment of Practical work and Progressive skill Test:

Sr. no	Criteria	Marks allotted
1	Preparedness for practical	05
2	Technical Ability	05
3	Algorithm	05
4	Implementation	05
5	Logical thinking and approach	05
TOTAL		25

Criteria for assessment at semester end Termwork:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end as per Pro-forma III.

Instructional strategies:

- 1) Lectures and discussions.
- 2) Laboratory experiences and laboratory interactive sessions.
- 3) Time bound assignments.

Teaching and Learning resources, including references:

1. Books
2. Transparencies
3. Power Point Presentation
4. Self-learning

1) Books:

1. Mathematical elements for Computer Graphics – David F.Rogers.
2. Procedural Elements for Computer Graphics – David F.Rogers.
3. Principles of Interactive Computer Graphics- Newman and Sproull , Tata McGraw Hill

2) References:

- 1) www.insidecg.com
- 2) www.graphics.standard.edu
- 3) www.cmp.uea.ac.uk/research
- 4) www.computerarts.co.uk

COURSE ID: 24 (C)

Course Name : SYSTEM PROGRAMMING
Course Code : ITF313
Course Abbreviation :FSYP

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : <nil >

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	03	04
Tutorial	01	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	ix. 25 marks for each practical x. One PST of 25 marks	Term End Theory Exam (03 hours)	As per Proforma III	--	
Marks	20	--	80	50	--	150

RATIONALE:

Computers cannot understand any language without using system programs like Assemblers, Loaders, and Compilers. The main purpose of system programming is to teach procedures for the design of such system software. System programs e.g. compilers, loaders, macro processors were developed to make computers better adapted to the needs of their users.

COMPETENCY :Understand procedures and working flow of system software.

Cognitive: Understand various design aspects of system software.

Psychomotor:i) Translation of high level language to assembly language ii) Conversion of Grammar.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) Effectiveness

COURSE OUTCOMES:

The student will be able:

ITF313-1: Describe functions of system programming components.

ITF313-2: Explain functions of language processors.

ITF313-3: State assembly language program statements.

ITF313-4: Discuss programming structure of macros.

ITF313-5: Identify working of Compilers, Interpreters, and linkers.

ITF313-6: Enlist software tools for diagnosis of system software.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[Note: Correlation levels: 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs										PSO1 Design and Development	PSO2 Network and Database Management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiences and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Understand procedures and working flow of system software..	1	2	1	-	-	-	-	-	-	1	-	-
ITF313-1 Describe functions of system programming components.	-	2	-	-	-	-	-	-	-	-	-	-
ITF313-2 Explain functions of language processors.	-	2	1	-	-	-	-	-	-	1	-	-
ITF313-3 State assembly language program statements.	-	2	1	-	-	-	-	-	-	1	-	-
ITF313-4 Describe programming structure of macros.	1	1	-	-	-	-	-	-	-	1	-	-
ITF313-5 Identify working of Compilers, Interpreters, and linkers.	-	2	-	-	-	-	-	-	-	3	-	-
ITF313-6 Enlist software tools for diagnosis of system software.	-	1	-							1	-	

CONTENT:**Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF313-1 Describe functions of system programming components.			
01	INTRODUCTION 1.1 Components of a programming system 1.1.1 Assemblers 1.1.2 Loaders 1.1.3 Macros 1.1.4 Compilers 1.1.5 Formal systems 1.2 Evolution of Operating system 1.3 Operating system : functions and facilities	04	08
Course Outcome ITF313-2 Explain functions of language processors.			
02	LANGUAGE PROCESSORS 2.1 Introduction 2.1.1 Language processors 2.1.2 Interpreter 2.1.3 Problem oriented and Procedure oriented languages 2.2 Language processing activities 2.2.1 Program generation 2.2.2 Program execution 2.3 Fundamentals of language processing 2.3.1 Lexical, Syntax and Semantic rules 2.3.2 Phases and passes of a language processor 2.3.3 Intermediate representation of programs 2.4 A Toy Compiler 2.4.1 Front end – Lexical, Syntax and Semantic analysis 2.4.2 Back end – Memory allocation, Code generation 2.5 Fundamentals of language specification 2.5.1 Programming language grammars	10	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	2.5.2 Binding and binding times.		
Course Outcome ITF313-3 State assembly language program statements.			
03	ASSEMBLERS 3.1 Elements of assembly language programming 3.1.1 Assembly language statements 3.1.2 Advantages of assembly language 3.2 A simple assembly scheme – Design specification of an assembler, synthesis phase, analysis phase 3.3 Pass structure of assemblers	06	12
Course Outcome ITF313-4 Discuss programming structure of macros.			
04	MACRO AND MACRO PROCESSORS 4.1 Introduction 4.2 Macro definition and call 4.3 Macro Expansion 4.4 Nested macro calls	04	06
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF313-5 Identify working of Compilers, Interpreters, and linkers.			
05	COMPILERS AND INTERPRETERS 5.1 Aspects of compilation -data types, data structures, scope rules, control structure 5.2 Memory allocation 5.2.1 Static and dynamic memory allocation 5.3 Compilation of expressions 5.3.1 A Toy Code Generator for expressions 5.3.2 Intermediate codes for expressions 5.4 Compilation of control structures 5.4.1 Control transfer, conditional execution and iterative constructs 5.4.2 Function and procedure calls – calling conventions, parameter passing mechanisms 5.5 Code optimization 5.5.1 Optimizing transformations 5.5.2 Local optimization 5.5.3 Global optimization 5.6 Interpreters 5.6.1 Use of interpreter 5.6.2 Overview of interpretation 5.6.3 A Toy interpreter 5.6.4 Pure and impure interpreters	12	16
06	LINKER 6.1 Translated, linked and load time addresses 6.2 Relocation and linking concepts 6.2.1 Program relocation 6.2.2 Linking 6.2.3 Object module 6.3 Self – relocating programs	04	10
Course Outcome ITF313-6 Enlist software tools for diagnosis of system software			

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
07	SOFTWARE TOOLS 7.1 Software tools for program development 7.1.1 Program design and coding 7.1.2 Program entry and editing 7.1.3 Program testing and debugging 7.1.4 Enhancement of program performance 7.1.5 Design of software tools 7.2 Editors – screen editors, word processors, structure editors, design of an editor 7.3 Debug monitors 7.4 Programming Environments 7.5 User interfaces 7.5.1 Command dialogs 7.5.2 Presentation of data 7.5.3 Online help 7.5.4 Structure of a user interface 7.5.5 User interface management systems	08	14
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

pecification table for setting question paper for semester end theory examination:

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Applica-tion		
01	Introduction	04	02	02	ITF313-1	08
02	Language Processors	06	04	04	ITF313-2	14
03	Assemblers	04	06	02	ITF313-3	12
04	Macro And Macro Processors	02	02	02	ITF313-4	06
05	Compilers And Interpreters	08	04	04	ITF313-5	16
06	Linker	04	04	02	ITF313-5	10
07	Software Tools	04	04	06	ITF313-6	14
TOTAL		32	26	22		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

Laboratory experiences and related skills developed.

1. To study functions of components of Programming system - Assembler, linker, compiler, interpreter, loader
2. To write a program to generate Machine Op-Code Table for the given input string.
3. To explore various features of debugging
4. To write a program to create symbol table for a given assembly language program.
5. To write a program to create symbol table for a given high-level language program.
6. Study of LEX and YACC tools
7. To create a menu driven interface for a) Displaying contents of a file page wise b) Counting vowels, characters, and lines in a file. c) Copying a file

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	10
2	Preparedness for practical	10
3	Correct figures / diagrams	10
4	Logical Thinking and Approach	10
5	Application	10
	Total	50

Criteria for assessment at semester end Termwork:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end as per Pro-forma III.

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

1. Lectures and Discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources :

1. Chalk board
2. LCD presentations Slides
3. Demonstrative Video Files
4. Books.

REFERENCE MATERIAL :**a) Books / Journals / IS Codes**

Sr. No.	Author	Title	Publisher
1.	D. M. Dhamdhere	System Programming And Operating Systems	McGraw Hill
2.	John J. Donovan	System Programming	McGraw Hill

* * *

LEVEL-IV APPLIED TECHNOLOGY COURSES

COURSE ID: 25

Course Name : NETWORK ADMINISTRATION
Course Code : ITF401
Course Abbreviation : FNAD

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : ITF306 Computer Network
Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	3	5
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (External)	
Details of Evaluation	Average of two tests of 20 marks each	xi. 25 marks for each practical xii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-I	
Marks	20	--	80	--	25	125

RATIONALE:

This subject is network application based subject. It gives the practical knowledge of designing computer network. This subject covers the installation and configuration of any network operating system. With the proper configuration of operating system on the server, the students will be able to manage and administer the network resources. This subject also covers network maintenance, troubleshooting tools and network security.

COMPETENCY- Configure and maintain the organization's computer network

Cognitive: i) Understanding and recalling network administration to design network for home or office
 ii) Describe active directory architecture, domain name system, use of firewall and IP security

Psychomotor : i) Administer the network operating system
 ii) Troubleshoot OS and TCP/IP utilities

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality

COURSE OUTCOMES

The student should be able to:

ITF401-1 Design network plan for home or small office.

ITF401-2 Distinguish remote network access.

ITF401-3 Describe domain name system & active directory architecture.

ITF401-4 Describe network maintenance and antivirus policies.

ITF401-5 Troubleshoot network problem using OS and TCP-IP utilities.

ITF401-6 Explain protocols and firewalls for network security

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[**Note : Correlation levels** : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design And Development	PSO2 Network and Database Management
Competency: Configure and maintain the organization's computer network	-	2	3	1	2	-	-	2	-	2	-	1
ITF401-1 Design network plan for home or small office	-	2	1	-	-	-	-	1	-	-	-	1
ITF401-2 Distinguish remote network access	-	2	1	-	-	-	-	1	-	2	-	-
ITF401-3 Describe domain name system & active directory architecture.	-	1	2	2	-	-	-	-	-	2	-	1
ITF401-4 Describe network maintenance and antivirus policies.	-	1	1	1	2	-	-	1	-	2	2	3
ITF401-5 Troubleshoot network problem using OS and TCP-IP utilities.	-	2	3	3	-	-	-	2	-	2	-	1
ITF401-6 Explain protocols and firewalls for network security	-	3	-	-	2	-	1	-	-	2	-	1

CONTENT:**H) THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF401-1 Design network plan for home or small office</i>			
1	IMPLEMENTATION OF NETWORK 1.1 Network Design Overview 1.1.1 Reasoning the need 1.1.2 Seeking approval 1.2 Designing a home or small office network 1.2.1 Selecting computers 1.2.2 Selecting a networking protocol - Choosing a network medium - Choosing a network speed 1.2.3 Expanding the network	04	08
<i>Course Outcome ITF401-2 Distinguish remote network access</i>			
2	NETWORK CONNECTION AND PRINTING SERVICES 2.1 Dynamic Host Configuration Protocol (DHCP) 2.1.1 Origins - RARP , BOOTP (introduction) 2.1.2 DHCP Objectives - IP address assignment - TCP/IP Client configuration 2.1.3 DHCP Architecture - DHCP packet structure - DHCP Message Type option 2.2 Remote Network Access 2.2.1 Public Switched Telephone Network (PSTN) 2.2.2 Integrated Services Digital Network (ISDN) 2.2.3 Digital Subscriber Line (DSL) 2.3 Understanding Network Printing Concepts 2.3.1 Network Printing Issues 2.3.2 Printer Connection 2.3.3 Printer Administration	08	12
<i>Course Outcome ITF401-3 Describe domain name system & active directory architecture.</i>			
3	THE DOMAIN NAME SYSTEM 3.1 Need For DNS 3.2 Name Space	06	12

	3.2.1 Flat Name Space 3.2.2 Hierarchical Name Space 3.2.3 Domain Name space 3.3 DNS in Internet 3.3.1 Generic top level domains 3.3.2 Country-code domains 3.2.2 Inverse Domain 3.2.3 Registrar 3.4 DNS Resolution 3.4.1 Resolvers 3.4.2 DNS Message Header 3.4.3 Types of Records -Question Record - Resource Record 3.4.4 Root Name Server		
4	ACTIVE DIRECTORY ARCHITECTURE 4.1 Object types 4.2 Object Naming 4.2.1 Canonical Names 4.2.2 LDAP notation 4.2.3 Globally unique identifiers 4.2.4 User principle names 4.3 Domain, Trees and Forests 4.4 DNS and Active directory 4.5 Global Catalog Server	06	08
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section - II

Course Outcome ITF401- 4 Describe network maintenance and antivirus policies.			
5	NETWORK MAINTENANCE 5.1 Backups 5.1.1 Backup Hardware 5.1.2 Backup Software Functions 5.2 Antivirus Policies 5.2.1 Types of Viruses 5.2.2 Preventing virus infections 5.3 Patches and Updates 5.3.1 Major updates 5.3.2 Patches 5.3.3 Driver Updates 5.3.4 Software upgrades	08	14
Course Outcome ITF401-5 Troubleshoot network problem using OS and TCP-IP utilities.			
6	MANAGEMENT AND TROUBLESHOOTING TOOLS 6.1 Operating System Utilities 6.1.1 NET 6.1.2 NET CONFIG 6.1.3 NET DIAG 6.1.4 NET START and NET STOP 6.1.5 NET SESSION 6.1.6 Net Watcher 6.2 TCP/IP Utilities 6.2.1 Ping 6.2.2 Traceroute 6.2.3 Route 6.2.4 Netstat 6.2.5 Nslookup 6.2.6 Ipconfig	06	12

Specification table for setting question paper for semester end theory examination

Course Outcome ITF401-6 Explain protocols and firewalls for network security.			
7	NETWORK SECURITY 8.1 Firewalls 8.1.1 Types of firewalls 8.1.2 Firewall configuration 8.1.3 Limitations of firewalls 8.2 IP Security 8.2.1 Introduction 8.2.2 IPSec Overview - Introduction , IPSec protocols , IKE protocol , Security Association 8.2.3 Authentication Header(AH) - AH format , Dealing with replay attacks , Modes of operation 8.2.4 Encapsulating Security Payload(ESP) - ESP format , Modes of operation 8.2.5 IPSec Key Management - Introduction , Oakley key determination protocol, ISAKMP (Packet Format Only) 8.3 Virtual Private Networks(VPN) 8.3.1 Introduction 8.3.2 VPN Architecture	10	14
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Topic No.	Name of topic	Distribution of marks (level-wise)			Course Outcome	Total Marks
		Remember	Understand	Application		
1	Implementation of network	02	04	02	ITF401-1	08
2	Network connection and Printing Services	06	04	02	ITF401-2	12
3	The Domain Name System	02	05	05	ITF401-3	12
4	Active Directory Architecture	03	03	02	ITF401-3	08
5	Network Maintenance	04	06	04	ITF401-4	14
6	Management and Troubleshooting Tools	04	04	04	ITF401-5	12
7	Network Security	04	06	04	ITF401-6	14
TOTAL		25	32	23		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

I) TERM WORK**Practical Exercises and related skills to be developed:**

Sr. No.	Title of Practical Exercise	Skills / Competencies to be developed	Course outcome
1	Identifying and recognizing network components	1. Recognize the functions of various ports on back of computer 2. Distinguish between various types of network	ITF401-1
2	Study of Server OS	1. Study of Server Operating System(CASE STUDY-Recent SERVEROS)	ITF401-1
3	Installation of server operating system(e.g. Windows Server 2000/2003)	1. Understanding hardware requirements and compatibility 2. Determining disk partitioning options 3. Choosing file system 4. Choosing Licensing mode 5. Deciding which protocol to install 6. Determining Domain and workgroup membership	ITF401-1
4	Installing and Configuring a network capable print device.	1. Installing a printer 2. Print spooler service 3. Viewing printer preferences	ITF401-2
5	Installing DHCP	1. Installing and configuring DHCP server	ITF401-2
6	Installing Active Directory	1. Understanding the concept of active directory	ITF401-3
7	User account management	1. Creating an Account 2. Disabling, renaming and enabling an Account 3. Moving an Account 4. Changing an Accounts password 5. Deleting an Account	ITF401-3
8	Security group management	1. Creating domain level and global security groups	ITF401-4
9	Network troubleshooting	OS utilities – Execution of commands with all options.	ITF401-5
10	Network troubleshooting	OS utilities – Execution of commands with all options.	ITF401-5
11	Industrial Visit	Visit any existing Network infrastructure	ITF401-1,2,3,4,5,6

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION**i) Criteria for Continuous Assessment of Practical work and Progressive skill Test:**

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical & neat & complete Diagram.	05
3	Observations & computer handling skill	05
4	Logical thinking and approach	05
5	Oral Based on Lab work and completion of task	05
TOTAL		25

b) Criteria for assessment at semester end ORAL exam:

Sr. no	Criteria	Marks allotted
1.	Technical ability	10
2.	Communication skill	10
3.	Logical approach	05
	TOTAL.	25

Assessment at semester end oral exam as per Pro-forma I.

INSTRUCTIONAL STRATEGIES :

- 1) Lectures and discussions.
- 2) Laboratory experiences and laboratory interactive sessions.
- 3) Time bound assignments.

TEACHING AND LEARNING RESOURCES:

1. Chalk board
2. O.H.P.
3. Presentation slides
4. Self-learning Tutors

REFERENCE MATERIAL:**a) Books / Codes**

Sr. No.	Author	Title	Publisher
1.	Craig Zacker	The Complete Reference Networking	McGraw Hill
2.	Microsoft Press	Microsoft Network + Certification Training Kit	Microsoft Press
3.	Atul Kahate	Cryptography and Network Security	McGraw Hill

COURSE ID: 26

Course Name : SOFTWARE ENGINEERING
Course Code : ITF402
Course Abbreviation : FSOE

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme: MPECS2016

Scheme component	Hours / week	Credits
Theory	3	4
Tutorial	1	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	iii. 25 marks for each practical iv. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma - II	
Marks	20	--	80		25	125

COMPETENCY

Apply the principles of software engineering to design and develop software.

Cognitive : i) Examine the role Software Engineer
 ii) Understand all the phases of software development life cycles
 iii) Describe the various processes along with project planning in software engineering.

Psychomotor : i) Design software models ii) Draw E-R diagram iv) Design software requirement specification

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality

COURSE OUTCOMES:

ITF402-1: Describe various models for the Software development process.

ITF402-2: Prepare software requirements specification format.

ITF402-3: Recognize software project planning.

ITF402-4: Classify software design and implementation type.

ITF402-5: Explain Software testing and maintenance activities.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :[**Note : Correlation levels :** 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and Development	PSO2 Networking and database management
Competency: Apply the principles of software engineering to design and develop software.	-	2	3	-	-	-	-	1	-	2	2	1
ITF402- 1 Describe various models for the Software development process.	-	1	1	-	-	-	-	-	-	2	2	-
ITF402-2: Prepare software requirements specification format.	-	1	2	-	-	-	-	1	-	2	1	-
ITF402-3: Recognize software project planning	-	3	-	-	-	-	-	-	-	3	1	-
ITF402-4: : Classify software design and implementation type.	-	2	-	-	-	-	-	-	-	-	1	-
ITF402-5: Explain Software testing and maintenance activities	-	3	-	-	-	-	-	-	-	3	2	-

CONTENT:

Section I			
Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF402-1: Describe various models for the Software development process.			
1	INTRODUCTION 1.1 Evolving Role of Software 1.2 What is Software Engineering, Software Engineering approach, Software Definition, Software Characteristics, Software Components, Software applications, 1.3 Role of Management in Software Development	06	08
2	SOFTWARE LIFE CYCLE MODELS 2.1 Definition of software life cycle 2.2 Software life cycle Models 2.2.1 Build and fix model 2.2.2 Waterfall model 2.2.3 Prototyping Model 2.3.4 Spiral Model 2.4.5 The Rapid Application Development (RAD) Model 2.3 Selection of Life Cycle Model	08	10
Course Outcome ITF402-2: Prepare the software requirement specification format.			
3	SOFTWARE REQUIREMENT ANALYSIS 3.1 Requirements Engineering. Crucial Process Steps 3.2 Types of Requirements(known, unknown, undreamt) 3.2.1 Functional and Non functional requirement 3.2.2 User and System requirement 3.3 Requirement Elicitation 3.3.1 Interviews 3.3.2 Brainstorming sessions 3.3.3 Facilitated Application specification Technique(FAST) 3.4 Requirement Analysis	10	12

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	3.4.1 Data Flow Diagram – Leveling(level 0, 1) 3.4.2 Data Dictionaries 3.4.3 Entity- Relation Diagrams 3.5 Characteristics of good SRS, format of SRS with example		
Course Outcome ITF402-3: Recognize the software project planning.			
4	SOFTWARE PROJECT PLANNING 4.1 Planning and its importance. 4.2 Activities during project planning 4.3 Size estimation 4.3.1 Lines of code(LOC) 4.3.2 Function Count 4.3.3 cost estimation 4.4 Risk Analysis 4.4.1 What is Risk 4.4.2 Typical Software Risks 4.4.3 Risk Management Activities	08	10
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Subtopics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF402-4 Classify software design and implementation type.			
5.	SOFTWARE DESIGN AND IMPLEMENTATION 5.1 What is Design - Conceptual and Technical design - Objectives of designs - Why Design is important 5.2 Modularity - Coupling, Cohesion 5.3 Strategy of Design- Bottom up, top Down, Hybrid 5.4 Program Language Characteristics - A Syntactic and semantic Model - Choosing a Language 5.5 Efficiency – Code Efficiency, Memory Efficiency, Input /Output Efficiency	10	14
Course Outcome ITF402-5: Explain Software testing and maintenance activities.			

6	SOFTWARE QUALITY ASSURANCE AND TESTING 6.1 Software Quality and Software Quality Assurance - Software Quality Factors - Software Quality Assurance - Software Quality Activities 6.2 Testing Process - What is Testing? - Why should we Test? - Who should do the testing? - What should we test? - Terminology – error, mistake, bug, fault, failure 6.3 Test ,Test case and Test Suite, verification & validation ,Alpha , Beta & Acceptance testing 6.4 Levels of testing - Unit, Integration, System testing - Basic Concept of White Box ,Black Box Testing	12	14
7	SOFTWARE MAINTENANCE 7.1 What is software maintenance 7.1.1 Categories of Maintenance 7.2 Problems during Maintenance 7.3 Potential Solution to Maintenance Problems 7.4 The maintenance Process - Program Understanding - Generating Particular maintenance Proposal - Ripple Effects - Modified Program Testing - Maintainability	10	12
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination:

Section / Topic no.	Name of topic	Distribution of marks			Total marks
		Knowledge	Comprehension	Application	
I / 1	Introduction	4	3	1	08
I / 2	Software Life Cycle	3	4	1	08
I / 3	Software Requirement Analysis	5	5	2	12
I / 4	Software Project Planning	4	4	4	12
II / 5	Software Design and Implementation	5	5	4	14

II/6	Software Quality Assurance and Testing	6	6	2	14
II/7	Software Maintenance	5	5	2	12

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

Q. TERM WORK

xi) Laboratory experiments and related skills to be developed :

Sr. No.	Title of Experiment	Skills to be developed	CO
01	Introduction To Software Engg	Explain Software Engineering concepts, role and Characteristics selection of problem statement (topic)	ITF402 - 1
02	Life cycle Models	Apply different Life cycle Models to suggested system	ITF402 – 1
03	Requirement analysis	Prepare requirement analysis for suggested system	ITF402 – 2
04	SRS Report	Prepare SRS for suggested system	ITF402 – 2
05	Software Estimation	Estimate effort using FP Estimation for chosen system.	ITF402 – 3
06	Software Design	Draw function oriented diagram : DFD	ITF402 –2, 4
07	Software Design	Draw function oriented diagram : ER Diagram	ITF402 -2, 4
08	Software Testing	Write test case for login and registration form. List latest software testing tools.	ITF402 – 5
09	Software Maintenance	Explain Software Maintenance, Categories & Problems	ITF402 – 5

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	10
2	Preparedness for practical	10
3	Correct figures / diagrams	10
4	Logical Thinking and Approach	10
5	Application	10
	Total	50

Criteria for assessment at semester end Termwork:

Sr. no	Criteria	Marks allotted
1	Technical Ability	05
2	Logical Approach	05
3	Presentation	05
4	Applications	10
	Total	25

Assessment at semester end as per Pro-forma III.

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

1. Lectures and discussions.
2. Time bound assignments.

Teaching and Learning resources:

13. Books
14. Transparencies
15. Power Point Presentation
16. Self-learning

REFERENCE MATERIAL:**f) Books**

Sr. No.	Author	Title	Publisher
1.	K.K. Agrawal & Yogesh Singh	Software engineering	Copyright © Age International
2.	Rogar Pressman	Software Engineering A Practitioner's Approach	McGraw Hill Education
3	Jalote Pankaj	An Integrated Approach to Software Engineering	Narosa Publication New Delhi

COURSE ID : 27

Course Name : Information Security
Course Code : ITF403
Course Abbreviation : FIFS

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme: MPECS2016

Scheme component	Hours / week	Credits
Theory	3	5
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	oral Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	v. 25 marks for each practical vi. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma - II	
Marks	20	--	80	--	50	150

RATIONALE:

Information security is becoming one of the most important areas of computing today. It is essential to understand various threats to secure computing and the basic security design principles and techniques developed to address these threats. The student will be able to recognize potential threats to confidentiality, integrity and availability. This course will introduce basic cryptography, web security, basic authentication mechanism, email security. It will develop knowledge for security of information and information systems within organizations.

COMPETENCY :

Understand potential threats to security of information systems and basic cryptography, authentication mechanisms and email security

Cognitive: i) Identify threats to confidentiality, integrity and availability of information systems
 ii) Demonstrate encryption techniques
 iii) Explain symmetric and asymmetric key algorithms

iv) Understand Internet security and message authentication

Psychomotor: i) Solve examples on cipher techniques

ii) Write programs to implement encryption techniques

iii) Perform a case study on security attack on information system

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :

The students will be able to :

ITF403-1 Classify security attacks on information systems

ITF403-2 Demonstrate substitution and transposition techniques

ITF403-3 Explain symmetric and asymmetric key algorithms.

ITF403-4 Describe message authentication technique

ITF403-5 Illustrate intrusion detection and password management techniques.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :[**Note : Correlation levels** : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs										PSO1 Design and Development	PSO2 Network and Database Management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Understand potential threats to security of information systems and basic cryptography, authentication mechanisms and email security	-	2	1	1	1	-	-	1	-	3	2	-
ITF403-1 Classify security attacks on information systems	-	2	-	-	-	-	1	-	-	2	-	-
ITF403-2 Demonstrate substitution and transposition techniques	1	2	2	1	1	-	-	1	-	2	2	-
ITF403-3 Explain symmetric and asymmetric key algorithms.	-	2	-	-	2	-	-	-	-	1	1	-
ITF403-4 Describe message authentication technique	-	2	1	1	-	-	-	-	-	2	-	-
ITF403-5 Illustrate intrusion detection and password management techniques.	-	2	1	1	-	-	-	2	-	2	2	-

CONTENT:

Section I			
Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF403-1 :Classify security attacks on information systems</i>			
1	INTRODUCTION TO INFORMATION SECURITY 1.1 Security trends 1.2 OSI security architecture 1.3 Security attacks 1.4 Security services 1.5 Security mechanisms 1.6 A model for network security	04	08
<i>Course Outcome ITF403-2: Demonstrate substitution and transposition techniques</i>			
2	ENCRYPTION TECHNIQUES AND BLOCK CIPHERS 2.1 Symmetric cipher model 2.2 Substitution techniques 2.2.1 Caesar cipher 2.2.2 Mono-alphabetic cipher 2.2.3 Homophonic substitution cipher 2.2.4 Playfair cipher 2.2.5 Hill cipher 2.3 Transposition techniques 2.3.1 Rail fence technique 2.3.2 Simple columnar technique 2.3.3 Vernam cipher	10	12
<i>Course Outcome ITF403-3: Explain symmetric key & asymmetric key algorithms</i>			
3	SYMMETRIC KEY ALGORITHMS 3.1 Block cipher 3.1.1 Algorithm types – stream cipher and block cipher	08	10

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	3.1.2 Algorithm modes <ul style="list-style-type: none"> • ECB • CBC • CFB • OFB 3.2 Overview of symmetric key cryptography 3.3 Simplified Data Encryption Standard <ul style="list-style-type: none"> 3.3.1 Conceptual working 3.3.2 Strength of SDES 		
4	ASYMMETRIC KEY ALGORITHMS 4.1 overview of asymmetric key cryptography 4.2 public key cryptosystem 4.3 RSA algorithm - encryption and decryption techniques 4.4 Key Management <ul style="list-style-type: none"> 4.4.1 Distribution of public keys 4.4.2 Diffi-Hellman key exchange <ul style="list-style-type: none"> • Algorithm • Man-in-middle attack 	08	10
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Subtopics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF403-4: Describe message authentication technique			
5.	MESSAGE AUTHENTICATION AND HASH FUNCTIONS 5.1 Authentication requirements 5.2 Message encryption <ul style="list-style-type: none"> 5.2.1 Symmetric encryption 	08	14

	5.2.2 Public-key encryption 5.3 Digital signature 5.4 Message Authentication Code 5.5 SHA – 1 Algorithm 5.6 Applications of Cryptographic Hash functions		
Course Outcome ITF403-5: Illustrate intrusion detection and password management techniques.			
6	INTERNET SECURITY 6.1 Secure Socket Layer 6.1.1 Handshake protocol 6.1.2 Record protocol 6.1.3 Alert protocol 6.2 Secure HTTP 6.3 Electronic money – types of electronic money 6.4 E-mail security 6.4.1 Pretty Good Privacy 6.4.2 S/MIME	10	14
7	INFORMATION SYSTEM SECURITY 7.1 Intruders 7.1.1 Intrusion techniques 7.1.2 Intrusion detection techniques 7.2 Password management 7.2.1 Password protection 7.2.2 Password selection strategies 7.3 Malicious software 7.3.1 Types of malicious software 7.4 Distributed Denial of Service Attacks	06	12
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination:

Section / Topic no.	Name of topic	Distribution of marks			Total marks
		Knowledge	Comprehension	Application	
I / 1	Introduction to Information Security	4	4	-	08
I / 2	Encryption Technique & block Cipher	4	4	4	12

I / 3	Symmetric Key algorithm	2	4	4	10
I / 4	Asymmetric Key algorithm	2	4	4	10
II / 5	Message Authentication	6	4	4	14
II/6	Internet Security	6	4	4	14
II/7	Information System Security	4	4	4	12

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

R. TERM WORK

xii) Laboratory experiments and related skills to be developed :

Sr. No.	Title of Experiment	Skills to be developed	CO
01	Study of information security threats	1. Study of security attacks	ITF403 - 1
02	Implementation of Substitution cipher technique	1. Understanding the concept and Implementation of Caesar cipher 2. Implementation of Mono-alphabetic cipher	ITF403 – 2
03	Implementation of Substitution cipher technique	1. Understanding the concept of Playfair cipher 2. Implementation of Example	ITF403 – 2
04	Implementation of Substitution cipher technique	1. Implementation of Homophonic substitution cipher 2. Understanding the concept and Implementation of Hill cipher	ITF403 – 2
05	Implementation of Transposition cipher technique	1. Understanding the concept and Implementation of Rail fence technique	ITF403 – 2
06	Implementation of Transposition cipher technique	1. Understanding the concept and Implementation of Simple columnar technique	ITF403 - 2
07	Implementation of Transposition cipher technique	1. Understanding the concept and Implementation of Vernam cipher	ITF403 - 2
08	Study of SDES	1. Understanding the concept of SDES 2. Solving example step by step	ITF403 - 3
09	Study of RSA	1. Understanding the concept of RSA 2. Solving example step by step	ITF403 - 3
10	Study of Diffi-Hellman key exchange algorithm	1. Understanding Diffi-Hellman key exchange algorithm Solving example step by step	ITF403 - 4
	Password	1. Understanding requirements of authentication	ITF403 - 5

11	management	2. Understanding features of strong password 3. Implementation of a program to check strength of a text password	
12	User authentication	1. Implementation of a program to authenticate a user based on registered password	ITF403 - 5
13	Case Study	A study report on recent security attacks on information system e.g. social networking website, email system, e-commerce websites etc.	ITF403 5

Criteria for Continuous Assessment of Practical work and Progressive skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical & neat & complete Diagram.	05
3	Observations & computer handling skill	05
4	Logical thinking and approach	05
5	Oral Based on Lab work and completion of task	05
TOTAL		25

Criteria for assessment at semester end oral exam:

Sr. no	Criteria	Marks allotted
1	Technical ability	15
2	Presentation	15
3	Logical approach	10
4	Application	10
	TOTAL.	50

Assessment as per proforma - II

INSTRUCTIONAL STRATEGIES:**Instructional Methods:**

1. Lectures and discussions.
2. Time bound assignments.
3. Lab Experiments

Teaching and Learning resources:

17. Books
18. Transparencies

19. Power Point Presentation

20. Self-learning

REFERENCE MATERIAL:**g) Books / Codes**

Sr. No.	Author	Title	Publisher
1.	Atul Kahate	Cryptography and network security	McGraw Hill
2.	William Stallings	Cryptography and network security Principles and practices	Pearson

COURSE ID: 28

Course Name : WEB TECHNOLOGY
Course Code : ITF404
Course Abbreviation : FWET

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	3	7
Practical	4	

Evaluation Scheme :

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (External)	
Details of Evaluation	Average of two tests of 20 marks each	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-I	
Marks	20	--	80	--	50	150

RATIONALE:

This is a technology subject. This subject requires knowledge of web page designing. It involves the technologies used today to develop interactive and sophisticated web sites such as ASP, ASP.net . Web Technology is based on dot net technology, which is a frame work, which supports many languages so that application designed in one language(like C++, COBOL, JAVA, etc) can be connected/interfaced with this frame work hence it is more flexible and advanced.

COMPETENCY : Design Windows Applications and Web Applications

Cognitive : i) Understand built in ASP.NET objects and ASP components.

ii) Design Windows Applications and Web Applications

Psychomotor : i) Create windows and web applications integrated with .NET framework.

Affective : Attitude of i) precision ii) accuracy iii) punctuality iv) aesthetic presentation

COURSE OUTCOMES :**ITF404-1** *Design simple ASP.NET web forms using Cookies.***ITF404-2** *Illustrate Session, Application and Server Objects.***ITF404-3** *Connect and manipulate database using ADO.NET.***ITF404-4** *Design a web page for sending email using Web services***ITF404-5** *Explain XML and XML document components.***COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :****[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]**

Competency and COs	Programme Outcomes POs and PSOs										PSO1 Design and Development	PSO2 Networking and database Management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Design Windows Applications and Web Applications	-	2	2	2	2	-	-	-	-	2	2	2
ITF404-1 <i>Design simple ASP.NET web forms using Cookies..</i>	-	2	2	2	-	-	-	-	-	1	2	-
ITF404-2 <i>Illustrate Session, Application and Server Objects.</i>	-	2	2	2	-	-	-	-	-	1	2	-
ITF404-3 <i>Connect and manipulate database using ADO.NET.</i>	-	2	2	2	2	-	-	-	-	2	2	2
ITF404-4 <i>Design a web page for sending email using Web services</i>	-	3	3	3	2	-	-	1	1	2	2	3
ITE504-5 <i>Explain XML and XML document components.</i>	-	2	2	2	1	-	-	-	-	2	2	1

CONTENT:

Section I			
Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF404-1: Design simple ASP.NET web forms using Cookies.</i>			
1	INTRODUCTION TO ASP.NET 1.1 Difference between ASP and ASP.Net 1.2 Introduction to IIS. 1.3 What is web application? Why it is used? 1.4 ASP.Net IDE. 1.5 Creation of web forms. 1.6 Using web form controls – Textbox, label, listbox, command button, combo box, Option button, Check list box	06	10
2	USING COOKIES 2.1 What are Cookies? 2.2 Advantages and Disadvantages of Cookies 2.3 Creating a Cookies 2.4 Removing Cookies	03	06
<i>Course Outcome ITF404-2: Illustrate Session, Application and Server Objects.</i>			
3	APPLICATION, SESSION AND SERVER OBJECTS 3.1 Session Objects - Using session variables 3.2 Application Objects - Using application variables 3.3 Initializing Application and Session variables 3.4 Creating a global.asa file 3.5 Server object- Methods- CreateObject, Execute, HTMLEncode, MapPath, Transfer 3.6 Adding web.config file.	8	12

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF404-3: Connect and manipulate database using ADO.NET.			
4	INTEGRATING WITH DATABASE 4.1 Microsoft's universal data access strategy – OLEDB, ODBC, RDO, ADO, ADO.net 4.2 The Connection object 4.2.1 Making a Sql connection object 4.2.2 Using Sql Connection 4.2.3 Closing a connection 4.3 Using Errors collections	7	12
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Subtopics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF404-3: Connect and manipulate database using ADO.NET.			
5	ADO.NET 5.1 ADO.Net in ASP.Net 5.1.1 Connection and Command Object. 5.1.2 Dataset and data reader. 5.1.3 Data table and Data row. 5.1.4 Web.config introduction. 5.1.5 Binding data with data grid. 5.2 Accessing and manipulating data using command Object. 5.3 The Recordset and Field object 5.3.1 Executing a query 5.3.2 Opening a recordset 5.3.3 Navigating in a recordset	8	12
Course Outcome ITF404-4 :Design a web page for sending email using Web services			

6	ASP TRANSACTIONS AND E-MAIL 6.1 Transactions. 6.2 Transaction db design. 6.3 CDONTS object. 6.4 Design E-MAIL sending web page.	04	06
7	Web Services 7.1 Consuming Third party Web Services 7.2 The Life Cycle of Web Service 7.3 The Structure of Web Service 7.3.1 Processing Directive 7.3.2 Namespaces 7.3.3 Public Class 7.3.4 Web Methods 7.4 Creating a Web Service	6	12
Course Outcome ITF404-5: Explain XML and XML document components.			
8	XML 8.1 The evolution of GML, SGML, HTML 8.2 The evolution of XML 8.3 What is XML? 8.3.1 Definition 8.3.2 XML as meta language 8.3.3 XML as a markup language 8.4 XML document components 8.4.1 XML declaration 8.4.2 Document Type Definition 8.4.3 Processing Instructions	6	10
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination

Section / Topic no.	Name of topic	Distribution of marks (level wise)			Total marks
		Knowledge	Comprehension	Application	
I / 1	Intro to ASP.Net	02	04	04	10
I / 2	Using Cookies	02	02	02	06
I / 3	Application, Session And Server Objects	02	04	06	12
I / 4	ADO.Net	04	04	04	12
II / 5	Integrating With Database	02	04	06	12
II / 6	Asp transaction and Email	02	02	02	06
II / 7	Web Services	02	02	08	12
II / 8	XML	02	04	04	10

Laboratory experiences and related skills developed.

Sr. no	Laboratory experience	Skills developed	CO
1	Introduction to ASP.net Environment	.1)Introduction to .Net framework	ITF404-1
2	Textbox, command button and Label controls Using ASP.net	1. Textbox – use of properties, methods and events 2. Label - use of properties, methods 3. Command button - use of properties, methods and events	ITF404-1
3	Option button, Checkbox using ASP.Net	1. Difference in use of Option button, Checkbox 2. Option button - use of properties, methods and events 3. Checkbox - use of properties, methods and events	ITF404-1
4	Listbox and Combobox using ASP.Net	1. Listbox - use of properties, methods and events 2. Combobox - use of properties, methods and events	ITF404-1
5	Implementation of Controls in ASP.net	1)Design registration form of college using text box, text area, radio list, check list,button etc. using Autopostback property. 2). Simple application for following function: (1) Login (2) Surfing (3) Logout	ITF404-1
6	Reading & Writing cookies	1. To understand cookies and its advantages/disadvantages 2. To know how to read and write cookies	ITF404-1

7	Accessing session variables	1. To understand Session object, SessionID, Session.Timeout and Session.Abandon 2. To make use of Session Variables	ITF404-2
8	Creating Global.asa file	1. To understand OnStart and OnEnd events of Session and Application obj. 2. To know how to create Global.asa file	ITF404-2
9	Database Connection	1. To establish connection to database	ITF404-3
10	Database Manipulation	1. To manipulate the data in database	ITF404-3
11	Database Implementation	1. Create a Web Service	ITF404-4
12	Online Application	1. Online application (student, employee, product, shopping mall) (a) Using dataset, data reader. (b) Same application using data table and data row. (use data grid to display data) (c) Bind the data to data grid using properties / templates. (d) Display details (student, employee, product, etc.) using data list. (4 cols per line)	ITF404-4
13	XML DTD	1. To learn XML Document Type Definition	ITF404-5
14	XML	1. Any 2 example programs based on XML	ITF404-5

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance	5
2	Preparedness for practical	4
3	Technical Ability	4
4	Logical Approach	4
5	Correct figures/diagrams	4
6	Presentation	4
		25

Instructional strategies:

- 4) Lectures and discussions.
- 5) Laboratory experiences and laboratory interactive sessions.
- 6) Time bound assignments.

Teaching and Learning resources, including references:

4. Books
5. Transparencies
6. Power Point Presentation

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end practical exam as per Pro-forma I

Books:

1. Active Server Pages 3.0 in 21 Days – Mitchell and Atkinson (Techmedia)
2. ASP Programming Bible
3. ASP.net -Dave Mercer TATA Mc Grow Hill
4. .net Framework- Anthony Jones

* * *

COURSE ID: 29

Course Name : LINUX
Course Code : ITF405
Course Abbreviation : FLIN

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	3	5
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	i.25 marks for each practical ii.One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-II	
Marks	20	--	80	--	50	150

RATIONALE:

Operating system are most essential components of computer science. Multi-user operating system like Linux is most reliable & efficient system. It is essential to study the same & explore them in-depth knowledge.

COMPETENCY : Install Linux OS & Understand Linux features, Shell programming.

Cognitive: i) Develop ability to working with Linux utilities, understand system administration.

ii) Demonstrate Shell programming with examples.

Psychomotor: i) Install & troubleshoot Linux OS

ii) Write Shell programs using control structures for various basic applications.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality

COURSE OUTCOMES:**ITF405-1** Installation of Linux OS & File formats.**ITF405-2** Select basic Linux commands and utilities for different operations.**ITF405-3** Describe Security Enhanced Linux.**ITF405-4** Demonstrate System administration of Linux.**ITF405-5** Create Office document using Open Source technology.**ITF405-6** Develop shell programs using control structures.**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX:**[**Note : Correlation levels** : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs										PSO1 Design And Development	PSO2 Network and Database Management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Installation & Understand Linux ,Shell programming.	1	2	3	3	3	-	-	3	1	3	1	1
ITF405-1 Installation of Linux OS & File formats.	-	2	3	3	1	-	-	1	-	2	-	-
ITF405-2 Select basic Linux commands and utilities for different operations.	-	2	2	2	-	-	-	1	-	1	-	1
ITF405-3 Describe Security Enhanced Linux.	-	2	-	-	-	-	-	1	-	1	-	-
ITF405-4 Demonstrate System administration of Linux.	-	2	2	2	1	-	-	1	-	2	-	-
ITF405-5 Create Office document using Open Source technology.	-	2	2	2	-	-	-	1	-	2	-	-
ITF405-6 Develop shell programs using control structures.	1	2	1	2	-	-	-	2	-	2	2	-

CONTENT:

SECTION - I			
Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory evaluation Marks
ITF405-1 Installation of Linux OS & File formats.			
1	Introduction to Operating System 1.1 Definition, Role of Operating System 1.2 Open source: Concept 1.3 Introduction to Linux 1.3.1 History 1.3.2 Linux principles 1.3.3 Comparative study with other OS's 1.4 Common Linux Features- Multiuser, Multitasking, Hardware support, Networking connectivity, Network servers, GUI, Application Support 1.5 File system 1.6 Basic hardware requirement of Linux 1.7 Preparing for installation 1.8 Linux installation 1.8.1 Linux installation media 1.8.2 Study File Formats (ext2,ext3,swap) 1.8.3 Partitioning 1.9 User login-GNOME,KDE 1.10 Understanding Shell, Kernel-Role and services	07	10
ITF405-2 Select basic Linux commands and utilities for different operations.			
2	Learning Linux Basics 2.1 passwd, su command and su -l command 2.2 Running commands and getting help - whatis ,man and info command	06	12

	<p>2.3 Checking login sessions with who,checking current directories with pwd command, listing directories with permissions :ls Command.</p> <p>2.4 creating directories and files : mkdir and touch command, changing directories with cd,cd ..,cd - ,removing directories with rmdir command</p> <p>2.5 working with files</p> <p>cp : Copies a file,</p> <p>mv : moves or renames a file,</p> <p>head :displays Beginning of File, tail : Displays End of File</p> <p>grep : Finding a string in a File</p> <p>find and locate :Finds Files</p>		
3	<p>Basic utilities</p> <p>3.1 Basic utilities</p> <p>cat :Displays a Text File</p> <p>rm: Deletes a file</p> <p>less and more : Displaying a Text File One Screen at a Time</p> <p>hostname: Displays the System Name</p> <p>date :Displays displays Time and Date</p> <p>system-config-date : To set Date and Time</p> <p>3.2 Compressing and Archiving Files</p> <p>Bzip2,bunzip2 and bzip2, gzip ,tar</p> <p>3.3 User group Permissions - Chown, chgrp, chmod</p> <p>3.4 Links : ln command</p> <p>Hard links, Symbolic Links.</p> <p>3.5 Standard Input and Output</p> <p>The Screen as a File</p> <p>The Keyboard and Screen as Standard Input and Output</p> <p>Redirection Pipes</p>	07	12
ITF405-3 Describe Security Enhanced Linux.			

4	Security Enhanced Linux 4.1 understanding Security Enhanced Linux 4.2 Types and roles in SELinux 4.3 Users in SELinux 4.4 Policies in SELinux 4.5 Tools in SELinux	04	06
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SECTION – II

ITF405-4 Demonstrate System administration of Linux.			
5	System Administration 5.1 Understanding System Administration Using the root user account Fdisk utility 5.2 Administrative configuration files- /etc(aliases, fstab, group, gshadow, mtab, passwd, shadow) 5.3 Administering Linux System 5.4 RAID 5.5 Checking system specification : Commands: parted /dev/sda print, df, df -h du, du -h	05	10
ITF405-5 Create Office document using Open Source technology.			
6	Publishing with Linux 6.1 Linux Text processors and word processors 6.1.1 Introduction of Open Office 6.1.2 Introduction to other word processors 6.2 Different types of Editors Emacs, vim 6.3 Printing documents with printing commands:	05	08

	lpr, lprm, lpc 6.4 Working with Graphics Manipulating images with GIMP Taking screen capture		
ITF405-6 Develop shell programs using control structures.			
7	Using the Shell 7.1 Introduction to shell 7.2 various types of shell 7.3 Definition &. Features of default Linux Shell-bash 7.4 Understanding Shell command Line. 7.5 Filename generation and path Expansion The? Special Character The * Special Character The [] Special Character	06	08
8	Shell Programming 8.1 Understanding & setting shell variables. 8.2 Predefine variables PATH ,PSI ,BASH,BASH- VERSION, HOME, HOSTNAME, OSTYPE, PPID, UID 8.3 Parameters and variables Array variables, scalar, vector variables. 8.4 Control Structures If...then If...then...else If ...then ...elif For...in While Case 8.5 Builtin commands: type,read,exec,echo,sleep command 8.6 Expressions Arithmetic evaluation Logical evaluation String pattern matching Operators 8.7 Running a script from current directory	08	14

Specification table for setting question paper for semester end theory examination

Section / Topic no.	Name of topic	Distribution of marks (level wise)			Total marks
		Know ledge	Comprehension	Application	
I / 1	Introduction to Operating System	03	03	04	10
I / 2	Learning Linux Basics	04	04	04	12
I / 3	Basic Utilities	04	02	04	10
I / 4	System Administration	03	03	02	08
II / 5	Security Enhanced Linux	02	02	04	08
II / 6	Publishing with Linux	04	04	04	12
II / 7	Using the Shell	04	04	02	10
II / 8	Shell Programming	04	02	04	10

Laboratory experiences and related skills developed.

Sr. no	Laboratory experience	Skills developed	Course Outcome
1	Introduction and installation of Linux OS	3. Definition of Linux 4. Advantages of linux over other operationg systems. 5. Installation	ITF405-1
2	Study of file system	1. Study of Linux file system	ITF405-1
3	Study of pwd,ls,su,who commands	1. Syntax 2. Description 3. Options (hyphens) 4. Use of given commands	ITF405-2
4	Study of directory related commands	1. Syntax of Mkdir,cd,rmdir commands 2. Description 3. Options (hyphens) 4. Use of commands given commands	ITF405-2
5	Study of file related commands	1. Syntax of Touch, cp, mv, head, tail commands	

		2. Description of this commands 3. Options (hyphens)& use of commands	ITF405-2
6	Study of commands used to find files	1. Study of commands used to find files and matching strings :Find,locate,grep	ITF405-2
7	Study of basic utilities	1 Syntax of Cat, rm, less, more, hostname,date commands 2. Description of this commands 3. Options (hyphens)& use of commands	ITF405-2
8	Understanding system administration	1. Fdisk utility 2. Administering linux system 3. Commands used to check system specification-parted,df,du	ITF405-4
9	Study of vim and emacs editor	1. Study of vim and emacs	ITF405-5
10	Introduction to shell	4. Types of shell 5. Features of bash 6. Special characters(?,*,[])	ITF405-6
11	Introduction to shell scripting	1. Definition and features of shell scripting 2. Understanding shell command line	ITF405-6
12	Study of variables	1. Types of variables 2. Study of predefines variables	ITF405-6
13	Study of Control structures in shell programming	8. If ...then ,If...then.....else,If...then...elif 9. For..in 10. While 11. Case, 12. Select	ITF405-6
14	Study of expressions,arithmetic evaluation,logical evaluation and string pattern matching	1. Program to demonstrate expressions, arithmetic evaluation, logical evaluation and string pattern matching	ITF405-6
15	Running C language program using linux	1. steps required to Run C language program using linux & program to demonstrate it.	ITF405-6
16	Report on current trends in linux	1. New inventions 2. Recent versions of linux (different versions of different linux flavors) Cerifications available.	ITF405-all

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical	05
3	Correct figures / diagrams	05
4	Logical Thinking and Approach	05
5	Application	05
	Total	25

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Practical	15
4	Applications	10
	Total	50

Assessment at semester end practical exam as per Pro-forma II.

Instructional strategies:

- 1) Lectures and discussions.
- 2) Laboratory experiences and laboratory interactive sessions.
- 3) Time bound assignments.

Teaching and Learning resources, including references:

- 1) Chalk-board.
- 2) Presentation Slides
- 3) Demonstrative video files

Books:

Sr.No	AUTHOR	TITLE	PUBLICATION
1	Mark.G.Sobell	A Practical guide to Linux	Pearson's Edition
2	Christopher Negus	Red Hat Linux 9 Bible	Wiley Publication

b) Websites

- ✓ www.linux-tutorial.info/
- ✓ www.ee.surrey.ac.uk/Teaching/Unix/
- ✓ www.tutorialspoint.com/listtutorials/linux/1

* * *

COURSE ID: 30

Course Name : Java Programming
Course Code : ITF406
Course Abbreviation : FJAP

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme :

Scheme component	Hours / week	Credits
Theory	3	7
Practical	4	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (External)	
Details of Evaluation	Average of two tests of 20 marks each	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-I	
Marks	20	--	80	--	50	150

RATIONALE:

Java language enhances and refines the object oriented paradigm. Java supports development of dynamic, secure and portable web based applications. This subject knowledge is essential for development of customized and web based applications. Java being platform independent language is widely used in various business applications

COMPETENCY :

Apply principles of Java for development of windows and web based applications.

Cognitive : i) Understand concepts of OOP

ii) Apply concept of Exception handling, multithreading, package and interface

iii) Implement GUI based applications and event handling

Psychomotor : i) Installation of JDK

ii) Compiling and debugging Java programs

iii) Designing GUI based and web based applications

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :

The students will be able to :

ITF406-1 Recall concepts of object oriented features and control structures in java.

ITF406-2 Construct Classes & Objects using concepts of inheritance ,array, vector.

ITF406-3 Develop the programs using Interface & Packages.

ITF406-4 Design web page using Applets & Graphics function in java.

ITF406-5 Demonstrate multithreaded program with exception handling.

ITF406-6 Design GUI using java.awt package and implement event listeners.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[**Note : Correlation levels** : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs										PSO1 Design and Development	PSO2 Network and Database Management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Apply principles of Java for development of windows and web based applications.	-	3	3	2	1	-	-	3	-	3	3	-
ITF406-1 : Recall concepts of object oriented features and control structures in java.	-	3	1	1	-	-	-	1	-	2	1	-
ITF406-2 Construct Classes & Objects using concepts of inheritance ,array, vector.	-	2	2	2	-	-	-	1	-	2	1	-
ITF406-3 Develop the programs using Interface & Packages.	-	2	3	2	-	-	-	2	-	2	1	-
ITF406-4 Design web page using Applets & Graphics function in java.	-	2	3	2	-	-	-	2	-	3	1	-
ITF406-5 Demonstrate multithreaded program with exception handling.	-	3	3	2	-	-	-	2	-	3	2	-
ITF406-6 Design GUI using java.awt package and implement event listeners	-	3	3	2	1	-	-	2	-	2	3	-

CONTENT:

Section I			
Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
ITF406-2 Recall concepts of object oriented features and control structures in java.			
1	INTRODUCTION TO JAVA 1.1 Java features <ul style="list-style-type: none"> • Compiled & Interpreted • Simple • Object oriented • Distributed • Robust & secure • Architecture Neutral • Platform independent & portable • Multithreaded & interactive • High performance • Dynamic 1.2 How Java differ from C & C++ 1.3 Java environment 1.4 Data types of Java Constants & Symbolic Constants, variables, dynamic initialization, data types, array & string, scope of variable, type casting, standard default values 1.5 Operators in Java Arithmetic Operators, Relational Operators, Logical Operators, Increment & Decrement, Conditional Operators, Bit wise Operators, Instance of Operators, Dot Operators, Operator precedence & associatively, Evaluation of Expressions, Type conversions in expressions, Mathematical Functions - min(), max(), sqrt(), pow(), exp(), round(), abs(). 1.6 decision making, branching & looping <ul style="list-style-type: none"> 1.6.1 The if...else statement 1.6.2 Switch 1.6.3 While, Do....while 1.6.4 For loop 1.6.5 Jumps in loops and labeled loops 1.6.6 Breaking control flow 	04	10
ITF406-2 Construct Classes & Objects using concepts of inheritance ,array, vector.			
2	CLASSES , OBJECTS and METHODS	04	10

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	2.1 Fundamentals of Object Oriented Programming -- Object and Classes, Data abstraction and encapsulation, Inheritance, Polymorphism, Dynamic Binding 2.2 class – <ul style="list-style-type: none"> • Add variable • Adding methods • Creating object • Accessing class members 2.3 Visibility Control Public, Private, Protected, default, friendly private Protected access 2.3 Static fields & methods 2.4 Constructor , Constructor overloading 2.5 Inheritance in Java 2.6 Method overloading & overriding 2.7 final variable & methods and final classes 2.8 abstract method & classes 2.9 finalize method, Use of this keyword		
3	ARRAY, STRINGS, & VECTORS 3.1 arrays 3.2 one dimensional array 3.3 creating an array 3.4 two dimensional array 3.5 String and String Buffer class 3.6 Vector class 3.7 wrapper classes	04	06
ITF406-3 Develop the programs using Interface & Packages.			
4	PACKAGE 4.1 system package 4.2 using system package 4.3 naming convention 4.4 creating package 4.5 accessing a package 4.6 using a package 4.7 adding a class to a package 4.8 hiding classes	06	08
5	INTERFACES & INNER CLASSES 5.1 defining interfaces 5.2 implementing interface 5.3 accessing interface, variables& methods,	06	06

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	5.4 use of interface in Multiple Inheritance 5.5 using inner class to access object state 5.6 special syntax rules 5.7 local and static inner classes		
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Subtopics	Lectures (Hours)	Theory Evaluation (Marks)
ITF406-4 Design web page using Applets & Graphics function in java.			
6	GRAPHICS PROGRAMMING 6.1 Creating frame 6.2 Frame positioning 6.3 displaying info in a panel 6.4 drawing 2D shapes <ul style="list-style-type: none"> • lines • rectangle • circle • ellipse • arcs • polygons 7.5 color and filling shapes 7.6 text and fonts	04	08
7	APPLET 7.1 local & remote applets 7.2 how applet differ from application 7.3 preparing to write applets 7.4 building applet code 7.5 applet life cycle 7.6 creating an executable applet 7.7 designing a web page 7.8 applet tag 7.9 adding applet to HTML file 7.10 running the applet 7.11 passing parameter to applet	06	10

ITF406-5 Demonstrate multithreaded program with exception handling.			
8	MULTITHREADING AND EXCEPTION HANDLING 8.1 What is thread? 8.2 Thread properties / States 8.3 Running and starting threads, 8.4 Stopping and blocking threads 8.5 Implementing Runnable interface 8.6 dealing with Errors <ul style="list-style-type: none"> • classification of exceptions • advertising exceptions that a method throws • How to throw an exception • Creating Exception classes 8.7 Catching exception 8.8 using finally statement	04	08
ITF406-6 Design GUI using java.awt package and implement event listeners			
9	AWT PACKAGE 9.1 Layout manager <ul style="list-style-type: none"> • Border layout • Panel layout • GridLayout • GridBagLayout 9.2 Text field 9.3 Input validation and password fields 9.4 Text area 9.5 label 9.6 check box 9.7 radio button 9.8 combo box 9.9 building menus	04	06
10	EVENT HANDLING 10.1 Basics of event handling 10.2 selecting event listeners 10.3 window events, Action events, Mouse events 10.4 adapter classes 10.5 awt event hierarchy 10.6 semantic and low level events in awt 10.10 low level event types <ul style="list-style-type: none"> • focus event • keyboard event • consuming event 	06	08

	<ul style="list-style-type: none"> mouse events 		
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination

Section / Topic no.	Name of topic	Distribution of marks (level wise)			Total marks
		Knowledge	Comprehension	Application	
I / 1	Introduction to Java	04	04	02	10
I / 2	Objects & Classes, Methods	02	04	04	10
I / 3	Array, Strings, & Vectors	02	02	02	06
I / 4	Package	02	02	04	08
I / 5	Interfaces And Inner Classes	02	02	02	06
I / 6	Graphics Programming	02	02	04	08
II / 7	Applet	02	02	06	10
II / 8	Multithreading & Exception Handling	02	02	04	08
II / 9	AWT package	02	02	02	06
II / 10	Event Handling	02	02	04	08

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

Laboratory experiences and related skills developed.

Sr. no	Laboratory experience	Skills developed	
1	Introduction to Java Environment	6) Study of java environment 7) Study of JVM, JDK tools 8) Writing and running a java program	ITF406-1
2	Control Structures	11) If...else statement, else if ladder 12) For loop 13) Do While loop 14) While loop 15) Continue and break statements	ITF406-1
3	Class	5) Concept of class and objects 6) Defining a class, adding methods and variables	ITF406-2

		7) Accessing class members	
4	Static fields, methods and method overloading	3) Use of static members 4) Use of Method Overloading	ITF406-2
5	Inheritance	3) Study and use of various forms of Inheritance- Single, Multilevel, Hierarchical 4) Method Overriding	ITF406-2
6	Array, String, Vector	6) Defining, Initializing array (1D, 2D) 7) Accessing array elements (1D, 2D) 8) Use of String and StringBuffer class methods 9) Use of Vector class and its methods	ITF406-2
7	Creating a Package	3) Creating a package 4) Adding class to a Package 5) Accessing a Package class	ITF406-3
8	Adding class to an existing package	3) Adding class to existing Package 4) Hiding a class in a package 5) Using system packages	ITF406-3
9	Interface	6) Defining an interface 7) Use of interface 8) Multiple Inheritance using interface	ITF406-3
10	2D Graphics	1) Creating a Frame 2) Drawing 2D shapes – line, circle, ellipse, rectangle, arc, polygon, 3) Filling shapes with various colors	ITF406-4
11	Applet	3) creating and executing an applet 4) Drawing shapes on an applet 5) Displaying Text on an applet 6) Passing parameters to an applet	ITF406-4
12	Exception Handling	3) Use of try...catch block 4) Use of Multiple catch statements 5) Using Finally statement 6) Throwing an exception	ITF406-5

13	Multithreading	1) Understanding the concept of thread and its states 2) Starting and running thread 3) Stopping and blocking thread 4) Implementing Runnable interface	ITF406-5
14	java.awt Package - Controls	1) Use of java.awt package for GUI 2) Using various layouts 3) Use of Button, Label, Checkbox, TextField, TextArea,	ITF406-6
15	java.awt Package – Menu	1) Use of java.awt package for GUI 2) Using various layouts 3) Adding menu bar to a frame	ITF406-6
16	Event Handling - ActionEvent	1) Concept of event handling in Java 2) ActionEvent – using ActionListener Interface	ITF406-6
17	Event Handling - MouseEvent	1) MouseEvent – using MouseListener Interface 2) MouseEvent – using MouseMotionListener Interface 3) Using Adapter classes	ITF406-6
18	Event Handling – Window Event	1) WindowEvent – using WindowListener Interface 2) Using Adapter classes	ITF406-6

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	10
2	Preparedness for practical	10
3	Algorithm and implementation	10
4	Logical Thinking and Approach	10
5	Application	10
	Total	50

Instructional strategies:

1. Lectures and discussions.

2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources, including references:

1. Chalk-board.
2. Transparencies
3. Presentation Slides
4. Demonstrative video files

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end practical exam as per Pro-forma I.

Books:

- i. Programming with Java - E. Balgurusamy(TMh)
- ii. Core Java 2 – Volume I- Sun Microsystems – (Pearson)
- iii. Core Java 2 – Volume II- Sun Microsystems – (Pearson)

Websites :

<http://www.sun.java.com>
<http://docs.oracle.com/javase/tutorial/>

* * *

COURSE ID: 31

Course Name : ADVANCED JAVA PROGRAMMING
Course Code : ITF407
Course Abbreviation : FAJP

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : ITF406
Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	1	5
Tutorial	4	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination		Total
	Theory	Practical	Theory Examination	Practical Examination (External)	
Details of Evaluation	--	i.25 marks for each practical ii.One PST of 25 marks	--	As per Proforma- I	
Marks	NIL	--	NIL	50	50

RATIONALE:

In the today's world of Internet, online transaction processing and managing the dataflow over network becomes an important issue. This subject is essential for providing knowledge and hands on experience over the issues of managing data on web, developing powerful GUI based friendly user interface, developing powerful database applications, server side programming.

COMPETENCY :Apply principles of advanced java programming to solve engineering problems as follows :

Cognitive :i)Understanding and applying features of swing for developing programs.

ii)Analyse connectivity with database using java.

iii) Understanding terms servlet, remote method invocation, java server pages with example.

Psychomotor: i) Installation of JDK. ii) Create java connectivity with different databases

iii) Create sockets for client server applications.

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES:

The Student will be able to:

ITF407-1 Illustrate concept of Swings

ITF407-2 Illustrate concepts of database & describe how java database connectivity is provided.

ITF407-3 Describe concept of socket programming & various types of servers.

ITF407-4 Explain servlets with packages & security issues.

ITF407-5 Explain term remote method invocation with example.

ITF407-6 Illustrate concept of java server pages with examples.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design & Development	PSO2 Network & Database Management
COMPETENCY : Apply principles of advanced java programming to solve engineering problems.	3	2	3	3	3	-	-	2	1	3	3	3
ITF407-1 Illustrate concept of Swings	3	3	3	3	3	-	-	2	1	2	3	2
ITF407-2 Clarify concepts of database & describe how java database connectivity is provided.	3	3	3	3	3	-	-	2	1	2	3	3
ITF407-3 Describe concept of socket programming & various types of servers.	3	2	3	3	3	-	-	2	1	3	3	3
ITF407-4 Explain servlets with packages & security issues.	3	2	3	3	3	-	-	2	1	3	3	3
ITF407-5 Express term remote method invocation with example	3	2	3	3	3	-	-	2	1	2	2	2
ITF407-6 Illustrate concept of java server pages with examples.	3	2	3	3	3	-	-	2	1	2	2	2

CONTENT:**THEORY :**

Sr. no.	Topics Subtopics	Teaching (Hours)
<i>ITF407-1 Illustrate concept of Swings</i>		
1	GUI USING SWING 1.1 JFrame, JApplet, JPanel classes 1.2 Adding button, textbox, label, combo box, listbox, tabbed panes, scroll panes on Window 1.3 Displaying menu and toolbar 1.4 JTables and Jtree classes	02
<i>ITF407-2 Illustrate concepts of database & describe how java database connectivity is provided.</i>		
2	JAVA DATABASE CONNECTIVITY 2.1 Java as a Database front end 2.2 Database client/server methodology 2.2.1 Two-Tier Database Design 2.2.2 Three-Tier Database Design. 2.3 The JDBC API- The API Components, Security Considerations, JDBC Drivers, JDBC-ODBC Bridge 2.4 Database Connectivity using JDBC API, inserting, updating and deleting records, sending queries through JDBC bridge & handling result 2.5 Connectivity with Web based Database systems.	04
<i>ITF407-3 Describe concept of socket programming & various types of servers.</i>		
3	NETWORKING AND SOCKET PROGRAMMING 3.1 Basics Socket overview, client/server, reserved sockets, proxy servers, internet addressing.	04

Sr. no.	Topics Subtopics	Teaching (Hours)
	3.2 The networking classes & interfaces 3.3 Inet address, Factory methods, instance method 3.4 Creating servers/clients sockets- Sending Data from client to server or vice-versa, 3.5 Creating proxy server, Datagram server & client.	
<i>ITF407-4 Explain servlets with packages & security issues.</i>		
4	Servlets 4.1 The Life Cycle Of a Servlet, The Java Servlet Development Kit, 4.2 Simple Servlet, The Servlet API 4.3 The Javax Servlet Package 4.4 Reading Servlet Parameters, Reading Initialization Parameters 4.5 Javax. Servlet. http package, 4.6 Handling HTTP Requests and responses 4.7 Using Cookies, Session Tracking, Security Issues	02
<i>ITF407-5 Explain term remote method invocation with example.</i>		
5	REMOTE METHOD INVOCATION 5.1 Serialization 5.2 Deserialization, Deserialization exceptions 5.3 Object persistence and RMI, RMI architecture 5.4 RMI example.	02
<i>ITE507-6 Illustrate concept of java server pages with examples.</i>		
6	JAVA SERVER PAGES 6.1 What is JSP? 6.2 Advantages 6.3 JSP expressions, JSP declarations, JSP directives	02

Sr. no.	Topics Subtopics	Teaching (Hours)
	6.4 Example Using Scripting Elements and Directives 6.5 Predefined variables 6.6 Actions	

Laboratory experiences and related skills developed.

Sr. no	Laboratory experience	Skills developed	
1	GUI using javax.swing	<ul style="list-style-type: none"> • Displaying frame, panel • Displaying components – textbox, label, buttons, listbox, combobox on frame • Use of proper layout • Handling events related to each component 	ITF407-1
2	Adding menu	<ul style="list-style-type: none"> • Adding menubar to the frame, • displaying menu items, sub menu items and checkable menu items 	ITF407-1
3	Adding toolbar	Displaying toolbar on frame	ITF407-1
4	JTree and JTable class	<ul style="list-style-type: none"> • Mapping a directory tree • Demonstration of use of tables 	ITF407-1
5	Connecting to database	Implement an application or applet to connect to database using JDBC	ITF407-2
6	Sending queries to database	Implement an application or applet to insert, update, delete and display records	ITF407-2
7	TCP/IP based communication	<ul style="list-style-type: none"> • TCP/IP based communication between client and server. • Sending data between client and server 	ITF407-3
8	UDP based communication	<ul style="list-style-type: none"> • UDP based communication between client and server. • Sending data between client and server 	ITF407-3
9	Servlet	<ul style="list-style-type: none"> • Understanding servlet life cycle • Generic Servlet class 	ITF407-4
10	Http Servlet	<ul style="list-style-type: none"> • Understanding request and response 	ITF407-4

	class	<ul style="list-style-type: none"> Understanding get and post methods Understanding cookies 	
11	RMI	<ul style="list-style-type: none"> Understanding basic concepts in Remote Method Invocation An RMI example 	ITF407-5
12	JSP	<ul style="list-style-type: none"> Understanding function of JSP server Example Using Scripting Elements and Directives Example to demonstrate JSP actions 	ITF407-6

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	10
2	Preparedness for practical	10
3	Algorithm and implementation	10
4	Logical Thinking and Approach	10
5	Application	10
	Total	50

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end practical exam as per Pro-forma I.

Instructional strategies:

1. Lectures and discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources, including references:

1. Chalk-board.
2. Transparencies
3. Presentation Slides
4. Demonstrative video files

7) Books:

Sr. No.	Author	Title	Publisher
1.	Sun Microsystems	Core Java 2 – Volume I	Pearson
2.	Sun Microsystems	Core Java 2 – Volume II	Pearson
3.	Herbert Schildt	Complete reference Java 2	
4.	John O'donahue	Java database programming bible	
5.	Steven Holzner	Java 2 Black Book	

8) Websites :

- i. <http://www.sun.java.com>
- ii. [http:// www.jsptut.com](http://www.jsptut.com)

* * *

COURSE ID: 32 (A)

Course Name : SOFTWARE TESTING
Course Code : ITF408
Course Abbreviation : FSOT

TEACHING AND EVALUATION SCHEME :

Pre-requisite Course(s) : <nil >

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	03	05
Practical	02	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	iii. 25 marks for each practical iv. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma- II	
Marks	20	--	80	--	50	150

RATIONALE:

The complexity and size of today's software makes writing secure, bug-free code is extremely difficult, in such a situation testing of software before release is very essential. Software testing can be considered as "Quality Gate" which will pass/release only quality software. Students will learn how to find bugs/errors in any computer program, how to plan an effective test approach, how to clearly report findings and to tell when software is ready to release. Also it introduces various levels and types of testing so that students will be able to practically apply appropriate testing method on application. It also covers manual testing as well as expanding manual test efforts with various automation tools.

COMPETENCY:

Understand the various automated testing tools to improve testing efficiency.

Cognitive: i) Understand how software testing fits into the software development process.

ii) Learn various types and levels of Software Testing.

iii) Develop the skills to find bugs in any type of software.

- iv) Learn how to effectively plan tests, communicate the bugs you find.
- v) Use your new testing skill to test not just the software but also the product specification, the raw code even the user's manual.

Psychomotor: i) Adapt knowledge of software testing life cycle, test planning, test case writing and testing execution.

ii) Describe defect management.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality.

COURSE OUTCOMES:

The student will be able:

ITF408-1: Explain Basics of Software Testing.

ITF408-2: Compare types of testing.

ITF408-3: Design test cases using levels of testing and special tests.

ITF408-4: List various steps in Test management.

ITF408-5: Use testing tools and measurements for defect management.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[Note: Correlation levels: 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs										PSO1 Design & Development	PSO2 Network & Database Management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Understand the various automated testing tools to improve testing efficiency.	-	1	3	2	2	2	2	2	1	3	-	-
ITF408-1: Explain Basics of software testing	-	2	-	-	-	-	-	-	-	-	-	-
ITF408-2: Compare types of testing.	-	2	-	-	-	-	-	1	-	-	-	-
ITF408-3: Design test cases using levels of testing and special tests.	-	2	2	2	1	-	-	2	-	2	2	-
ITF408-4: Describe various steps in Test management	-	2	-	-	-	-	-	1	-	-	-	-
ITF408-5: Use testing tools and measurements for defect management.	-	2	2	2	-	-	-	1	-	2	2	-

CONTENT :**J) THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF408-1 Explain Basics of Software Testing.			
1	Basics Of Software Testing 1.1 Software Quality, Definition of Software Testing, Role of Testing 1.2 Failure, Error, Fault, Bug Terminology 1.3 Objectives of Testing 1.4 What Is Test Case? 1.5 When To Start and Stop Testing of Software (Entry and Exit Criteria) 1.6 Skills for Software Tester 1.7 Quality Assurance, Quality Control, Verification, V Model	04	10
Course Outcome ITF408-2 Compare types of testing.			
2.	Types Of Testing 2.1 White Box Testing : 2.1.1 Static Testing- Inspections, Structured Walkthroughs, Technical Review 2.1.2 Structural Testing- Code Functional Testing, Code Coverage Testing, Code Complexity Testing 2.2 Black-Box Testing : 2.2.1 Techniques for Black Box Testing Requirement Based Testing, Positive and Negative Testing , Boundary Value Analysis, Decision Tables, Equivalence Partitioning, User Documentation Testing, Graph Based Testing. 2.2.2 Sample Examples on White and Black Box Testing.	08	14
Course Outcome ITF408-3 Design test cases using levels of testing and special tests.			
3	Levels Of Testing And Special Tests	12	16

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	3.1 Unit Testing: Driver, Stub 3.2 Integration Testing: Decomposition Based Testing- Top-Down Integration, Bottom-Up Integration, BiDirectional Integration, Incremental Integration, NonIncremental Integration 3.3 System Testing: Recovery Testing, Security Testing, Performance Testing, Load Testing, Stress Testing, Usability Testing, Compatibility Testing 3.4 Acceptance Testing: Acceptance criteria, Alpha Testing an Beta Testing 3.5 Special Tests: Smoke Testing and Sanity Testing, Regression Testing, Usability Testing, GUI Testing, Object Oriented Application Testing: Client-Server Testing, Web based Testing		
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF508-4 Describe various steps in Test management.			
4	Test Management 4.1 Test Planning : Preparing a Test Plan, Scope Management, Deciding Test Approach, Setting Up Criteria for Testing, Identifying Responsibilities, Staffing, Training Needs, Resource Requirements, Test Deliverables, Testing Tasks	12	16

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	<p>4.2 Test Management: Choice of Standards, Test Infrastructure Management, Test People Management , Integrating with Product Release</p> <p>4.3 Test Process: Base Lining a Test Plan, Test Case Specification, Update of Traceability Matrix, Executing Test Cases, Collecting and Analyzing Metrics, Preparing Test Summary Report</p> <p>4.4 Test Reporting: Recommending Product Release.</p>		
Course Outcome ITF308-5 Use testing tools and measurements for defect management			
5	<p>Defect Management</p> <p>5.1 Introduction, Defect Classification, Defect Management Process</p> <p>5.2 Defect Life Cycle, Defect Template</p> <p>5.3 Estimate Expected Impact of a Defect, Techniques for Finding Defects, Reporting a Defect.</p>	06	12
6	<p>Testing Tools And Measurements</p> <p>6.1 Limitations of Manual Testing and Need for Automated Testing Tools</p> <p>6.2 Features of Test Tool: Guideline for Static and Dynamic Testing Tool</p> <p>6.3 Advantages and Disadvantages of Using Tools</p> <p>6.4 Selecting a Testing Tool</p> <p>6.5 When to Use Automated Test Tools, Testing Using Automated Tools</p> <p>6.6 What Are Metrics and Measurement.: Types of Metrics, Project Metrics, Progress and Productivity Metrics</p>	06	12
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Applica-tion		
1	Basics of Software Testing	05	02	03	ITF408-1	10
2	Types Of Testing	05	04	05	ITF408-2	14
3	Levels of Testing And Special Tests	06	05	05	ITF408-3	16
4	Test Management	06	05	05	ITF408-4	16
5	Defect Management	04	04	04	ITF408-5	12
6	Testing Tools And Measurements	04	04	04	ITF408-6	12
TOTAL		30	24	26		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

K) TERM WORK**Practical Exercises and related skills to be developed :**

Sr No.	Title of Practical Exercise	Skills / Competencies to be developed	Course Outcome
01	Introduction To Software Testing.	To study Software Testing concepts, types and methods.	ITF408-1
02	Case Study	To study any one sample system specification and design the test cases for it.(e.g. Student information system, Library management system, Hospital management system etc)	ITF408-2
03	Design of Test cases.	To write test cases on simple calculator application.	ITF408-2
04	Study of Test cases	1.Partitioning the hard disk 2.Understanding the FAT	ITF408-3
05	Design of Form	To design test cases for any login form(Eg: Gmail or Yahoo login form)	ITF408-3
06	Design of Test cases for system	To design test cases for mobile phone system(Eg: check battery is inserted in mobile properly,	ITF408-3

		check SIM is inserted properly, check incoming and outgoing call)	
7	Design of Test cases for Application	To design test cases for notepad/WordPad/MS-Word application.	ITF408-4
8	Design of Test cases for Application	To design test cases for ATM machine	ITF408-4
9	Design of Test cases for Project	To design test cases for mini project developed by students in VB.	ITF408-4
10	Automate Microsoft Word Application	Using any freeware automation testing tool, atomize and run test cases for Ms-Word application	ITF408-5
11	Study of Web Testing	Testing web application for performance using any automated tool	ITF408-5
12	Study of test management tool	Assignment for any test management tool (e.g. Test Director	ITF408-6

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION

j) Assessment Criteria for Term work :

i) Continuous Assessment of Practical Assignments :

Every practical assignment shall be assessed for 50 marks as per following criteria :

Domain	Particulars	Marks out of 50
Cognitive	Understanding	05
	Application	05
Psychomotor	Operating Skills	10
	Drawing / drafting skills	10
Affective	Discipline and punctuality	10
	Decency and presentation	10
TOTAL		50

ii) Progressive Skill Test :

Sr. No	Criteria	Marks Allotted
1	Technical Ability	20
2	Communication Skills	10
3	Logical Approach	20
TOTAL		50

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Final marks of term work shall be awarded as per *Assessment Pro-forma II*.

INSTRUCTIONAL STRATEGIES :**Instructional Methods :**

1. Lectures and Discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources :

1. Chalk board
2. LCD presentations Slides
3. Demonstrative Video Files

REFERENCE MATERIAL :**a) Books / Journals / IS Codes**

Sr. No.	Author	Title	Publisher
1.	SrinivasanDesikanGopalaswamy Ramesh	Software Testing: Principles and Practices	PEARSON
2.	M G Limaye	Software Testing: Principles, Techniques and Tools	Tata McGraw-Hill
3.	NareshChauhan	Software Testing: Principles and Practices	Oxford
4.	Ron Patton	Software Testing	PEARSON 2 nd edition

b) Websites

1. <http://www.selenium.com>
2. http://en.wikipedia.org/wiki/Test_automation
3. http://en.wikipedia.org/wiki/Software_testing#Testing_tools
4. <http://www.softwaretestingsoftware.com>

* * *

COURSE ID: 32 (B)

Course Name : PHP
Course Code : ITF409
Course Abbreviation : FPHP

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	3	5
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	i.25 marks for each practical ii.One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-II	
Marks	20	--	80	--	50	150

RATIONALE:

The PHP Hypertext Preprocessor (PHP) is a programming language that allows web developers to create dynamic content that interacts with databases. PHP is basically used for developing web based software applications. This Syllabus helps student to build your base with PHP.

COMPETENCY : Dynamic web development using PHP & MySQL.

Cognitive: i) Understand PHP scripting, accessing file system using PHP.

ii) Demonstrate PHP programming with examples.

Psychomotor: i) Install & troubleshoot PHP, MySQL & Apache.

ii) Write PHP scripts using control structures for various basic applications.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality

COURSE OUTCOMES:**ITF409-1** Explain features and perform installation of PHP.**ITF409-2** Design form by Embedding PHP with HTML**ITF409-3** Display dynamic content of PHP.**ITF409-4** Develop file system programs in PHP.**ITF409-5** Write PHP scripts to add, insert, and update records in MySQL database with connectivity.**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX:****[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]**

Competency and COs	Programme Outcomes POs and PSOs										PSO1 Design And Development	PSO2 Network and Database Management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Dynamic web development using PHP & MySQL.	-	2	3	2	1	-	1	1	-	2	2	1
ITF409-1 Explain features and perform installation of PHP..	-	2	2	2	-	-	-	1	-	3	-	-
ITF409-2 Design form by Embedding PHP with HTML	-	2	2	2	-	-	-	1	-	2	-	-
ITF409-3 Describe dynamic content of PHP.	-	2	2	2	-	-	-	1	-	2	-	-
ITF409-4 Develop file system programs in PHP.	-	2	3	2	-	-	-	1	-	2	3	1
ITF409-5 Write PHP scripts to add, insert, and update records in MySQL database with connectivity.	-	2	3	3	2	-	1	2	-	3	3	3

CONTENT:**SECTION - I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory evaluation Marks
ITF409-1 Explain features and perform installation of PHP.			
1	Introduction To PHP 1.1 What is PHP? 1.2 What is MySQL? 1.3 The history of PHP 1.4 The history of MySQL 1.5 Features of PHP & MySQL Cost, Ease to use, HTML-embeddedness, Cross-platform compatibility, Not tag based, stability, Speed, Open source licensing, Many extensions, Fast feature development, Popularity, Not proprietary, strong user communities	04	08
2	Web scripting & Installing PHP 2.1 Static HTML 2.2 Client side technologies 2.3 Server side scripting 2.4 Installing PHP 2.4.1 Installing PHP for Windows 2.4.1 Installing PHP for Linux 2.4.2 Configuring Apache to use PHP 2.4.3 Testing the PHP installation	06	10
ITF409-2 Design form by Embedding PHP with HTML			
3	Basics of Coding in PHP 3.1 Mixing PHP & HTML -How PHP is Parsed, PHP start & end tags, Code cohabitation, Escaping code, Commenting code 3.2 Variables - Naming variable, Value types 3.3 Operators - Assignment operator, Arithmetic operator, Comparison operator, Logical operator 3.4 Creating variables from Forms - Creating a calculation form, Creating a calculation script, Submitting form & getting result 3.5 HTTP Environment variables	07	10

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory evaluation Marks
	<ul style="list-style-type: none"> - Retrieving and using REMOTE_ADDR - Retrieving and using HTTP_USER_AGENT 		
ITF409-3 Display dynamic content of PHP.			
4	Dynamic Content <ul style="list-style-type: none"> 4.1 Displaying Browser-specific content 4.2 Displaying Platform-specific content 4.3 Working with String function <ul style="list-style-type: none"> - creating as input form - creating a script to display form values - submitting form & getting results 4.4 Redirecting to new location <ul style="list-style-type: none"> - creating redirection form - creating the redirection script and testing it 	07	12

SECTION- II

ITF409-4 Develop file system programs in PHP.			
5	File System <ul style="list-style-type: none"> 5.1 File paths and permissions 5.2 Displaying directory contents 5.3 Working with fopen() & fclose() <ul style="list-style-type: none"> - creating a new file - appending data to a file 5.4 File system housekeeping <ul style="list-style-type: none"> - copying file - renaming file - deleting file 	07	12

ITF409-5 Write PHP scripts to add, insert, and update records in MySql database with connectivity.			
6	Working with MySQL 6.1 Working with user privileges in MySQL 6.1.1 Creating a new user 6.2 Connecting to MySQL 6.2.1 Breaking connection scrip 6.3 Listing databases on a server 6.4 Listing tables in a database 6.5 Creating a new database 6.6 Deleting a database	07	10
7	Creating Database 7.1 Planning for tables - Basic MySQL data types - Defining fields - Importance of unique fields 7.2 A two-step form sequence 7.2.1 step 1- Number of fields 7.2.2 step 2- Defining fields 7.3 Creating table-creation script 7.4 Create table	06	10
8	Working with tables 8.1 Creating record addition form 8.2 Creating record addition script 8.3 Populating table	04	08

Specification table for setting question paper for semester end theory examination

Section / Topic no.	Name of topic	Distribution of marks (level wise)			Total marks
		Knowledge	Comprehension	Application	
I / 1	Introduction To PHP	4	2	2	08
I / 2	Web scripting & Installing PHP	4	4	2	10
I / 3	Basics of Coding in PHP	4	4	2	10
I / 4	Dynamic Content	6	4	2	12
I / 5	File System	6	4	2	12
II / 6	Working with MySQL	4	4	2	10
II / 7	Creating Database	4	4	2	10
II/8	Working with tables	2	2	4	08

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

Laboratory experiences and related skills developed.

Sr. no	Laboratory experience	Skills developed	Course Outcome
1	Introduction to PHP & MySQL	1. Study of history & features of PHP & MySQL.	ITF409-1
2	Installing & configuring MySQL	1. Install MySQL on windows .(optionally on linux)	ITF409-1
3	Installing Apache	1. Install Apache web server on windows .(optionally on linux)	ITF409-1
4	Installing PHP	1. Configure PHP settings on windows .(optionally on linux) 2. Make modification to Apache.	ITF409-1
5	Mixing PHP & HTML	1. Recognize use of different PHP tags. 2. Mingle PHP & HTML in source code.	ITF409-2
6	Study of variables & operators	1. Recognize use & working of PHP variables & operators.	ITF409-2
7	Using PHP variables	1. Use html forms to send variables to scripts. 2. Use environment variables.	ITF409-2
8	Displaying dynamic content	1. Display browser specific HTML. 2. Display platform specific HTML. 3. Use of PHP string function & redirection.	ITF409-3
9	Using file system	1. Display contents of a directory. 2. Create new file. 3. Open an existing file. 4. Copy, rename & deletes file.	ITF409-4
10	Establishing connection	1. Connect to MySQL. 2. List all database on localhost. 3. List all tables in a database. 4. Create a new database. 5. Drop database.	ITF409-5

11	Creating database tables	1. Plan database table. 2. Create tables for one of the application.	ITF409-5
12	Inserting data into table	1. Create administrative interface for adding new record. 2. Create a script to insert record into table.	ITF409-5

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical	05
3	Correct figures / diagrams	05
4	Logical Thinking and Approach	05
5	Application	05
	Total	25

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end practical exam as per Pro-forma II.

Instructional strategies:

1. Lectures and discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources, including references:

1. Chalk-board.
2. Transparencies
3. Presentation Slides
4. Demonstrative video files

Books:

Sr.No	AUTHOR	TITLE	PUBLICATION
1	Julie meloni & Matt Telles	PHP 6- fast & easy web development	Corse Technology
2	Tim converse & Joyse Park	PHP 5 & MySQL Bible	Wiley Publication
3	Janet valade	PHP 5 for Dummies	Wiley Publication

b) Websites

- ✓ www.w3schools.com/PHP/
- ✓ www.tutorialspoint.com/php/
- ✓ www.tizag.com/phpT/

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COURSE ID: 32 (C)

Course Name : MULTIMEDIA TECHNIQUES
Course Code : ITF410
Course Abbreviation : FMMT

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : NIL
Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	3	5
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	i.25 marks for each practical ii.One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-II	
Marks	20	--	80	--	50	150

RATIONALE:

One picture speaks thousand words. Animation has given a boost to various areas like film production, Advertisement, e-learning & animated web-site etc. This subject will enable the students to implement their creative imagination to produce animated text & images, audio and video.

It is a practical oriented subject which deals with various fonts, audio & video formats, bitmap images, animation.

COMPETENCY :

Design and develop animation, images, audio and video using multimedia tools.

Cognitive : i) Understand the basic components of Multimedia

ii) Synthesize animated text, images, audio and video

Psychomotor : i) Drawing 2D animations ii) Make images, audio and video of various formats

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :**ITF410-1** State uses of Multimedia**ITF410-2** Compare Digital and MIDI audio.**ITF410-3** Use Image Editing and Animation software.**ITF410-4** Describe *methodology and planning process of multimedia*.**ITF410-5** State laws and electronic trading for multimedia.**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :**[**Note : Correlation levels :** 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and Development	PSO2 Networking and database Management
Competency: Design and develop animation, images, audio and video using multimedia tools.	-	2	3	3	2	-	1	2	-	2	2	-
ITF410-1 State uses of Multimedia	-	1	-	-	-	-	-	-	-	1	-	-
ITF410-2 Compare Digital and MIDI audio.	-	2	2	3	1	-	-	2	-	2	-	-
ITF410-3 Use Image Editing and Animation software.	-	2	2	3	3	-	-	1	-	3	2	-
ITF410-4 Describe methodology and planning process of multimedia	-	1	-	-	2	-	-	1	-	3	1	-
ITF410-5 State laws and electronic trading for multimedia	-	1	-	-	-	-	2	1	-	2	3	-

CONTENT:**SECTION - I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory evaluation Marks
Course Outcome ITF410-1: State uses of Multimedia			
1	Introduction To Multimedia 1.1 Definitions -Where to use Multimedia 1.2 Uses of multimedia :Multimedia in Business, Multimedia in Schools, Multimedia in Home, Multimedia in Public Places 1.3 Virtual Reality 1.4 Introduction to voicemails, messaging, chatting, & video conferencing	04	06
Course Outcome ITF410-2: Compare Digital and MIDI audio.			
2	SOUND 2.1 The power of sound 2.2 Multimedia system sounds. 2.3 MIDI V/S digital audio 2.4 Digital audio 2.5 Audio file format 2.6 Adding sound to multimedia project	04	08
Course Outcome ITF410-3: Use Image Editing and Animation software.			
3	IMAGES 3.1 Image file formats – gif, bmp, jpg, pix etc 3.2 Making still images 3.2.1 Bitmap 3.2.2 ClipArt 3.2.3 Bitmap software 3.3 Capturing & Editing images 3.4 Scanning images 3.5 Vector drawing 3.6 Color 3.6.1 Computerized color 3.6.2 Color palettes	04	08
4	Animation & Video 4.1 The Power of motion, Principles of Animation, Making Animation that Work, A Rolling Ball, A Bouncing Ball, Creating an Animated Scene. 4.2 Using video, Obtaining Video Clips, How Video Works, Broadcast Video Standards. 4.3 Digital video, Shooting and Editing Video.	06	10
5	MULTIMEDIA BASIC SOFTWARE TOOLS 5.1 Text editing & word processing tools 5.2 OCR software 5.3 Painting & drawing tools 5.4 3-D modeling and animation tools 5.5 Image editing tools 5.6 Sound editing tools	06	08

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory evaluation Marks
	5.7 Animation, video and digital Movie tools		

SECTION – II

<i>Course Outcome ITF410-4: Describe methodology and planning process of multimedia</i>			
6	Developing multimedia applications 6.1 Applications 6.1.1 Multimedia and the single user 6.1.2 Multimedia on networks 6.1.3 Multimedia in the office 6.1.4 Multimedia in training 6.2 Methodology 6.2.1 Analysis and design 6.2.2 Content creation 6.2.3 Maintenance 6.3 Design 6.3.1 Kiosks 6.3.2 Human factors	10	16
7	Planning and Costing 7.1 The Process of making Multimedia 7.1.1 Idea Analysis 7.1.2 Pre-Testing 7.1.3 Task Planning 7.1.4 Alpha Development 7.1.4 Beta Development 7.1.5 Delivery 7.2 Scheduling 7.3 Estimating 7.3.1 Billing Rates 7.4 RFP and Bid Proposals(Introduction only)	08	14
<i>Course Outcome ITF410-4:State laws and electronic trading for multimedia</i>			
8	Multimedia and the law 8.1 Intellectual property rights 8.1.1 Copyright 8.1.2 Patents 8.2 Errors and inaccuracies 8.3 Electronic trading	06	10

Specification table for setting question paper for semester end theory examination

Section / Topic no.	Name of topic	Distribution of marks (level wise)			Total marks
		Knowledge	Comprehension	Application	
I / 1	Introduction To Multimedia	02	2	02	06
I / 2	Sound	02	4	02	08
I / 3	Images	04	02	02	08
I / 4	Animation & Video	04	04	02	10
I / 5	Multimedia Basic Software Tools	04	06	4	14
I / 6	Developing multimedia applications	06	06	04	16
I / 7	Planning and Costing	04	06	04	14
I / 8	Multimedia and the law	02	04	04	10

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

Laboratory experiences and related skills developed.

Sr. no	Laboratory experience	Skills developed	CO
1	Introduction to Multimedia	Create a cycle & name each part of cycle using different styles & format & animate text	ITF410-1
2	Sound Recording	Create a forest of trees using the object created earlier. Also add lighting and rain effect.	ITF410-2
3	Image Editing	Draw seed & create small plant with use of at least 4 frames.	ITF410-3
4	Image Mixing	Create a forest of tree with flowers & fruits from a small plant using different layers & frame transition time.	ITF410-3
6	Sound Editing	Insert audio to relevant frames that has lighting & rain effect.	ITF410-3
6	Animation	5) Studying principle of animation and various animation techniques 6) Animation using Macromedia Flash 7) Tweened animation	ITF410-3
7	Video	10) Cutting a part of Video file using VCD Cutter	ITF410-3
8	Multimedia on Web	6) Adding images to an HTML page 7) Applying various effects to text on a web page 8) Using .wav files on web	ITF410-3,4
9	Multimedia in Office	9) Using various multimedia features offered by Office Suites like using a scanned image on a document, applying sound to a presentation etc. 10) Interfacing digital-web-cam, capturing live image & editing using web-cam software	ITF410-3,4
10	Creating multimedia database	3) Study of ways to create multimedia database.	ITF410-4,5
11	Miniproject	Miniproject which implements any animation technique like morphing etc. or using Flash or using 3D-Max or using Maya	ITF410-1.to 5

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical	05
3	Correct figures / diagrams	05
4	Logical Thinking and Approach	05
5	Application	05
	Total	25

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end practical exam as per Pro-forma II.

Instructional strategies:

1. Lectures and discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources, including references:

1. Chalk-board.
2. Transparencies
3. Presentation Slides
4. Demonstrative video files

Books:

Sr.No	AUTHOR	TITLE	PUBLICATION
1	Tay Vaughan	Multimedia – Making it work	TMH
2	Judith Jeffcoate	Multimedia in practice	PHI
3	Prabhat K. Andheigh, Kiran Thakrar, John F	Multimedia Systems Design	Prentice Hall of India
4	Koegel Buford	Multimedia Systems	Pearson Education
5	Katherine Ulrich	Micromedia Flash for Windows and Macintosh	Pearson Education

b) Websites

- ✓ www.tutorialspoint.com/listtutorials/multimedia/1
- ✓ www.w3schools.com/html/html_media.asp
- ✓ multimedia.journalism.berkeley.edu/tutorials/

LEVEL-V MANAGEMENT AND DIVERSIFIED COURSES

COURSE ID: 33

Course Name : **PROJECT - I**
Course Code : **ITF502**
Course Abbreviation : **FPRO**

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : **NIL**

Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	0	2
Tutorial	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Termwork	Oral Examination (Internal)	
Details of Evaluation	--	xv. 25 marks for each practical vi. One PST of 25 marks	--	As per Proforma- VI	As per Proforma- V	
Marks	--	--	NIL	50	50	100

RATIONALE :

In the field of Information Technology various technologies (hardware and Software) needs to be integrated and proper paradigms needs to be implemented to develop any kind of computer applications . Hence it becomes essential to get hands on experience for developing industrial applications. This subject is essential to understand the implementation of the system development process i.e. analysis, design, coding, debugging and testing.

The project work should be undertaken by group of 4-5 students who will jointly work and implement the project with the approval of guide. The student should decide the area of proposal work as per requirement of Industry / community or environment and work together for hardware / software solution for that work.

The project work is divided into two phases. In the first phase the group is expected to submit a synopsis upon choosing a project work. The synopsis report should include following points:

- Title of project
- Introduction

- Study of existing system
- Need of proposed work / Choice of topic with reasoning
- Literature review / Related work
- Hardware and software requirements
- Outline of proposed work
- Block diagram
- Expected schedule

Student should work on detailed system design, data flow design, data structure layout, file designs and complete 30 to 40 percent of work out of complete project work as a part of term work submission in the form of joint report.

The term work consists of Vocational Industrial Training (Phase I) of 4 weeks after completion of 4th semester. The term work assignment should be carried out under the guidance of appointed project guide by Head of Dept. A seminar should be delivered by student on latest trends in IT as part of termwork. The oral examination will be conducted by internal examiner as appointed by the Institute.

COMPETENCY :

Implementation of the software system development process i.e. analysis, design, coding, debugging and testing.

Cognitive : i) Decide the area of proposal work as per requirement of Industry / community or environment

ii) Understand phases of Software Development Life Cycle for the project work

iii) Apply concepts of database, programming and networking for hardware or software solution of project work

Psychomotor : i) Prepare a block diagram for the proposed work

ii) Draw a Data Flow Diagram for the proposed system

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :

The students will be able to :

ITF502-1 Identify need of Industry / community or environment and the area of proposed work

ITF502-2 Prepare a synopsis report including requirements, design, proposed schedule and modules of the project work

ITF502-3 Write a project report and demonstrate project work.

ITF502-4 Present seminar on recent trends in IT and prepare report.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :**[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]**

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and Development	PSO2 Network and Database Management
Competency: Implementation of the software system development process i.e. analysis, design, coding, debugging and testing	3	3	3	3	3	2	2	3	3	3	3	3
ITF502-1 Identify need of Industry / community or environment and the area of proposed work	1	1	-	-	2	1	-	2	2	3	-	-
ITF502-2 Prepare a synopsis report including requirements, design, proposed schedule and modules of the project work	1	2	-	1	-	-	2	2	-	3	-	-
ITF502-3 Write a project report and demonstrate project work.	1	2	3	3	-	-	2	3	3	2	1	1
ITF502-4 Present seminar on recent trends in IT and prepare report.	2	2	2	2	-	-	-	3	3	3	-	-

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	5
2	Requirement Analysis	5
3	Design – Algorithm, DFD	5
4	Logical Thinking and Approach	5
5	Progressive Project Demonstration	5
6	Vacational Industrial Training (Phase I) Duration 4 weeks	25
	Total	50

Criteria for assessment at semester end oral exam:

Sr. no	Criteria	Marks allotted
1	Seminar	25
2	Requirement Analysis	05
3	Design – Algorithm, DFD	05
4	Logical Thinking and Approach	05
5	Project Report	05
6	Project Demonstration	05
Total		50

Assessment at semester end oral exam as per Pro-forma V and VI

COURSE ID: 34

Course Name : **PROJECT - II**
Course Code : **ITF503**
Course Abbreviation : **FPRT**

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : **ITF502**

Teaching Scheme: MPECS 2016

Scheme component	Hours / week	Credits
Theory	0	4
Tutorial	4	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term work	Practical Examination (External)	
Details of Evaluation	--	i.25 marks for each practical ii.One PST of 25 marks	--	As per Proforma-VI	As per Proforma- IV	
Marks	--	--	NIL	50	50	100

RATIONALE :

In the field of Information Technology various technologies (hardware and Software) needs to be integrated and proper paradigms needs to be implemented to develop any kind of computer applications . Hence it becomes essential to get hands on experience for developing industrial applications. This subject is essential to understand the implementation of the system development process i.e. analyse, design, coding , debugging and testing .

The project work should be undertaken by group of 4-5 students who will jointly work and implement the project with the approval of guide. The student should decide the area of proposal work as per requirement of Industry / community or environment and work together for hardware / software solution for that work.

The project work is divided into two phases. In the second phase student should work on detailed system design, data flow design, data structure layout, file designs and complete project work as a part of term work submission in the form of joint report.

The term work consists of Vocational Industrial Training (Phase II) of 2 weeks after completion of 5th semester. The term work assignment should be carried out under the guidance of appointed project guide by Head of Dept.

The group is expected to submit a report of a project work at the end of semester. The report should include following points:

- Title of project
- Introduction
- Study of existing system
- Need of proposed work / Choice of topic with reasoning
- Literature review / Related work
- Requirement Analysis / SRS
- Hardware and software requirements
- System design that includes details of modules of system along with Data Flow Diagrams, ER diagram and Block diagram etc.
- Implementation details with snapshots
- Applications
- Conclusion and Future work
- Bibliography

These points are guidelines to the students. Students shall prepare a report containing these and additional points if any depending on the project as guided by the appointed project guide. The oral examination will be conducted by internal and external examiner as appointed by the Institute.

COMPETENCY :

Implementation of the software system development process i.e. analysis, design, coding, debugging and testing.

Cognitive : i) Understand phases of Software Development Life Cycle for the project work

iii) Apply concepts of database, programming and networking for hardware or software solution of project work

Psychomotor : i) Prepare a block diagram, DFD, ER diagram for the proposed work

ii) Test and debug implemented software / hardware system

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :

The students will be able to:

ITF503-1 Plan and coordinate project team work as per schedule in synopsis

ITF503-2 Implement acquired technical knowledge practically

ITF503-3 Design all modules of proposed project work to meet the user requirements

ITF503-4 Test and debug the project work

ITF503-5 Write a project report after completion of complete project work

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[**Note : Correlation levels** : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs										PSO1 Design and Development	PSO2 Network and Database Management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Implementation of the software system development process i.e. analysis, design, coding, debugging and testing	3	3	3	3	3	2	2	3	3	3	3	3
ITF503-1 Plan and coordinate project team work as per schedule in synopsis	-	2	1	1	-	-	-	3	1	3	-	-
ITF503-2 Implement acquired technical knowledge practically	-	3	3	3	-	-	2	3	1	3	3	3
ITF503-3 Design all modules of proposed project work to meet the user requirements	-	3	3	3	-	-	2	3	1	3	3	3
ITF503-4 Test and debug the project work	-	3	3	3	-	-	2	3	1	3	1	1
ITF503-5 Write a project report after completion of complete project work	-	3	2	2	-	-	-	3	-	3	-	-

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	5
2	Requirement Analysis	5
3	Design – Algorithm, DFD	5
4	Logical Thinking and Approach	5
5	Progressive Project Demonstration	5
6	Vacational Industrial Training (Phase II) Duration 2 weeks	25
	Total	50

Criteria for assessment at semester end oral exam:

Sr. no	Criteria	Marks allotted
1	Requirement Analysis	10
2	Design – Algorithm, DFD	10
3	Logical Thinking and Approach	10
4	Project Report	10
5	Project Demonstration	10
	Total	50

Assessment at semester end oral exam as per Pro-forma IV and VI

COURSE ID :35

Course Name : **INDUSTRIAL ORGANIZATION AND MANAGEMENT**
Course Code : **CCF501**
Course Abbreviation : **FIOM**

TEACHING AND EVALUATION SCHEME :

Pre-requisite Course(s) : *<nil>*

Teaching Scheme :

Scheme component	Hours / week	Credits
Theory	03	03
Practical	--	

Evaluation Scheme :

Mode of Evaluation	Progressive Assessment		Term End Examination		Total
	Theory	Practical	Theory Examination	Term Work	
Details of Evaluation	Average of two tests of 20 marks each	1. 25 marks for each practical 2. One PST of 25 marks	Term End Online Theory Exam	As per Proforma-III	
Marks	20	--	80	-	100

RATIONALE :

Management ability is a higher-grade ability, which every successful engineer must possess. This science has been developed in those days when it was treated as an art in earlier stages. It is impossible for an individual though technically sound to achieve goals of the organizations. Effective implementation of management policies is a tough task. The Diploma holder should learn these principles of management and various techniques.

COMPETENCY: Plan and implement managerial and administrative strategies.

Cognitive : Use management principles and techniques.

Psychomotor : i) Apply management principles ii) Control inventory iii) Use personal protective devices for safety

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :

CCF 502.1 Apply principles of management and carry out various functions of management.

CCF 502.2 Prepare organization structure for small and medium scale industry.

CCF 502.3 Perform duties of stores Incharge, material and finance manager.

CCF 502.4 Practice industrial safety rules, codes, practices and acts.

CCF 502.5 Apply various modern management techniques.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX[**Note : Correlation levels :** 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and Development	PSO2 Network and database Management
Competency:	2	-	-	-	-	-	-	3	-	-	1	-
CCF501.1	2	-	-	-	-	-	-	3	-	-	1	-
CCF501.2	2	-	-	-	-	-	-	3	-	-	1	-
CCF501.3	2	-	-	-	-	-	-	3	-	-	1	-
CCF501.4	2	-	-	-	-	-	-	3	-	-	1	-
CCF501.5	2	-	-	-	-	-	-	3	-	-	1	-

CONTENT :**L) THEORY :****SECTION -I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
CCF 502.1 <i>Apply principles of management and carry out various functions of management.</i>			
1	PRINCIPLES OF MANAGEMNET 1.1 Concept of management 1.2 Principles of management 1.3 Objectives of management 1.4 Scope and importance of management 1.5 Levels of management 1.6 Managerial competencies : Communication, Planning and Administration, Team work, Strategic action and General awareness	06	10

CCF 502.2 Prepare organization structure for small and medium scale industry.			
2	FORMS OF BUSINESS ORGANISATION 2.1 Types of industrial sectors 2.2 Forms of business organization 2.3 Individual Proprietorship 2.4 Partnership 2.5 Joint stock companies 2.6 Co-operatives 2.7 Public sectors 2.8 Government undertakings.	04	08
CCF 502.1 Apply principles of management and carry out various functions of management.			
3	FUNCTIONS OF MANAGEMENT 3.1 Planning: Forms of planning, Strategic levels and Planning, Phases of Planning 3.2 Decision Making: Decision making conditions, Basic types of Decisions 3.3 Organizing: Introduction to Organization design, basic types of Departmentalization, Co-ordination, Authority 3.4 Motivation: Work Motivation, Three approaches to Motivation, 3.5 Leadership: Leadership and Power, Leadership Development 3.6 Communication: The Communication process, Impact of Information Technology, Hurdles to effective communication 3.7 Controlling: Foundations of control, creative Effective control, Primary methods of control	08	12
4	HUMAN RESOURCE MANAGEMENT(Personnel Management) 4.1 Definition and concept, 4.2 Aim, Objectives and functions of HR dept. 4.2 Principles of personnel policy, details recorded in policy 4.3 Recruitment and selection of employees 4.4 Training : Objectives, benefits, types and methods 4.5 Workers Participation in Management	06	10
	Total	24	40

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

SECTION II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
CCF 502.3 <i>Perform duties of stores Incharge, material and finance manager.</i>			
5	MATERIALS MANAGEMENT 5.1 Importance of purchase 5.2 Functions and Objectives 5.3 Duties of purchasing officer 5.4 Methods of purchasing and procedure 5.5 Scope and importance of material management 5.6 Objectives of material management 5.7 Duties of Material manager 5.8 Concept of supply chain management 5.9 Modern trends in material management : MRP,ERP	06	10
6	FINANCIAL MANAGEMENT 6.1 Concept, Scope and Importance 6.2 Functions of financial management 6.3 Types of capital: Fixed, working 6.4 Factors affecting Working capital 6.5 Capitalization : over, under 6.6 Sources of Finance 6.7 Industrial taxation	04	08
CCF 502.4 <i>Practice industrial safety rules, codes, practices and acts.</i>			
7	INDUSTRIAL ACT & SAFETY 7.1 Factory Act, Boiler Act, Workmen Compensation Act, ESI Act, pollution Control Act 7.2 Accidents: Economic aspects, direct and indirect cost of accidents Causes, Types, Remedies, Personal Protective Equipments (PPE), Reporting & Investigation of accidents	08	12

	7.3 Safety management: safety in industry, committees, programs, Safety codes, Safety training, 7.4 Occupational Safety and Health Administration – Promoting, norms and standards 7.5 Housekeeping: definition, concept, necessity, advantages, procedure		
CCF 502.5 <i>Apply various modern management techniques.</i>			
8	MODERN MANAGEMENT TECHNIQUES 8.1 PERT & CPM 8.2 Various terms related with network analysis 8.3 Various Time estimates 8.4 Construction of Network Diagram 8.5 Computation of Critical Path	06	10
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Knowledge	Comprehension	Application		
1	Principles Of Management	02	04	04	<i>CCF501.1</i>	10
2	Forms Of Business organization	02	04	02	<i>CCF501.2</i>	08
3	Functions Of Management	02	04	06	<i>CCF501.2</i>	12
4	Human Resource management	04	04	02	<i>CCF501.2</i>	10
5	Materials Management	04	02	04	<i>CCF501.3</i>	10
6	Financial Management	02	02	04	<i>CCF501.3</i>	08
7	Industrial Act & Safety	04	04	04	<i>CCF501.4</i>	12
8	Modern Management Techniques	02	02	06	<i>CCF501.5</i>	10
TOTAL		22	26	32		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

INSTRUCTIONAL STRATEGIES :**Instructional Methods :**

1. Lectures cum Demonstrations
2. Classroom practices

Teaching and Learning resources :

1. Chalk board
2. LCD presentations
3. Audio presentations
4. Item Bank

REFERENCE MATERIAL :**a) Books / Journals / IS Codes**

Sr. No.	Author	Title	Publisher
1	BangaandSharma	Industrial Organisation& Management	Khanna Publisher
2	O P Khanna	Industrial Engg. & Management	DhanpatRai& sons New Delhi
3	P.C. Pandey&C.K.Sing	Management Science	DhanpatRai& sons New Delhi
4	Industrial Oraganisation	P.T. Ghan	Tata McGraw Hill
5	Management Information System	Waman S. Jawadekar	Tata McGraw Hill
6	P.C. Pandey&C.K.Sing	Management Science	DhanpatRai& sons New Delhi

b) Websites

- i) nptel/iitm.ac.in
- ii) <http://iete.ac.in/subjects/amindustry/Mgmt.htm>

* * *

COURSE ID: 36 (A)

Course Name : **MOBILE COMMUNICATION**
Course Code : **ITF504**
Course Abbreviation : **FMOC**

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : **NIL**
Teaching Scheme: **MPECS 2016**

Scheme component	Hours / week	Credits
Theory	3	3
Practical	--	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination	
Details of Evaluation	Average of two tests of 20 marks each	--	Term End Theory Exam (03 hours)	--	--	
Marks	20	--	80	--	--	100

RATIONALE:

Today's world is full of Mobile or wireless Communication, So it is very essential to our students to have conceptual knowledge of Mobile Communication. This subject gives the information about some concepts and applications of Mobile Communication.

COMPETENCY: Apply principles wireless communication system & mobile communication system.

Cognitive: i) Understanding and applying various algorithms on wireless system.

ii) Understand different architectures of wireless system used for communication.

iii) Apply various protocols in wireless communication system.

Psychomotor: i) Draw architecture of Global System for Mobile communication (GSM) & Bluetooth Technology.

ii) Create personal area network using Bluetooth technology.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES :

The students will be able to:

ITF504-1 Illustrate concept of mobile & wireless devices with its applications.

ITF504-2 Describe concept of wireless transmission of data with its different phases , schema and medium access control .

ITF504-3 Explain telecommunication system with architecture.

ITF504-4 Describe term wireless local area network & Bluetooth technology.

ITF504-5 Illustrate concept of network layer and transport layer with mobile devices.

ITF504-6 Clarify wireless application protocol & security issues in mobile network

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX :

[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs										PSO1 Design & Development	PSO2 Network & database Management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Understanding and applying principles of mobile & wireless technology	-	2	-	-	2	1	-	1	2	1	-	-
ITF504-1 Illustrate concept of mobile & wireless devices with applications.	-	2	-	-	-	-	-	1	-	2	1	1
ITF504-2 Describe concept of wireless transmission of data with its different phases , schema and medium access control .	-	2	-	-	-	-	-	1	-	2	1	1
ITF504-3 Explain telecommunication system with architecture.	-	2	-	-	-	-	-	1	-	2	1	1
ITF504-4 Describe term wireless local area network & Bluetooth technology.	-	2	-	-	-	-	-	1	-	2	1	1
ITF504-5 Illustrate concept of network layer & transport layer with mobile devices.	-	2	-	-	-	-	-	1	-	2	1	1
ITF504-6 Clarify wireless application protocol & security issues in mobile network	-	2	-	-	-	-	-	1	-	2	1	1

CONTENT:**SECTION -I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory evaluation Marks
<i>Course Outcome ITF504-1 Illustrate concept of mobile & wireless devices with its applications.</i>			
1	INTRODUCTION 1.1 Need & Applications of Wireless 1.2 Wireless Data Technologies 1.3 Market for Mobile Communication 1.4 Mobile & Wireless Devices	04	06
<i>Course Outcome ITF504-2 Describe concept of wireless transmission of data with its different phases , schema and medium access control .</i>			
2	WIRELESS TRANSMISSION 2.1 Frequencies for Radio Transmission 2.2 Signals 2.3 Antennas 2.4 Signal Propagation- Path loss, Additional signal propagation effect, Multipath propagation 2.5 Multiplexing – SDM, FDM, TDM 2.6 Modulation- ASK, FSK, PSK, AFSK, APSK 2.7 Spread Spectrum- DHSS, FHSS 2.8 Cellular Systems	08	12
3	MEDIUM ACCESS CONTROL 3.1 Specialized MAC 3.1.1 Hidden and Exposed terminals 3.1.2 Near and Far Terminals 3.2 SDMA 3.3 FDMA 3.4 TDMA- Fixed TDM, Classical & Slotted Aloha, CSMA 3.5 CDMA	06	10

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory evaluation Marks
	3.6 Comparison between SDMA/FDMA/TDMA/CDMA		
<i>Course Outcome ITF504-3 Explain telecommunication system with architecture.</i>			
4	TELECOMMUNICATION SYSTEMS 4.1GSM 4.1.1 Mobile Services 4.2.2 System Architecture 4.2 3G Networks 4.2.1 System Architecture 4.2.2 Protocol Architecture	06	12

SECTION – II

<i>Course Outcome ITF504-4 Describe term wireless local area network & Bluetooth technology.</i>			
5	WIRELESS LAN 5.1 Introduction 5.2 Infrared v/s Radio Transmission 5.3 Infrastructure & Ad-hoc Network 5.4 IEEE 802.11 –System & protocol architecture (without detailed protocol description) 5.5 Bluetooth – User scenarios, architecture ,scatternet & piconet	08	12
<i>Course Outcome ITF504-5 Illustrate concept of network layer and transport layer with mobile devices.</i>			
6	MOBILE NETWORK LAYER 6.1 Mobile IP 6.2 Entities & terminology 6.3 IP packet Delivery- Agent discovery, Registration 6.4 DHCP	04	08

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory evaluation Marks
7	MOBILE TRANSPORT LAYER 7.1 Traditional TCP 7.2 Indirect TCP 7.3 Snooping TCP 7.4 Mobile TCP	06	10
<i>Course Outcome ITF504-6 Clarify concept of wireless application protocol & security issues in mobile network.</i>			
8	SUPPORT FOR MOBILITY 8.1 File System - consistency, coda 8.2 WAP – architecture 8.3 Wireless datagram protocol (concept) 8.3 Security issues in mobile computing	06	10
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination

Section / Topic no.	Name of topic	Distribution of marks (level wise)			Total marks
		Knowledge	Comprehension	Application	
I / 1	Introduction	03	02	01	06
I / 2	Wireless Transmission	05	05	02	12
I / 3	Medium Access Control	04	04	02	10
I / 4	Telecommunication Systems	04	04	04	12
II / 5	Wireless LAN	04	04	04	12
II / 6	Mobile Network Layer	03	03	02	08
II / 7	Mobile Transport Layer	04	04	02	10
II / 8	Mobile Application Layer	04	04	02	10

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

Instructional strategies:

- 7) Lectures and discussions.
- 8) Laboratory experiences and laboratory interactive sessions.
- 9) Time bound assignments.

Teaching and Learning resources, including references:

- 9) Chalk-board.
- 10) Transparencies
- 11) Presentation Slides
- 12) Demonstrative video files

Books:

Sr .No.	Author	Book Title	Publication
01	Lacher Schiller	Mobile Communication	Pearson
02	Peter Davis, Craig & McGulfin	Wireless LAN	EMG
03	Sandip Singh	The Wireless Application Protocol	Wiely
04	Charies Archart & Grays	Professional WAP	Wiely

Websites :

- ✓ www.tutorialspoint.com/mobile.../mobile_computing_overview.htm
- ✓ www.tutorialspoint.com/wimax/wireless_introduction.htm
- ✓ www.radio-electronics.com/info/.../gsm.../gsm_introduction.php

COURSE ID:36(B)

Course Name : DISTRIBUTED SYSTEM
Course Code : ITF505
Course Abbreviation :FDIS

TEACHING AND EVALUATION SCHEME :

Pre-requisite Course(s) : <nil >

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	03	03
Practical	00	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination		Total
	Theory	Practical	Theory Examination	Term Work	
Details of Evaluation	Average of two tests of 20 marks each	ii. 25 marks for each practical iii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	
Marks	20	--	80	--	100

RATIONALE:

Distributed computing is a field of computer science that studies distributed systems. A distributed system is a software system in which components located on networked computers communicate and coordinate their actions by passing messages. The components interact with each other in order to achieve a common goal. The result of these technologies make it easy to put together computing systems composed of large number of computers connected by high speed networks and called as distributed systems. So it is essential to study distributed system for a computer or IT student.

COMPETENCY:

Understand Distributed System working

Cognitive: State concept of Distributed System, hardware and software used in Distributed System.

Psychomotor: i) Categorize Distributed System Hardware

ii) Identify communication type in Distributed System.

iii) Categorize algorithms used for synchronization and mutual exclusion.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) aesthetic presentation

COURSE OUTCOMES:**ITF505-1** Describe Distributed systems and concepts of hardware and software used in Distributed system.**ITF505-2** Explain Distributed System architecture.**ITF505-3** Summarize communication, remote procedure call, message oriented communication.**ITF505-4** Explain processes, threads and code migration in Distributed System.**ITF505-5** State synchronization, mutual exclusion and it's related algorithms.**ITF505-6** Discuss security policies and mechanisms in Distributed System.**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX****[Note: Correlation levels: 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]**

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Network and database management
Competency: Understand Distributed System working	-	3	-	-	-	-	-	-	-	3		1
ITF505-1 Describe Distributed Systems and concepts of Hardware and software used in distributed system	-	2	-	-	-	-	-	-	-	2	-	1
ITF505-2 Explain Distributed System architecture	-	2	-	-	-	-	-	-	-	2	-	3
ITF505-3 Summarize communication, remote procedure call, message oriented communication	-	2	-	-	-	-	-	-	-	2	-	1
ITF505-4 Explain processes, threads and code migration in distributed system	-	2	-	-	-	-	-	-	-	2	-	-
ITF505-5 State synchronization, mutual exclusion and it's related algorithms	-	2	-	-	-	-	-	-	-	2	-	-
ITF505-6 Discuss security policies and mechanisms in distributed system	-	2	-	-	-	-	-	-	-	3	-	-

CONTENT :**THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF505-1 Describe Distributed systems and concepts of hardware and software used in Distributed System.			
1	Introduction To Distributed System 1.1 Definition of a distributed system 1.2 Goals 1.2.1 Making Resource accessible 1.2.2 Distribution Transparency 1.2.3 Openness 1.2.4 scalability 1.3 Types of distributed Systems 1.3.1 Distributed Computing Systems 1.3.2 Distribute Information Systems 1.3.3 Distributed Pervasive	06	12
Course Outcome ITF505-2 Explain Distributed System architecture.			
2.	Architectures Of Distributed System 2.1 Architectural Styles 2.2 System Architectures 2.2.1 Centralized Architectures 2.2.2 Decentralized Architecture-Structured peer to peer, Unstructured peer to peer 2.2.3 Hybrid Architecture 2.3 Architecture V/s Middleware –Interceptors	09	14
Course Outcome ITF505-3 Summarize communication, remote procedure call, message oriented communication.			
3	Communication 3.1 Layered Protocols – 3.1.1 Lower Level 3.1.2 Transport Level 3.1.3 Higher Level	09	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	3.2 Types of Communication 3.3 Remote Procedure Call 3.3.1 Basic RPC operation 3.3.2 Parameter passing 3.4 Asynchronous RPC 3.5 Message oriented communication 3.5.1 Message oriented Transient communication 3.5.2 Message oriented Persistent communication		
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF505-4 Explain processes, threads and code migration in Distributed System.			
4	Processes 4.1 Threads 4.1.1 Introduction to threads 4.1.2 Threads in distributed systems 4.2 Clients 4.2.1 User interfaces 4.2.2 Client side software for distribution transparency 4.3 Servers 4.3.1 General design issues 4.4 Code migration 4.4.1 Approaches to code migration 4.4.2 Migration and local resources 4.4.3 Migration in heterogeneous systems	08	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF308-5 State synchronization, mutual exclusion and it's related algorithms.			
5	Synchronization 5.1 Clock synchronization 5.1.1 Physical clocks 5.1.2 Clock synchronization algorithms 5.2 Logical clocks 5.2.1 Lamport's Logical Clock 5.2.2 Vector Clock 5.3 Election algorithms 5.3.1 The Bully algorithm 5.3.2 A Ring algorithm 5.4 Mutual exclusion 5.4.1 A centralized algorithm 5.4.2 A distributed algorithm 5.4.3 A Token Ring algorithm	10	14
Course Outcome ITF308-6 Discuss security policies and mechanisms in Distributed System.			
6	Security 6.1 Introduction to Security 6.1.1 Security Threats, Policies and Mechanisms 6.2 Secure Channels 6.2.1 Authentication 1) Based on shares Secret key 2) Based on Public key cryptography 6.2.2 Message Integrity and Confidentiality 1) Digital Signatures 2) Session Key 6.3 Secure Group communication –Confidential group Communication	06	12
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and			

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Applica-tion		
1	Introduction to Distributed System	06	06	--	ITF505-1	12
2	Architecture Of Distributed System	06	04	04	ITF505-2	14
3	Communication	06	04	04	ITF505-3	14
4	Processes	06	06	02	ITF505-4	14
5	Synchronization	06	04	04	ITF505-5	14
6	Security	04	06	02	ITF505-6	12
TOTAL		34	30	16		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

INSTRUCTIONAL STRATEGIES :

Instructional Methods :

1. Lectures and Discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources :

1. Chalk board
2. LCD presentations Slides
3. Demonstrative Video Files

REFERENCE MATERIAL :

a) Books / Journals / IS Codes

Sr. No.	Author	Title	Publisher
1.	A. S. Tanenbaum, Maarten van Steen	Distributed System : Principles And Paradigms(2 nd Edition)	PHI
2.	P. K. Sinha	Distributed System:	PHI

b) Websites

- i. <http://www.distributedsystem.guide.com/>
- ii. <http://www.distributedsystem.notes.com/tutorials/>

COURSE ID: 36 (C)

Course Name : CLOUD COMPUTING
Course Code : ITF506
Course Abbreviation :FCCM

TEACHING AND EVALUATION SCHEME :

Pre-requisite Course(s) : <nil >

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	03	03
Practical	00	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	ix. 25 marks for each practical xx. One PST of 25 marks	Term End Theory Exam (03 hours)	--	--	
Marks	20	--	80	--	--	100

RATIONALE:

This course covers a series of current cloud computing technologies, including technologies for Infrastructure as a Service, Platform as a Service, Software as a Service, and Physical Systems as a Service. For different layers of the cloud technologies, practical solutions such as Google, Amazon, Microsoft, Salesforce.com, etc. solutions as well as theoretical solutions are introduced.

COMPETENCY:

Understand basic concepts of cloud computing.

Cognitive: i) Understand Cloud applications, services

ii) Discuss cloud vendors

iii) Describe cloud infrastructure

iv) Discuss cloud future, security issues

Psychomotor: i) Perform case study

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) Effectiveness.

COURSE OUTCOMES:

The student will be able:

ITF506-1 Explain Basics of cloud , services and applications of cloud computing.

ITF506-2 Describe benefits and limitations of cloud computing.

ITF506-3 Describe cloud computing vendors

ITF506-4 Explain cloud hardware and storage basics

ITF506-5 Discuss SaaS model of cloud computing.

ITF506-6 Describe future scope , services , security issues of cloud computing.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[Note: Correlation levels: 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and Cos	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and development	PSO2 Network and database management
Competency: Understand basic concepts of cloud computing.	-	3	-	1	-	-	-	-	-	3	-	-
ITF506-1 Explain Basics of cloud , services and applications of cloud computing.	-	2	-	-	-	-	-	-	-	2	1	1
ITF506-2 Describe benefits and limitations of cloud computing.	-	2	-	-	-	-	-	-	-	2	1	1
ITF506-3 Describe cloud computing vendors.	-	2	-	-	-	-	-	-	-	2	1	1
ITF506-4 Explain cloud hardware and storage basics	-	2	-	-	-	-	-	-	-	2	1	1
ITF506-5 Discuss SaaS model of cloud computing.	-	2	-	-	-	-	-	-	-	2	1	1
ITF506-6 Describe future scope , services , security issues of cloud computing.	-	1	-	-	-	-	-	-	-	3	1	1

CONTENT :**M) THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF506-1 Explain Basics of cloud , services and applications of cloud computing.</i>			
01	Introduction To Cloud Computing 1.1 What is Cloud Computing? 1.2 Cloud Components- clients, Datacenter, Distributed Servers 1.3 Services- Software as a Service(SaaS), Platform as a Service(PaaS), Hardware as a Service(HaaS) 1.4 Applications- 1.4.1 Storage- Database, Synchronization 1.4.2 Database Services- Ease of use, power, integration, management 1.4.3 MS SQL 1.5 Intranet And The Cloud 1.5.1 Components 1.5.2 Hypervisor Applications 1.6 First Movers In The Cloud- Amazon, Google, Microsoft,	08	14
<i>Course Outcome ITF506-2 Describe benefits and limitations of cloud computing.</i>			
02.	Cloud Computing And Organization 2.1 Cloud Computing Scenarios- Compute cloud, cloud storage, cloud applications 2.2 When you shouldn't use cloud? 2.3 Benefits- scalability, simplicity, knowledgeable vendors, more internal resources, security 2.4 Limitations- sensitive information, protect your data, applications not ready, developing own applications	08	12
<i>Course Outcome ITF506-3 Describe cloud computing vendors.</i>			
03	Cloud Computing With Titans 3.1 Google- Google app engine, Google web tool kit 3.2 NetApp- Offering 3.3 Microsoft- Azure service platform, Windows live, exchange online, SharePoint Services, 3.4 Amazon- EC2, simpleDB, Amazon S3, CloudFront, Amazon SQS 3.5 IBM services, security 3.6 Partnerships 3.6.1 Yahoo! Research 3.6.2 SAP & IBM 3.6.3 HP, Intel & Yahoo!	08	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	3.6.4 IBM and Amazon		
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF506-4 Explain cloud hardware and storage basics.</i>			
04	Cloud Hardware & Cloud Storage 4.1 Client- Mobile, Thin, Thick 4.2 Security-Data Leakage, Logging, Forensics Auditing, 4.3 Network- Public Internet, Accelerated Internet 4.4 Services- Identity, Integration, Mapping, Payments, Search 4.5 Storage Basics, Providers, Security, Reliability, Advantages, Cautions, Outages, Theft	08	12
<i>Course Outcome ITF506-5 Discuss SaaS model of cloud computing.</i>			
05	Cloud computing at work 5.1 Software AS a Service-advantages, software considerations, Vendors advantages, limitations Driving forces , company offerings, industries, 5.2 Software Plus Services- overview, pros, cons, vendors, mobile device integration, providers, 5.3 Virtualization in Organization- Why virtualize, how to virtualize, concerns, security	08	12
<i>Course Outcome ITF506-6 Describe future scope , services , security issues of cloud computing.</i>			
06	Migrating To The Cloud& Future 6.1 Cloud services for individuals- available services, skytap solution, 6.2 Cloud services aimed at the mid-market, enterprise-class cloud offering, MS exchange, VMotion, VMware vCenter Converter 6.3 Migration, which application do you need? Sending your existing data to cloud, use wave approach,	10	16

	6.4 Analyze your service , Establishing Baseline and metrics, tools 6.5 Cloud Security issues		
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Applica-tion		
1	Introduction To Cloud Computing	06	06	02	ITF506-1	14
2	Cloud Computing and Organization	08	04	02	ITF506-2	12
3	Cloud computing with titans	04	04	04	ITF506-3	14
4	Cloud Hardware and Cloud Storage	04	02	04	ITF506-4	12
5	Cloud Computing at work	06	06	04	ITF506-5	12
6	Mitigating to the cloud and future	08	04	04	ITF506-5	16
TOTAL		34	26	20		80

INSTRUCTIONAL STRATEGIES :**Instructional Methods :**

1. Lectures and Discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources :

1. Chalk board
2. LCD presentations Slides
3. Demonstrative Video Files

REFERENCE MATERIAL :**a) Books / Journals / IS Codes**

Sr. No.	Author	Title	Publisher
1.	J.Vette, Toby J. Vette, Robert Elsenpeter	Cloud Computing: A Practical Approach	Tata, McGraw Hill
2.	GautamShroff	Enterprise Cloud Computing	Cambridge University Press
3.	Judith Hurwitz, R.Bloor, Kanfman, F.Halper	Cloud Computing for Dummies	Wiley India Edition
4.	Tim Malhar, S.Kumaraswammy, S.Latif	Cloud Security & Privacy	O'REILY

* * *

COURSE ID: 37(A)

Course Name : CYBER LAWS
Course Code : ITF507
Course Abbreviation : FCLC

TEACHING AND EVALUATION SCHEME :

Pre-requisite Course(s) : <nil >

Teaching Scheme:MPECS-2016

Scheme component	Hours / week	Credits
Theory	03	05
Practical	02	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	xi. 25 marks for each practical xii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-II	
Marks	20	--	80	--	50	150

RATIONALE:

Due to the heavy use of internet, Cybercrimes are increasing day by day. Hence Cyber Laws is one of the most important and relevant areas of information technology today. It is essential to understand the various threats to security and cyber laws associated with it.

COMPETENCY:Identify information technology acts& intellectual property rights.

Cognitive: i)Understand different cyber laws. ii) State different issues in Cyber space

Psychomotor: i)Illustrate design of patents.

Affective: Attitude of i) precision ii) accuracy iii) safety iv) punctuality v) Effectiveness.

COURSE OUTCOMES:**ITF507-1** Explain concept, law & intellectual property issues.**ITF507-2** Compare different IT acts.**ITF507-3** Demonstrate patent acquisition.**ITF507-4** State domain name protection.**ITF507-5** Illustrate design of patents.**ITF507-6** Relate aspects of licensing.**COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX****[Note: Correlation levels:** 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs										PSO1 Design and development	PSO2 Network and database management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Identify information technology acts & intellectual property rights.	-	2	2	2	-	-	2	2	1	2	2	-
ITF507-1 Explain concept, law & intellectual property issues.	-	2	-	-	-	-	-	1	-	1	-	-
ITF507-2 Compare different IT acts.	-	2	-	-	-	-	-	1	-	1	-	-
ITF507-3 Demonstrate patent acquisition.	-	2	2	2	-	-	-	1	2	1	-	-
ITF507-4 State domain name protection.	-	2	-	-	-	-	-	1	-	2	-	-
ITF507-5 Illustrate design of patents.	-	2	-	-	-	-	-	1	-	2	-	-
ITF507-6 Relate aspects of licensing.	-	2	-	-	-	-	-	1	-	2	-	-

CONTENT :**N) THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF507-1 Explain concept, law & intellectual property issues.</i>			
01	Cyber Laws 1.1 Basic Concepts of Technology and Law: 1.1.1 Understanding the Technology of Internet 1.1.2 Scope of Cyber Laws 1.1.3 Cyber Jurisprudence 1.2 Law of Digital Contracts : 1.2.1 The Essence of Digital Contracts, 1.2.2 The System of Digital Signatures, 1.2.3 The Role and Function of Certifying Authorities, 1.2.4 The Science of Cryptography. 1.3 Intellectual Property Issues in Cyber Space: 1.3.1 Domain Names and Related issues, 1.3.2 Copyright in the Digital Media, 1.3.3 Patents in the Cyber World. 1.4 Rights of Netizens and E-Governance: 1.4.1 Privacy and Freedom Issues in the Cyber World, 1.4.2 E-Governance, 1.4.3 Cyber Crimes and Cyber Laws.	08	12
<i>Course Outcome ITF507-2 Compare different IT acts.</i>			
02.	Information Technology Act 2000 2.1 Information Technology Act 2000 2.1.1 Information Technology Act2000-1 (Sec 1to 13), 2.1.2 Information Technology Act-2000-2 (Sec 14 to 42 and Certifying authority Rules), 2.1.3 Information Technology Act-2000-3 (Sec 43 to 45 and Sec 65 to 78), 2.1.4 Information Technology Act-2000-4 (Sec 46 to Sec 64 and CRAT Rules), 2.1.5 Information Technology Act-2000-5 (Sec 79 to 90), 2.1.6 Information Technology Act-2000-6 (Sec 91-94) Amendments in 2008. 2.2 International Scenario in Cyber Laws : 2.2.1 Data Protection Laws in EU and USA, 2.2.2 Child Abuse Protection Laws in EU and USA, 2.2.3 Cyber Laws - the Malaysian Approach. 2.3 Cyber Law Issues for Management : 2.3.1 Cyber Law Issues in E-Business Management, 2.3.2 Major issues in Cyber Evidence Management,	08	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	Cyber Law Compliancy Audit.		
<i>Course Outcome ITF507-3 Demonstrate patent acquisition.</i>			
03	Basic Principles And Acquisition Of Intellectual Property Rights 3.1 Focus on the: Philosophical Aspects of Intellectual Property Laws, 3.2 Basic Principles of Patent Law, 3.3 Patent Application procedure, Drafting of a Patent Specification, Understanding Copyright Law, 3.4 Basic Principles of Trade Mark, Basic Principles of Design Rights, International Background	08	14
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF507-4 State domain name protection.</i>			
04	Information Technology Related Intellectual Property Rights 4.1 Computer Software and Intellectual Property-Objective, Copyright Protection, Reproducing, Defences, Patent Protection 4.2 Database and Data Protection-Objective, Need for Protection, UK Data Protection Act, 1998, US Safe Harbor Principle, Enforcement. 4.3 Protection of Semi-conductor Chips-Objectives Justification of protection, Criteria, Subject-matter of Protection, WIPO Treaty, TRIPs, SCPA. 4.4 Domain Name Protection-Objectives, domain name and Intellectual Property, Registration of domain names, disputes under Intellectual Property Rights, Jurisdictional Issues, and International Perspective.	10	16
<i>Course Outcome ITF507-5 Illustrate design of patents.</i>			
05	Patents (Ownership And Enforcement Of Intellectual Property) 5.1 Patents-Objectives, Rights, Assignments, 5.2 Defences in case of Infringement Copyright-Objectives, Rights, Transfer of Copyright, work of employment	08	16

	Infringement, 5.3 Defences for infringement Trademarks-Objectives, Rights, Protection of good will, Infringement, Passing off, Defences. 5.4 Designs-Objectives, Rights, Assignments, Infringements, Defences of Design Infringement		
<i>Course Outcome ITF507-6 Relate aspects of licensing.</i>			
06	Enforcement of Intellectual Property Rights 6.1 Civil Remedies, Criminal Remedies, Border Security measures. 6.2 Practical Aspects of Licencing – Benefits, Determinative factors, important clauses, licensing clauses.	06	08
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Applica-tion		
1	Cyber Laws	06	04	02	ITF507-1	12
2	Information Technology Act 2000	08	04	02	ITF507-2	14
3	Basic Principles And Acquisition Of Intellectual Property Rights	08	04	02	ITF507-3	14
4	Information Technology Related Intellectual Property Rights	08	04	04	ITF507-4	16
5	Patents (Ownership And Enforcement Of Intellectual Property)	08	04	04	ITF507-5	16
6	Enforcement of Intellectual Property Rights	04	02	02	ITF507-5	08
TOTAL		42	22	16		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

B) TERM WORK
Practical Exercises and related skills to be developed:

Sr. No.	Title of Practical Exercise	Course outcome
1	Describe Cyber Law & IT Act.	ITF507-1
2	List & Explain Cyber Law objectives.	ITF507-2
3	Explain Cyber Security strategies.	ITF507-3
4	Study of information security act. 2000	ITF507-4
5	Design patents(Ownership And Enforcement Of Intellectual Property)	ITF507-5
6	Illustrate Intellectual Property Rights.	ITF507-6

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION

k) Criteria for Continuous Assessment of Practical work and Progressive skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical& neat & complete Diagram.	05
3	Observations & computer handling skill	05
4	Logical thinking and approach	05
5	Oral Based on Lab work and completion of task	05
TOTAL		25

Assessment at semester end practical exam as per Pro-forma I.

b)Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1.	Technical ability	20
2.	Communication skill	10
3.	Logical approach	20
	TOTAL.	50

INSTRUCTIONAL STRATEGIES :**Instructional Methods :**

1. Lectures and Discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.

Teaching and Learning resources :

1. Chalk board
2. LCD presentations Slides
3. Demonstrative Video Files

REFERENCE MATERIAL :**a) Books / Journals / IS Codes**

Sr. No.	Author	Title	Publisher
1.	Peter Weill , Jeanne Ross	IT Governance: How Top Performers Manage IT Decision Rights for Superior Results	Harvard business school press
2.	Jeanne W. Ross	Enterprise Architecture As Strategy: Creating a Foundation for Business Execution	Harvard business school press
3.	Peter Weill	IT Savvy: What Top Executives Must Know to Go from Pain to Gain	Harvard business school press
4.	Marx Warda	How To Register Your Own Copyright	Sphinx Publishing

b) Websites

- https://www.tutorialspoint.com/information_security_cyber_law/

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COURSE ID:37(B)

Course Name : OBJECT ORIENTED MODELING & DESIGN
Course Code : ITF508
Course Abbreviation : FOOM

TEACHING AND EVALUATION SCHEME:

Pre-requisite Course(s) : <nil>

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	3	5
Practical	2	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Oral Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	i. 25 marks for each practical ii. One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-II	
Marks	20	--	80	--	50	150

RATIONALE:

Object oriented modelling and design presents an Object Oriented approach to software development. It is based on modelling objects from the real world and then using the model to build language-independent design. This subject shows how to use Object Oriented concepts throughout the entire software life cycle, from analysis through design implementation by using different models. The graphical notation i.e. described in subjects helps the software developer to visualize a problem before going for implementation. This subject will be useful for the student to understand the concepts of Object Oriented Programming System and to model these concepts using Unified Modelling Language (UML) for any application, before actually going for coding part.

COMPETENCY

Apply principles of object oriented modeling to represent different software designs.

Cognitive :i) Identify the software design may be represented as a set of interacting objects that manage their own state and operations
 ii) Describe the activities in the object-oriented design process

Psychomotor :i) Investigate the objects by creating object model diagram.

ii) Design the Use-case diagram, Sequence diagrams and structural modeling diagrams.

Affective : Attitude of i) precision ii) accuracy iii) safety iv) punctuality

COURSE OUTCOMES:

ITF508-1: State object-oriented concepts and themes.

ITF508-2: Illustrate the activities in the object-oriented design process

ITF508-3: Draw UML Diagram for given problem

ITF508-4: Describe structural modeling diagrams and behavioral modeling.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[Note : Correlation levels : 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs											
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning	PSO1 Design and Development	PSO2 Network and database Management
Competency: Apply principles of object oriented modeling to represent different software designs	-	1	2	2	-	-	-	2	-	2	2	-
ITF508-1: Recall object-oriented concepts and themes.	-	2	-	-	-	-	-	-	-	-	1	1
ITF508-2: Illustrate the activities in the object-oriented design process	-	2	2	1	-	-	-	1	-	1	1	1
ITF508-3: Draw UML Diagram for given problem	-	2	2	2	-	-	-	2	-	2	2	1
ITF508-4: Describe structural modeling diagrams and behavioral modeling	-	3	3	2	-	-	-	2	-	2	2	1

CONTENT:**A) THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF508-1 State object-oriented concepts and themes.			
1	Introduction 1.1 Object Oriented development & themes 1.2 Evidence for usefulness, modelling as a Design Technique.	02	06
2	Concepts Of OOP 2.1 Objects and Classes (Object Diagrams, Attributes, Operations and Methods), Links, Associations and Advanced Concepts (General Concepts, Multiplicity, Link Attributes, Association as a Class, Roll names, Ordering, Qualification, Aggregation).	06	10
Course Outcome ITF508-2 Illustrate the activities in the object-oriented design process			
3	Object Modelling 3.1 Generalizations and Inheritance, Grouping Constructs. 3.2 Aggregation verses Association And Generalization, Recursive Aggregates and Propagation of Operations. 3.3 Abstract Classes, Multiple Inheritance, Metadata, Candidate Keys, Constraints	08	12
4	Dynamic & Functional Modelling 4.1 Events, states, operations, concurrency, nested state diagrams, advanced dynamic 4.2 Modelling concepts, relation of object and dynamic models 4.3 DFD, relation of functional to object and dynamic Models	08	12
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

SECTION II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
<i>Course Outcome ITF508-3 Draw UML Diagram for given problem.</i>			
5	Overview Of UML 5.1 Efforts of standardization / Integration, OMG approval for UML, Scope of UML, Conceptual model of UML, Architectural –Meta model, Unified Software Development Lifecycle. 5.2 Introduction to UML Diagrams	06	10
<i>Course Outcome ITF508-4 Describe structural modeling diagrams and behavioral modeling.</i>			
6	UML – Structural Modelling 6.1 Advanced Class Diagrams: - Advanced Classes and Relationships, Interfaces, Types and Roles, Packages, Instances. Object Diagrams. 6.2 Component Diagrams: Terms and Concepts, Common modelling techniques. Deployment Diagrams: Terms and Concepts, Common modelling techniques.	06	12
7	UML—Behavioral Modelling 7.1 Use case diagram: Terms and Concepts, Modelling techniques. 7.2 Interaction diagram (Sequence and collaboration diagram): Terms and Concepts, Modelling techniques. 7.3 State chart diagram: Terms and Concepts, Modelling techniques. 7.4 Activity diagram: Terms and Concepts, Modelling techniques.	12	18
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt question.			

Topic No.	Name of topic	Distribution of marks (level-wise)			Course Outcome	Total Marks
		Remember	Understand	Application		
1	Introduction	02	02	02	ITF508-1	06
2	Object modelling	04	04	02	ITF508-2	10
3	Concept of OOP	04	04	04	ITF508-3	12
4	Dynamic & Functional modelling	06	04	02	ITF508-4	12
5	Overview of UML	04	02	04	ITF508-5	10
6	UML Structural Modelling	06	04	02	ITF508-6	12
7	UML Behavioural Modelling	04	06	08	ITF508-6	18
TOTAL		30	26	24		80

Specification table for setting question paper for semester end theory examination

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

B) TERM WORK

Laboratory experiments and related skills to be developed :

Sr. No.	Title of Experiment	Skills to be developed	Course outcome
1.	Introduction	1. Analyze and Design the UML diagrams for - ATM System - Railway Reservation System - Library Management System.	ITF508-1
2.	Implementation	1. To be able to apply different logics to solve given problem.	ITF508-2
3.	Implementation	1. To be able to write program using different implementations for the same problem	ITF508-3
4.	Development	1. Understanding different steps to develop program such as Problem definition, Analysis, Design of logic Coding & Testing	ITF508-4 TO ITF508-6
5.	Maintenance of program	1. Study of Maintenance (Modifications, error corrections, making changes etc.)	ITF508-6

ASSESSMENT CRITERIA FOR TERM WORK AND PRACTICAL EXAMINATION**a) Criteria for Continuous Assessment of Practical work and Progressive skill Test:**

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	10
2	Preparedness for practical& neat & complete Diagram.	10
3	Observations & computer handling skill	10
4	Logical thinking and approach	10
5	Oral Based on Lab work and completion of task	10
TOTAL		50

Assessment at semester end practical exam as per Pro-forma I.

b)Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1.	Technical ability	10
2.	Communication skill	10
3.	Logical approach	05
	TOTAL.	25

INSTRUCTIONAL STRATEGIES:

1. Lectures and discussions.
2. Laboratory experiences and laboratory interactive sessions.
3. Time bound assignments.
4. Group tasks

Teaching and Learning resources:

1. Books
2. Transparencies
3. Power Point Presentation
4. Self-learning

REFERENCE MATERIAL:**a) Books / Codes**

Sr. No.	Author	Title	Publisher
1.	Rumbaugh, Blaha	Object Oriented Modelling and Designing (Refer for 1,2,3,4 Chapter)	Pearson Prentice Hall
2.	Booch, Jacobson, Rumbaugh	The UML User Guide (Addison Wesley)	Pearson Education India
3.	Mark Paestly	Practical OOD with UML – . (Refer for 5, 6 and 7 Chapter)	Tata McGraw Hill
4.	Kahate (TMH)	Object oriented Analysis & design	Tata McGraw Hill

b) References:

1. <http://uml.tutorials.tireme.com/>
2. http://pigseye.kennesaw.edu/~dbraun/csis4650/A&D/UML_tutorial/
3. <http://www.smartdraw.com/tutorials/software-uml/uml.htm>
4. <http://www-db.stanford.edu/~burback/watersluice/node55.html>

COURSE ID:37 (C)

Course Name : Mobile Application Development
Course Code : ITF509
Course Abbreviation : FMAD

TEACHING AND EVALUATION SCHEME :

Pre-requisite Course(s) : <nil >

Teaching Scheme:

Scheme component	Hours / week	Credits
Theory	03	05
Practical	02	

Evaluation Scheme:

Mode of Evaluation	Progressive Assessment		Term End Examination			Total
	Theory	Practical	Theory Examination	Term Work	Practical Examination (Internal)	
Details of Evaluation	Average of two tests of 20 marks each	i.25 marks for each practical ii.One PST of 25 marks	Term End Theory Exam (03 hours)	--	As per Proforma-II	
Marks	20	--	80	--	50	150

RATIONALE:

The aim of the subject is to teach the development of android mobile applications. The subject helps the students to design and create the innovative mobile apps using android development tools. The subject is practical oriented and covers the basic terminology and functionality required for developing mobile applications.

COMPETENCY :Design android mobile application.

Cognitive: i)Understand Android Architecture and tools used for developing android applications.
ii) Design Android Mobile Applications.

Psychomotor: i) Create Android Mobile Applications using Android Development Tools.

Affective: Attitude of i) precision ii) accuracy iii) punctuality iv)aesthetic presentation

COURSE OUTCOMES:

ITF509-1 Explain Android Architecture and Features of Android.

ITF509-2 Describe Android Application Components.

ITF509-3 Explain Android Activities and Intents.

ITF509-4 Use layouts used for Android User Interface.

ITF509-5 Design Android User Interfaceusing views.

ITF509-6 Create Android Application using content providers.

COMPETENCY, COURSE OUTCOMES AND PROGRAMME OUTCOMES (CP-CO-PO) MATRIX

[Note: Correlation levels: 1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), “-” : no correlation]

Competency and COs	Programme Outcomes POs and PSOs										PSO1 Design and Development	PSO2 Networking and database management
	PO 1 Basic knowledge	PO 2 Discipline knowledge	PO 3 Experiments and practice	PO 4 Engineering Tools	PO 5 The engineer and society	PO 6 Environment and sustainability	PO 7 Ethics	PO 8 Individual and team work:	PO 9 Communication	PO 10 Life-long learning		
Competency: Design android mobile application.	-	3	3	2	-	-	-	2	-	2	3	2
ITF509-1 Explain Android Architecture and Features of Android	-	3	3	3	-	-	-	2	-	2	3	1
ITF509-2 Describe Android Application Components.	-	3	2	2	-	-	-	2	-	2	3	1
ITF509-3 Explain Android Activities and Intents.	-	3	3	3	-	-	-	2	-	2	3	1
ITF509-4 Use layouts used for Android User Interface	-	3	3	3	-	-	-	2	-	2	3	1
ITF509-5 Design Android User Interface using views.	-	3	3	3	-	-	-	3	-	2	3	1
ITF509-6 Create Android Application using content providers.	-	3	3	3	-	-	-	2	-	2	3	3

CONTENT:**THEORY :****Section I**

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF509-1: Explain Android Architecture and Features of Android			
1	Introduction to Android Programming 1.2 What is android 1.1.1 Android versions 1.1.2 Features of Android 1.2 Architecture of Android 1.3 Android devices in the market 1.4 Obtaining required tools(JDK, Eclipse, Android SDK,ADT) 1.5 Creating Android application 1.5.1 Steps for Creating basic android application 1.5.2 Execution process of android application	10	14
Course Outcome ITF509-2: Describe Android Application Components.			
2.	Android Framework Overview 2.1 Foundation of OOP: Object, Class, Inheritance, Interface. 2.2 An Overview of XML 2.3 Anatomy of an android application 2.4 Android Application components 2.4.1 Android Activities 2.4.2 Android Services 2.4.3 Broadcast Receivers 2.4.4 Content Provider 2.5 Android Intent Object 2.6 Android Manifest XML	08	12
Course Outcome ITF509-3: Explain Android Activities and Intents.			
3	Activities ,Intents and Intent Filters 3.1 Understanding activities 3.1.1 Activity class events 3.1.2 Activity lifecycle 3.2 The Context Object 3.3 What is Intent? 3.4 Android Intent Messaging via Intent Object 3.5 Intent Resolution: Implicit Intent and Ecplcit Intent 3.6 Using Intents with Activities	06	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
	3.7 Android Services: Data Processing in its own class		
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Section II

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF509-4: Use layouts used for Android User Interface			
4	<p style="text-align: center;">Android User Interface</p> <p>4.1 Understanding components of screen</p> <p style="padding-left: 40px;">4.1.1 Views and ViewGroups</p> <p style="padding-left: 40px;">4.1.2 LinearLayout</p> <p style="padding-left: 40px;">4.1.3 AbsoluteLayout</p> <p style="padding-left: 40px;">4.1.4 TableLayout</p> <p style="padding-left: 40px;">4.1.5 RelativeLayout</p> <p style="padding-left: 40px;">4.1.6 FrameLayout</p> <p style="padding-left: 40px;">4.1.7 ScrollView</p> <p>4.2 Adapting to display orientation</p> <p style="padding-left: 40px;">4.2.1 Anchoring Views</p> <p style="padding-left: 40px;">4.2.2 Resizing Repositioning</p> <p>4.3 Managing changes to screen orientation</p> <p>4.4 Persisting State information during changes in configuration</p> <p>4.5 Listing for UI notification</p> <p style="padding-left: 40px;">4.5.1 Overriding activity methods</p>	08	14

Sr. No.	Topics / Sub-topics	Lectures (Hours)	Theory Evaluation (Marks)
Course Outcome ITF509-5: Design Android User Interface using views.			
5	Designing User Interface Using views 5.1 Basic Views 5.1.1 TextView and Edit Text 5.1.2 Button and Image Button 5.1.3 CheckBox and ToggleButton 5.1.4 RadioButton and RadioGroup 5.2 Picker View 5.2.1 TimePicker View 5.2.2 DatePicker View 5.3 List View 5.3.1 ListView View 5.3.2 Spinner View 5.4 Using Image View and Gallery View 5.5 Using Menus with Views 5.5.1 Option Menu 5.5.2 Context Menu	06	12
Course Outcome ITF509-6: Create Android Application using content providers.			
6	Understanding Content Providers 6.1 An Overview of Android Content Provider 6.2 Databases and Database Management System 6.3 Android Built-In Content Providers 6.3.1 Contacts Database Content Provider 6.3.2 Android MediaStore Content Provider 6.4 Defining a Content Provider 6.5 Defining Security Permissions 6.6 Working With Database 6.6.1 Accessing The Content 6.6.2 Adding New Content	06	14
	Total	24	40
Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.			

Specification table for setting question paper for semester end theory examination :

Topic No.	Name of topic	Distribution of marks (Cognitive level-wise)			Course Outcome	Total Marks
		Remember	Understand	Application		
1	Introduction to Android Programming	04	04	06	ITF509-1	14
2	Android Framework Overview	04	06	02	ITF509-2	12
3	Activities, Intents and Intent Filters	04	04	06	ITF509-3	14
4	Android User Interface	04	04	06	ITF509-4	14
5	Designing User Interface using views	04	02	06	ITF509-5	12
6	Understanding Content Provider	04	04	06	ITF509-6	14
TOTAL		24	24	32		80

Semester end exam question paper should be such that total marks of questions on each topic is one and half times the marks allotted above but the candidates are able to attempt questions of the above allotted marks only.

Laboratory experiences and related skills developed.

Sr. no	Laboratory experience	Skills developed	CO
1	Introduction to Android Programming	1) Install and Setup Android studio. 2) Create Basic Hello World Android Application	ITF509-1
2	Simple Calculator Application	Create basic calculator application	ITF509-2
3	Understand Activities	1) Understand Life Cycle of Activity 2) Applying Styles and themes to activity 3) Displaying a dialog window using an activity 4) Displaying a progress dialog window using an activity.	ITF509-3
4	Implicit Intent	1) Create android application that will show the working of implicit Intent. 2) Calling built in application using intents.	ITF509-3
5	Explicit Intent	Create android application that will show the working of explicit intent.	ITF509-3
6	Understanding components of screen	Design Android user interface that use linear layout, absolute layout, relative layout, frame layout and scroll view	ITF509-4
7	Basic views	Design android user interface that will use the all basic views like text view, button, image view, radio button, radio group,	ITF509-5

		check box.	
8	Picker View and List View	Design android user interface that use picker view and list view.	ITF509-5
9	Using image view and gallery view.	Design android user interface that use image view and gallery view.	ITF509-5
10	Using Menus with views	Design android user interface that use option menu and context menu.	ITF509-5
11	Content Provider	4) Study of ways to create Android application using database. 5) Implement android application that create database, insert values to the database, access values from database and delete the values from database.	ITF509-6

Criteria for Continuous Assessment of Practical work and Progressive Skill Test:

Sr. no	Criteria	Marks allotted
1	Attendance at regular practical	05
2	Preparedness for practical	05
3	Correct figures / diagrams	05
4	Logical Thinking and Approach	05
5	Application	05
	Total	25

Criteria for assessment at semester end practical exam:

Sr. no	Criteria	Marks allotted
1	Technical Ability	15
2	Logical Approach	10
3	Presentation	15
4	Applications	10
	Total	50

Assessment at semester end practical exam as per Pro-forma II.

Instructional strategies:

4. Lectures and discussions.
5. Laboratory experiences and laboratory interactive sessions.
6. Time bound assignments.

Teaching and Learning resources, including references:

5. Chalk-board.
6. Transparencies
7. Presentation Slides
8. Demonstrative video files

Books:

Sr.No	AUTHOR	TITLE	PUBLICATION
1	Wei-Meng Lee	Beginning Android Application Development	Wrox
2	Wallace Jackson	Android apps for Absolute Beginners Second Edition	Apress
3	ChryssaAliferi	Android Programming Cookbook	JCG
4	Kevin Grant, Chris Haseman	Beginning android programming	Peachpit press

b) Websites

- ✓ www.tutorialspoint.com
