

VISION, MISSION AND QUALITY POLICY OF THE COLLEGE

VISION

Kovai Kalaimagal College of Arts and Science shall inspire and guide students to acquire knowledge, develop skill and a positive attitude that will enhance their personality, providing self-confidence to face the competitive world.

MISSION

- To strive for excellence in academics.
- To inculcate a positive attitude and to develop skill in students, to meet the challenges of the competitive world.
- To develop self-confidence through adequate inter-action and relevant exposure.
- To promote ethical and social values in the students.
- To identify and encourage talents in academics and sports by rewarding them with scholarships.

QUALITY POLICY

“KKCAS shall provide value-based education to its students for continual improvement in their academic performance, enhancing their competency for higher education and employment.”

VISION, MISSION AND OBJECTIVES OF THE DEPARTMENT

VISION

The department of Information Technology to attain a status of excellence by producing adequately knowledgeable, technically strong, emotionally sound and socially responsible persons to cater to the demands of the industry and society .

MISSION

1. To make the students conversant with the technical concepts.
2. To provide adequate knowledge through structured Curriculum designed with the inputs of Industry, Alumni, Subject Experts and students.
3. To devise suitable training programmes to train the students in the technical and other skills as per expectations of the industry.
4. To arrange for programmes which would instil in the minds of students human values and a sense of responsibility towards society
5. To produce ethically and professionally responsible graduates through balanced curriculum.
6. To create a learning environment that motivates the students to have a thirst for knowledge through life long learning.

OBJECTIVES OF THE DEPARTMENT

1. To make the students to have a thorough understanding of the basic concepts in the field of Information Technology.
2. To arrange for a number of seminars and guest lectures which would enhance the knowledge of students in the recent advances in the field of Information Technology.
3. To take the students to industries to make them have first hand knowledge on the application of the softwares.
4. To train the students in the development of softwares for solving certain simple problems.
5. To provide training for the development of softskills so as to make the students employable.

GRADUATE ATTRIBUTES

Our Graduates to possess

- 1)Communication skills
- 2)In-depth domain knowledge
- 3)Technical skills
- 4)Knowledge Inter-disciplinary in nature
- 5)Positive attitude
- 6)Critical thinking and problem solving skills
- 7)Dynamism and team building skills
- 8)Professional ethics and social values
- 9)Self-awareness and emotional intelligence
- 10)Entrepreneurship qualities
- 11)Responsibility towards Society and environment
- 12)Thirst for knowledge through life long learning

PROGRAMME EDUCATIONAL OBJECTIVES AND PROGRAMME OUTCOME

PROGRAMME EDUCATIONAL OBJECTIVES

PEO1: Graduates would be ideal IT professionals carrying out their tasks with professionalism and professional Ethics.

PEO2: Graduates would have become entrepreneurs in their own capacity.

PEO3: Graduates would be pursuing research programmes in order to contribute to the ever changing IT industry with innovative products.

PROGRAMME OUTCOMES

After completion of three years of study, our B.Sc IT Graduates will be able to :

PO1: Exhibit proficiency in oral and written communication.

PO2: Learn the principles and applications of various languages, processes involved, and acquire adequate knowledge to write programmes using the above.

PO3: Acquire Technical skills such as developing softwares for various applications, Testing them and providing information security.

PO4: Acquiring adequate knowledge in interdisciplinary subjects such as Commerce, Mathematics and Statistics for enhanced applications of softwares developed.

PO5: Developing positive attitude by instilling confidence in the minds of students by suitable programs.

PO6: An ability to make the students think out of the box and solve complex problems arising in step floor situation.

PO7: An ability to function effectively and pro actively and in teams ,to accomplish a common goal.

PO8: Carrying out the task assigned by the industries with professional ethics and at the same time with the consent for well being of the society.

PO9: Aware of one's own weaknesses and strengths, emotions and the way to control emotions to maintain good interpersonal relationships.

PO10: Undertake entrepreneurship as a desirable and feasible career option.

PO11: Realizing the responsibilities towards the society and to protect the environment, use ones professional knowledge for providing better living condition to the people.

PO12: Learn continuously for updating new knowledge and technologies in the field of Information Technology.

MAPPING OF GRADUATE ATTRIBUTES WITH PROGRAMME OUTCOMES

S.No.	GRADUATES ATTRIBUTES	PROGRAM OUTCOME
1	Communication skills	Exhibit proficiency in oral and written communication.
2	In-depth domain knowledge	Learn the principles and applications of various languages, processes involved, and acquire adequate knowledge to write programmes using the above.
3	Technical skills	Acquire Technical skills such as developing softwares for various applications, Testing them and providing information security.
4	Knowledge Inter-disciplinary in nature	Acquiring adequate knowledge in interdisciplinary subjects such as Commerce, Mathematics and Statistics for enhanced applications of softwares developed.
5	Positive attitude	Developing positive attitude by instilling confidence in the minds of students by suitable programs.
6	Critical thinking and problem solving skills	An ability to make the students think out of the box and solve complex problems arising in shop floor situation.
7	Dynamism and team building skills	An ability to function effectively and pro actively and in teams ,to accomplish a common goal.
8	Professional ethics and social values	Carrying out the task assigned by the industries with professional ethics and at the same time with the consent for well being of the society.
9	Self-awareness and emotional intelligence	Aware of one's own weaknesses and strengths, emotions and the way to control emotions to maintain good interpersonal relationships.
10	Entrepreneurship qualities	Undertake entrepreneurship as a desirable and feasible career option.
11	Responsibility towards Society and environment	Realizing the responsibilities towards the society and to protect the environment, use ones professional knowledge for providing better living condition to the people.
12	Thirst for knowledge through life long learning	Learn continuously for updating new knowledge and technologies in the field of Information Technology.

KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE
(An Autonomous Institute Affiliated to Bharathiar University)
Re - accredited with “A” grade by NAAC
Regulations for Undergraduate Programmes
(Under Choice Based Credit System)
(Effective from 2018 – 2019)

1. REGULATIONS

This regulation is effective from the academic year 2018 -2019.

1.1. Eligibility for Admission

Course	Eligibility Condition
B.Sc IT	A pass in higher secondary course. Preference will be given to those who have studied Mathematics as one of the subjects.

1.2. Duration and Course of Study

Three Academic years with six semesters, the duration of the first, third and fifth Semesters from June to November and the second, fourth and sixth Semesters from December to April. The duration of each semester is 90 working days.

1.3. The Medium of Instruction and Examinations

The medium of instruction and examinations shall be English.

1.4. Requirements for Attendance

- a) A candidate will be permitted to take the examination for any semester, if he/she secures not less than 75% of attendance out of the 90 working days during the semester.
- b) A candidate who has secured attendance less than 75% but 65% and above shall apply with the prescribed fee for the condonation of lack of attendance. On the recommendation of the Principal, he/she will be permitted to take up the examination.
- c) A candidate who has secured attendance less than 65% but 55% and above in any semester, will be permitted to continue the course but will not be permitted to appear for the examination in the current papers. However he/she will be permitted to appear for the examination in the papers in which he/she has arrears. He/she will have to compensate the shortage of attendance in the subsequent semester and take the examination in the papers of both the semester together.
- d) A candidate who has secured less than 55% of attendance in any semester will not be permitted to take the regular examinations and to continue the study in the subsequent semester. He/she has to re-do the course by rejoining in the semester in which the attendance is less than 55%.

- e) A candidate who has secured less than 65% of attendance in the final semester has to compensate his / her attendance shortage in a manner to be decided by the Head of the Department concerned after rejoining the course.

1.5 Restriction to take the Examinations

- a) Any candidate having arrear paper(s) shall have the option to take the examinations in any arrear paper(s) along with the subsequent regular semester papers.
- b) Candidates who fail in any of the papers shall pass the paper(s) concerned within five years from the date of admission to the said course. If they fail to do so, they shall take the examination in the revised text / syllabus, if any, prescribed for the immediate next batch of candidates. If there is no change in the text / syllabus they shall take the examination in that paper with the syllabus in vogue, until there is a change in the text or syllabus.
- c) In the event of removal of that paper consequent to the change of regulations and / or curriculum after a five year period, the candidates shall have to take up an equivalent paper in the revised syllabus as suggested by the chairman and fulfill the requirements as per regulations/curriculum for the award of the degree.

1.6 The Evaluation System

The major objective of the institution's evaluation system is to motivate all students to excel in their performance. The students' performance is continually assessed through Continuous Assessment (CIA) and End Assessment (EAE). The CIA, EAE break up for theory papers is 25:75 and practical is 40:60.

1.6.1. Break Up of Continuous Internal Assessment (CIA) Marks

Theory (Languages, English, Core, Allied and Elective)

Content	Marks Awarded
Continuous Internal Assessment Test I	05
Continuous Internal Assessment Test II	05
Model Examination	10
Assignment (2 Numbers)	05
Total	25

Theory (Communication Skills, Mathematics for Competitive Examinations and Aptitude & Soft Skills) #

Content	Marks Awarded
Continuous Internal Assessment Test I	25*
Continuous Internal Assessment Test II	
End Semester Assessment	25
Total	50

*Test I and Test II will be evaluated for 25 marks each and the average of these two will be considered.

Internal Evaluation only.

Practical

Content	Marks Awarded (Max Marks: 100)	Marks Awarded (Max Marks: 50)
Minimum ten Experiments / Practical Paper / Semester	20	05
Continuous Internal Assessment Test	05	05
Model Exam	10	05
Record Note Book	05	05
Total	40	20

Project Viva Voce

Content	Marks Awarded
Review and content Presentation (3 Reviews)(3*20)	60
Project Report	20
Total	80

1.6.2. End Assessment Examinations (EAE)

1. Semester examination will be conducted at the end of each semester after completing a minimum of 90 working days.
2. End Assessment Examination for the odd semester will generally be held during November and even semester during April.
3. The question papers for all the courses will be set by the external examiners.
4. The examinations for Language, English, Core, Allied and Elective will be conducted for a maximum of 75 marks for three hours. The passing minimum is 40% (30 out of 75 marks) and overall passing minimum putting the CIA and EAE marks together will be 40%.

5. Question Paper Pattern: (Languages, English, Core, Allied and Elective)

Part A	20 Marks	10 Questions - 2 Marks each – Descriptive type
Part B	25 Marks	5 Questions- 5 Marks each – either or type.
Part C	30 Marks	3 Questions out of five questions - 10 Marks each.
Total	75 Marks	

6. The exams for Value Based Education & Non Major Elective will be conducted for a maximum of 50 marks for three hours. The passing minimum is 40% (20 out of 50 marks).

7. Question Paper Pattern: (Value Based Education & Non Major Elective)

Part A	50 Marks	5 Questions - either or type of question - 10 Marks each
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8. Question paper pattern : (Extra Credit Courses)

Part A	40 Marks	5 Questions- 8 Marks each – either or type.
Part B	60 Marks	5 Questions- 12 Marks each – either or type.
Total	100 Marks	

9. The marks secured in the extra credit course will get reflected in the mark sheet only if the candidate has secured 40% marks and above.

10. The students will be allowed to choose only two papers per semester under the extra credit courses from third semester onwards.

11. Practical

Content	Marks Awarded (Max Marks: 100)	Marks Awarded (Max Marks: 50)
Program - 1	20	10
Program - 2	20	10
Viva voce	10	05
Record	10	05
Total	60	30

12. Project Viva Voce

The evaluation for the end semester examination should be as per the norm given below:

Content	Marks Awarded
Viva Voce	20
Total	20

13. The students who have opted for the Languages other than Tamil in part-I should undergo Basic Tamil Course during the year of the study as a non-credit course for which there would be only Internal Evaluation.
14. For all the Non-Credit courses result would be indicated as “Pass” or “Re-Appearence” and not by marks or Grades secured in the Grade Sheet.
15. There will be one independent valuation for all theory papers under Parts I,II & III by external examiner.
16. A candidate may request for re-totalling/revaluation of his/her answer script by submitting an application addressing to the Controller of Examination through the Principal, paying the prescribed fee. This provision is available for all theory papers taken in the EAE. However there is no provision for revaluation of Practical papers.
17. Candidates desirous of improving the marks awarded in a passed subject in their first attempt shall reappear once within a period of subsequent two semesters. The improved marks shall be considered for classification but not for ranking. When there is no improvement, there shall not be any change in the original marks already awarded.
18. Supplementary examination will be conducted for the benefit of final year students after 15 days of the declaration of the final semester results. Candidate who has arrears in any semester subject to a maximum of three papers can appear for the supplementary exam conducted after the final semester.

1.7 Grading

The following table gives the marks, grade points, letter grades and classification to indicate the performance of the candidate.

Conversion of Marks to Grade Points and Letter Grades (Performance in a Course/Paper)

Range of Marks	Grade Points	Letter Grade	Description
90-100	9.0-10.0	O	Outstanding
80-89	8.0-8.9	D+	Excellent
75-79	7.5-7.9	D	Distinction
70-74	7.0-7.4	A+	Very Good
60-69	6.0-6.9	A	Good
50-59	5.0-5.9	B	Above Average
40-49	4.0-4.9	C	Average
00-39	0.0	U	Re - Appearance
ABSENT	0.0	AB	Absent

C_i = Credits earned for course i in any semester

G_i = Grade Point obtained for course i in any semester

n = refers to the semester in which such course were credited

For a Semester:

$$\text{GRADE POINT AVERAGE [GPA]} = \frac{\sum_i C_i G_i}{\sum_i C_i}$$

Sum of the multiplication of grade points by the credits of the courses

$$\text{GPA} = \frac{\text{-----}}{\text{-----}}$$

Sum of the credits of the courses in a semester

For the Entire Programme:

$$\text{CUMULATIVE GRADE POINT AVERAGE [CGPA]} = \frac{\sum_n \sum_i C_{ni} G_{ni}}{\sum_n \sum_i C_{ni}}$$

Sum of the multiplication of grade points by the credits of the entire programme

$$\text{CGPA} = \frac{\text{-----}}{\text{-----}}$$

Sum of the credits of the courses of the entire programme

CGPA	Grade	Classification of Final Result
9.0 and above up to 10.0	O+	First Class – Exemplary*
9.0 and above but below 9.5	O	
8.5 and above but below 9.0	D++	First Class with Distinction*
8.0 and above but below 8.5	D+	
7.5 and above but below 8.0	D	
7.0 and above but below 7.5	A++	First Class
6.5 and above but below 7.0	A+	
6.0 and above but below 6.5	A	
5.5 and above but below 6.0	B+	Second Class
5.0 and above but below 5.5	B	
4.5 and above but below 5.0	C+	Third Class
4.0 and above but below 4.5	C	
0.0 and above but below 4.0	U	Re – Appearance

Classification of Successful candidates

A candidate who passes all the examinations in Part I to Part IV securing following CGPA and Grades shall be declared as follows for each part:

CGPA	Grade	Classification of Final Result
9.5 and above up to 10.0	O+	First Class – Exemplary*
9.0 and above but below 9.5	O	
8.5 and above but below 9.0	D++	First Class with Distinction*
8.0 and above but below 8.5	D+	
7.5 and above but below 8.0	D	
7.0 and above but below 7.5	A++	First Class
6.5 and above but below 7.0	A+	
6.0 and above but below 6.5	A	
5.5 and above but below 6.0	B+	Second Class
5.0 and above but below 5.5	B	
4.5 and above but below 5.0	C+	Third Class
4.0 and above but below 4.5	C	
0.0 and above but below 4.0	U	Re-Appearence

*** The candidates who have passed in the first appearance and within the prescribed semester of the Programme (Major, Allied and Elective Course alone) are eligible.**

1.8 Course Completion

Students shall complete the programme within a period not exceeding three years for UG courses from the date of admission.

SCHEME OF EXAMINATION AND PROGRAMME STRUCTURE
B.Sc Information Technology (2018 – 2021)

Part	Sub Code	Study Components	Hrs/ week	CIA	Ext	Total	Credits
Semester-I							
I	18U1TALT01	Language 1 : Paper I	5	25	75	100	3
II	18U1ENLT01	Language 2 : Functional English I	5	25	75	100	3
III	18U1ITCT01	Core 1: C Programming with Problem Solving Techniques	5	25	75	100	4
	18U1ITCT02	Core 2: Digital Fundamentals and Architecture	5	25	75	100	4
	18U1ITCP03	Core 3: C Programming-Practical	4	40	60	100	3
	18U1ITAT01	Allied 1: Numerical Methods and Statistics	5	25	75	100	4
IV	18U1VBET01	Value Based Education 1: Environmental Studies**	2	-	50	50	2
	18U1SBST01	Skill Based Subject 1 : Mathematics for Competitive Examinations -I	2	50	-	50	2
		Sports	2	-	-	-	-
		Library Work	1	-	-	-	-
Total Credits							25
Semester-II							
I	18U2TALT02	Language 1 : Paper II	5	25	75	100	3
II	18U2ENLT02	Language 2 : Functional English II	5	25	75	100	3
III	18U2ITCT04	Core 4: C++ Programming	5	25	75	100	4
	18U2ITCT05	Core 5: Data Structures	4	25	75	100	4
	18U2ITCP06	Core 6: C++ Programming- Practical	5	40	60	100	3
	18U2ITAT02	Allied 2: Discrete Mathematics	5	25	75	100	4
IV	18U2VBET02	Value Based Education 2: Ethics and Culture **	2	-	50	50	2
	18U2SBST02	Skill Based Subject 2 : Mathematics for Competitive Examinations -II	2	50	-	50	2
		Sports	2	-	-	-	-
	Library Work	1	-	-	-	-	
Total Credits							25
Semester-III							
III	18U3ITCT07	Core 7: Operating Systems	5	25	75	100	4
	18U3ITCT08	Core 8: Java Programming	5	25	75	100	4
	18U3ITCT09	Core 9: Microprocessor and ALP	6	25	75	100	4
	18U3ITCP10	Core 10: Java Programming - Practical	6	40	60	100	3
	18U3ITAT03	Allied 3: Operations Research	5	25	75	100	4
IV	18U3NMET01	Non Major Elective 1: Food Science and Nutrition	2	-	50	50	2
	18U3SBST03	Skill Based Subject 3: Mathematics for Competitive Examinations -III	2	50	-	50	2
	18U3SBST04	Skill Based Subject 4: Communication Skills -I	2	50	-	50	2
	18U3BTLT01	Non Credit Course 1: Basic Tamil-I #	-	-	-	-	-
	Sports	2	-	-	-	-	
	Library Work	1	-	-	-	-	
Total Credits							25

Semester-IV							
III	18U4ITCT11	Core 11: Computer Graphics	5	25	75	100	4
	18U4ITCT12	Core 12: System Analysis and Design	6	25	75	100	4
	18U4ITCT13	Core 13: Data Communication and Computer Networks	5	25	75	100	3
	18U4ITCP14	Core 14: Computer Graphics - Practical	6	40	60	100	3
	18U4ITAT04	Allied 4: Business Accounting	5	25	75	100	4
IV	18U4NMET0	Non Major Elective 2: Floriculture	2	-	50	50	2
	18U4SBST05	Skill Based Subject 5: Mathematics for Competitive Examinations -IV	2	50	-	50	2
	18U4SBST06	Skill Based Subject 6: Communication Skills -II	2	50	-	50	2
	18U4BTLT02	Non Credit Course 2 : Basic Tamil-II #	-	-	-	-	-
	Sports	2	-	-	-	-	
	Library Work	1	-	-	-	-	
Total Credits							24
Semester-V							
III	18U5ITCT15	Core 15: ASP .Net and C#	5	25	75	100	4
	18U5ITCT16	Core 16: PHP and MySQL	5	25	75	100	4
	18U5ITCP17	Core 17: ASP. Net and C# - Practical	6	40	60	100	4
	18U5ITCP18	Core 18: PHP and MySQL - Practical	6	20	30	50	3
		Elective 1:	4	25	75	100	3
		Elective 2:	4	25	75	100	3
IV	18U5NCCT01	Non Credit Course 3 : Aptitude and Soft Skills - I	3	-	-	-	-
		Sports	2	-	-	-	-
		Library Work	1	-	-	-	-
Total Credits							21
Semester-VI							
III	18U6ITCT19	Core 19: Software Testing	5	25	75	100	4
	18U6ITCT20	Core 20: Operations of E-Wallet and Information Security	6	25	75	100	3
	18U6ITCP21	Core 21: Software Testing -Practical	5	20	30	50	3
	18U6ITCV22	Core 22: Project and Viva Voce	6	80	20	100	4
		Elective 3:	4	25	75	100	3
		Elective 4:	4	25	75	100	3
IV	18U6NCCT02	Non Credit Course 4 : Aptitude and Soft Skills -II	3	-	-	-	-
		Sports	2	-	-	-	-
		Library Work	1	-	-	-	-
Total Credits							20
Total Marks						3800	140

****** Answers to the questions may also be given in Tamil.

The students who have not studied Tamil in Higher Secondary Course and not opted for Tamil under Language I in the Degree programme have necessarily to study Basic Tamil for 2 hours/week during III & IV Semesters after their regular College working hours.

Project and Viva Voce:

Project Work carries 100 marks with 4 credits . The breakup of marks will be as follows:-

Internal assesment :80 Marks (60 Marks for 3 reviews and 20 Marks for Record) and External Assesment : 20 Marks (Viva Voce)

List of Electives		
	Sub Code	Subjects
Elective 1	18U5ITET1A	Data Mining and Warehousing
	18U5ITET1B	Internet of Things
	18U5ITET1C	Enterprise Resource Planning
Elective 2	18U5ITET2A	Web Technology and its Applications
	18U5ITET2B	Inter Networking with TCP/IP
	18U5ITET2C	Software Project Management
Elective 3	18U6ITET3A	Artificial Intelligence and Expert System
	18U6ITET3B	Software Engineering
	18U6ITET3C	Mobile and Wireless Technology
Elective 4	18U6ITET4A	Compiler Design
	18U6ITET4B	Mobile Operating System
	18U6ITET4C	Cloud Computing

EXTRA CREDIT COURSES		
Course Code	Subjects	Credits
2018ECC001	சுற்றுலா வளர்ச்சி	2
2018ECC002	இதழியல் கலை	2
2018ECC003	நாட்டுப்புறவியல்	2
2018ECC004	கணிப்பொறியில் தமிழ்	2
2018ECC005	தமிழக வரலாறும் மக்கள் பண்பாடும்	2
2018ECC006	தமிழ் இலக்கிய வரலாறு	2
2018ECC007	New Media	2
2018ECC008	Proofreading And Copyediting	2
2018ECC009	Personality Development	2
2018ECC010	Technical Writing	2
2018ECC011	An Introduction To Psychology	2
2018ECC012	Astronomy	2
2018ECC013	Fuzzy Mathematics	2
2018ECC014	Operation Research	2
2018ECC015	Mathematics For Professional Courses	2
2018ECC016	Multimedia And Its Applications	2
2018ECC017	Management Information System	2
2018ECC018	Theory Of Computation	2
2018ECC019	Oops With Java Programming	2
2018ECC020	Programming In C	2
2018ECC021	Internet Of Things	2
2018ECC022	Web Technology And Its Applications	2
2018ECC023	Network Security	2
2018ECC024	Mobile And Wireless Technology	2
2018ECC025	Cloud Computing	2
2018ECC026	Cross Culture Management	2
2018ECC027	Indian Economy And Trade Dependencies	2
2018ECC028	Export Marketing	2
2018ECC029	International Trade & Forex	2
2018ECC030	Brand Management	2
2018ECC031	Stress Management	2
2018ECC032	Risk And Insurance In International Trade	2
2018ECC033	Retail Marketing	2
2018ECC034	Export And Import Procedures	2
2018ECC035	Logistics And Supplychain Management	2
2018ECC036	Quality Management	2
2018ECC037	Management Of Small And New Enterprises	2
2018ECC038	Tourism Management	2
2018ECC039	Event Management	2
2018ECC040	Hospitality Management	2
2018ECC041	Consumer Behaviour	2
2018ECC042	Human Resource Management	2
2018ECC043	Principles And Practice Of Marketing Services	2
2018ECC044	Consumer Marketing	2
2018ECC045	Marketing Of Health Services	2
2018ECC046	International Banking	2
2018ECC047	E-Commerce	2
2018ECC048	International Accounting	2
2018ECC049	Corporate Social Responsibility And Governance	2
2018ECC050	Enterprise Resource Planning	2

Curriculum Structure

S.No	Course	No of Papers	Credits
1	Language 1 : Tamil/Hindi/Malayalam/French	2	6
2	Language 2 : English	2	6
3	Core	22	80
4	Allied	4	16
5	Elective	4	12
6	Value Based Education	2	4
7	Skill Based Subject	6	12
8	Non-Major Elective	2	4
9	Non Credit Course	4	-
Total			140

SEMESTER I

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U1TALT01	Title :Language 1: Tamil - I	Batch	2018-2021
			Semester	I
Hrs/week	5		Credits	3

நோக்கம்

- சமூகம் பற்றிய சிந்தனைகளைத் தமிழ்ப் படைப்பிலக்கியங்கள் மூலம் ஏற்படுத்துதல்
- புதுக்கவிதைகள் இ சிறுகதைகள் ஆகியவற்றைப் படிக்க வைத்தல். எழுத வைத்தல்
- போட்டித் தேர்வுகளுக்கு மாணவர்களைத் தயார் செய்தல்

Course Outcome (CO)

CO Number	CO Statement
CO1	தமிழ் மொழியின் வாயிலாக பண்பாடு, பகுத்தறிவு, கலை மற்றும் மரபு முதலியவற்றை அறிந்து வாழ்க்கையில் பயனடைதல்.
CO2	வாழ்வியல் நெறிமுறைகளை உணர்ந்து மனிதநேயத்துடனும் உயர்ந்த குறிக்கோளுடனும் சமுதாயத்தில் மதிக்கத்தக்கவர்களாக இருத்தல்.
CO3	இலக்கியங்களின் வாயிலாக வாழ்க்கை முறைகளைத் தெரிந்து கொள்ளுதல்.
CO4	அறத்தின் வழிநின்று பொருளீட்டி இன்பம் துய்ப்பது உன்னத வாழ்வின் அடிப்படை என்பதை திருக்குறள் மூலம் மாணவர்கள் உணர்தல்.
CO5	நாட்டுப்பற்று, சமூகம், பெண்ணியம் குறித்த விழுமியங்கள் சார்ந்த கவிதைகளும், கருத்து பரிமாற்றத்திறனுக்கு அடிப்படையாக உள்ள இலக்கணப் பகுதியும், தன் சுய சிந்தனையுடன் படைப்பாக்கத்திறனை வளர்த்தெடுக்கும் வகையில் சிறுகதைப்பகுதியும் காலவோட்டத்துடன் இணைந்து மாணவர்களுக்கு சிந்திக்கும் ஆற்றலைப் பெற வழி வகை செய்தல்.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	✓	✓	✓	-	-	-	-	-	✓
CO2	-	-	-	✓	✓	✓	✓	✓	✓	-	✓	✓
CO3	-	-	-	✓	✓	✓	-	-	-	-	-	✓
CO4	-	-	-	✓	✓	✓	-	-	-	-	-	✓
CO5	✓	-	-	✓	✓	✓	✓	✓	✓	✓	-	✓

பாடத்திட்டம்

அலகு – 1 செய்யுள் திரட்டு : மரபுக் கவிதைகள் (15 மணிநேரம்)

1. பாரதியார் - யோகசித்தி (பாரதியார் கவிதைகள்)
2. பாரதிதாசன் - தமிழனுக்கு வீழ்ச்சியில்லை (பாரதிதாசன் கவிதைகள்)
3. கவிமணி - கவிதை (மலரும் மாலையும்)
4. கண்ணதாசன் - ஆதியிலே வார்த்தை இருந்தார் (இயேசு காவியம்)

அலகு – 2 செய்யுள் திரட்டு : புதுக் கவிதைகள் (13 மணிநேரம்)

- | | | |
|----------------------------|---|--|
| 1. புவியரசு | - | கதாநாயகி (ஒரு முக்கிய அறிவிப்பு) |
| 2. அப்துல் ரகுமான் | - | தவறான எண் (ஆலாபனை) |
| 3. வைரமுத்து | - | உன் ஆன்மீகத்தின் அர்த்தம் (கவிராஜன் கதை) |
| 4. சிற்பி பாலசுப்பிரமணியம் | - | கொடும்பாவி சாகாளோ (ஒரு கிராமத்து நதி) |
| 5. கலாப்பிரியா | - | உயிர்த்தெழுதல் (கலாப்பிரியா கவிதைகள்) |
| 6. இளம்பிறை | - | அசதி (முதல் மணிஷி) |

அலகு – 3 சிறுகதைத் தொகுப்பு (20 மணிநேரம்)

- | | | |
|----------------------|---|---|
| 1. புதுமைப்பித்தன் | - | பொன்னகரம் (புதுமைப்பித்தன் சிறுகதைகள்) |
| 2. ஆ.மாதவன் | - | சுசிலாவின் கதை (ஆ.மாதவன் கதைகள்) |
| 3. ஜெயகாந்தன் | - | தேவன் வருவாரா? (தேவன் வருவாரா?) |
| 4. சுஜாதா | - | தர்மு மாமா (விஞ்ஞானச் சிறுகதைகள்) |
| 5. அசோகமித்திரன் | - | அப்பாவின் சிநேகிதர் (அப்பாவின் சிநேகிதர்) |
| 6. வண்ணதாசன் | - | ஆலங்கட்டிமழை (வண்ணதாசன் கதைகள்) |
| 7. நாஞ்சில் நாடன் | - | சூடிய பூ சூடற்க (சூடிய பூ சூடற்க) |
| 8. எஸ்.இராமகிருஷ்ணன் | - | தெரிந்தவர்கள் (எஸ்.இராமகிருஷ்ணன் கதைகள்) |
| 9. வண்ணநிலவன் | - | இரண்டாவது சொர்க்கம்(வண்ணநிலவன் கதைகள்) |
| 10. அம்பை | - | பிளாஸ்டிக் டப்பாவில் பராசக்தி முதலியோர் (காட்டில் ஒரு மான்) |

அலகு – 4 தமிழ் இலக்கிய வரலாறு (15 மணிநேரம்)

1. தமிழ்நாடு அரசுப் பணியாளர் தேர்வாணையம் நடத்தும் போட்டித் தேர்வுக்குரிய பொதுத் தமிழ்ப் பாடத்திட்டம் - ஓர் அறிமுகம்

1. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்
2. சிறுகதையின் தோற்றமும் வளர்ச்சியும்
3. புகழ்பெற்ற தமிழ் நூல்கள், நூலாசிரியர்கள் (சிறுகதை, புதுக்கவிதை) (பார்வை நூல்: தமிழ் இலக்கிய வரலாறு)
4. அடைமொழியால் குறிக்கப்பெறும் நூல்கள் , நூலாசிரியர்கள் (பார்வை நூல்: தமிழ் இலக்கிய வரலாறு)
5. ஆங்கிலச் சொல்லிற்கு இணையான தமிழ்ச் சொல் (பார்வை நூல்: நற்றமிழ் இலக்கணம்)

அலகு – 5 இலக்கணம் (12 மணிநேரம்)

1. வேர்ச்சொல் அறிதல் , அகர வரிசைப்படி சொற்களை மாற்றியமைத்தல்.
2. செய்வினை, செயப்பாட்டுவினை, உடன்பாடு, எதிர்மறை, கலவை வாக்கியங்களும் வாக்கிய வகைகளும்.
3. பெயர் , வினை, இடை, உரிச்சொற்கள்.
4. லகர-ளகர-ழகர, ணகர-னகர – வேறுபாடுகள்.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publisher
1	தமிழ்த்துறை	பொதுத்தமிழ் - I (செய்யுள் திரட்டு , சிறுகதைத் தொகுப்பு)	கோவை கலைமகள் கலை அறிவியல் கல்லூரி

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publisher
1	புலவர் வெற்றியழகன் (தொ.ஆ),	பாரதியார் கவிதைகள்	ராமையா பதிப்பகம், சென்னை.
2	தொ.பரமசிவன் (ப.ஆ)	பாரதிதாசன் கவிதைகள்	நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை.
3	வித்துவான் சிவ கன்னியப்பன்	மலரும் மாலையும்	பூம்புகார் பதிப்பகம், சென்னை.
4	கவியரசு கண்ணதாசன்	இயேசு காவியம்	கலைக்காவிரி பதிப்பகம், திருச்சி.
5	புவியரசு	ஒரு முக்கிய அறிவிப்பு	விஜயா பதிப்பகம், கோவை.
6	அப்துல் ரகுமான்	ஆலாபனை	நேசனல் பப்ளிஷர்ஸ், சென்னை.
7	வைரமுத்து	கவிராஜன் கதை	திருமகள் பதிப்பகம், சென்னை.
8	சிற்பி	ஒரு கிராமத்து நதி	கவிதா பதிப்பகம் சென்னை.
9	கலாப்பிரியா	கலாப்பிரியா கவிதைகள்	தமிழினி பதிப்பகம், சென்னை.
10	இளம்பிறை	முதல் மனுஷி	தமிழ் நெஞ்சம், மயிலாடுதுறை.
11	சுஜாதா	விஞ்ஞானச் சிறுகதைகள்	உயிர்மை பதிப்பகம், சென்னை - 18.
12	புதுமைப்பித்தன்	புதுமைப்பித்தன் கதைகள்	பூம்புகார் பதிப்பகம், சென்னை.
13	முாதவன்	ஆ.மாதவன் கதைகள்	தமிழினி பதிப்பகம், சென்னை.
14	ஜெயகாந்தன்	தேவன் வருவாரா	மீனாட்சி புத்தக நிலையம், மதுரை.
15	அசோகமித்திரன்	அப்பாவின் சிநேகிதர்	நர்மதா வெளியீடு, சென்னை.
16	வண்ணதாசன்	கனிவு	சந்தியா பதிப்பகம், சென்னை
17	நாஞ்சில் நாடன்	சூடிய பூ சூடற்க	தமிழினி பதிப்பகம், சென்னை
18	எஸ்.ராமகிருஷ்ணன்	எஸ்.ராமகிருஷ்ணன் கதைகள்	கிழக்கு பதிப்பகம், சென்னை.
19	வண்ணநிலவன்	வண்ணநிலவன் சிறுகதைகள்	நற்றிணை பதிப்பகம், சென்னை.
20	அம்பை	காட்டில் ஒரு மான்	காலச்சுவடு பதிப்பகம், சென்னை.
21	வல்லிக்கண்ணன்	புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்	அகரம் பதிப்பகம், கும்பகோணம்.
22	கா.கோ.வெங்கட் ராமன்	தமிழ் இலக்கிய வரலாறு	கலையக வெளியீடு, திண்டுக்கல்.
23	மது.ச.விமலானந்தம்	தமிழ் இலக்கிய வரலாறு	முல்லை நிலையம், சென்னை.
24	மு.பரமசிவம்	நற்றமிழ் இலக்கணம்	சைவசித்தாந்த பதிப்பகம், திருநெல்வேலி.

SEMESTER I

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U1FRLT01	Title :Language 1: French I	Batch	2018-2021
			Semester	I
Hrs/week	5		Credits	3

COURSE OBJECTIVES

- To enable the students to understand the basic structure of French language.

COURSE OUTCOMES (CO)

On Successful Completion of the course the students should be able to

CO Number	CO Statement
CO1	have access to the works of great french writers.
CO2	Develop the skills of speaking and writing without flaws.
CO3	Help the learners to have a good critical thinking.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	-	-	-	-	-	-	-	-	-	-	-
CO2	✓	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	✓	-	-	-	-	-	-

SYLLABUS

Prescribed text	:	ALORS I
Units	:	1-5
Authors	:	Marcella Di Giura Jean-Claude Beacco
Available at	:	Goyal Publishers Pvt Ltd 86, University Block Jawahar Nagar (Kamla Nagar) New Delhi – 110007. Tel : 011 – 23852986 / 9650597000

Question Paper Pattern : Semester I

(ALL QUESTIONS TO BE SET ONLY FROM THE PRESCRIBED TEXT)

Maximum Marks: 75

Time: 3 hrs.

SECTION A (10)

1. CHOISISSEZ LA MEILLEURE RÉPONSE: (10X1=10)

SECTION B (20)

2. TRADUISEZ LES TEXTES SUIVANTS EN ANGLAIS:(4/5) (4X5=20)
(Pg Nos : 26 ex-6,44 ex-3,56 ex-4,74ex-4,80.)

SECTION C (45)

3. COMPRÉHENSION (8x1=8)

4. EXERCICES DE GRAMMAIRE:(5X5=25) (EITHER/OR)

5. FAITES DES PHRASES:(6/8) (6X1=6)

6. TRADUISEZ LES EXPRESSIONS EN ANGLAIS :(6/8) (6X1=6)

SEMESTER I

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U1HILT01	Title : Language 1:Hindi I	Batch	2018-2021
			Semester	I
Hrs/week	5		Credits	3

COURSE OBJECTIVES

- To enable the students to understand the basic structure of Hindi language.

COURSE OUTCOMES (CO)

On Successful Completion of the course the students should be able to

CO Number	CO Statement
CO1	help the learners to communicate with others in any part of India with ease.
CO2	Develop the skills of speaking and writing without flaws.
CO3	Help the learners to have a good critical thinking.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	-	-	-	-	-	-	-	-	-	-	-
CO2	✓	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	✓	-	-	-	-	-	-

SYLLABUS**1. PROSE : NUTHAN GADYA SANGRAH**

Editor: Jayaprakash
 (Prescribed Lessons – only 6)
 Lesson 1 – Bharthiya Sanskurthi
 Lesson 3 - Razia
 Lesson 4 – Makreal
 Lesson 5- Bahtha Pani Nirmala
 Lesson 6 – Rashtrapitha Mahathma Gandhi
 Lesson 9 – Ninda Ras.
 Publisher: Sumitra Prakashan
 Sumitravas, 16/4 Hastings Road,
 Allahabad – 211 001.

2. NON DETAILED TEXT: KAHANI KUNJ.

Editor: Dr.V.P.Amithab.
(Stories 1 -6 only)
Publisher : Govind Prakashan
Sadhar Bagaar, Mathura,
Uttar Pradesh – 281 001.

3. GRAMMAR : SHABDHA VICHAR ONLY

(NOUN,PRONOUN, ADJECTIVE, VERB, TENSE,CASE ENDINGS)
Theoretical & Applied.
Book for reference : Vyakaran Pradeep by Ramdev.
Publisher : Hindi Bhavan,
36,Tagore Town
Allahabad – 211 002.

4. TRANSLATION: English- Hindi only.

ANUVADH ABHYAS – III
(1-15 lessons Only)
Publisher: DAKSHIN BHARATH HINDI PRACHAR SABHA
CHENNAI -17.

5. COMPREHENSION : 1 Passage from ANUVADH ABHYAS – III (16- 30)
DAKSHIN BHARATH HINDI PRACHAR SABHA
CHENNAI- 17.

SEMESTER I

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U1MLLT01	Title : Language 1: Malayalam I	Batch	2018-2021
Hrs/week	5		Semester	I
			Credits	3

COURSE OBJECTIVES

- To enable the students to understand the basic structure of Malayalam language.

COURSE OUTCOMES (CO)

In Successful Completion of the course the students should be able to

CO Number	CO Statement
CO1	Help the learners to learn other Indian languages like Sanskrit,Tamil etc., through Malayalam without much effort.
CO2	Develop the skills of speaking and writing without flaws.
CO3	Help the learners to have a good critical thinking.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	-	-	-	-	-	-	-	-	-	-	-
CO2	✓	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	✓	-	-	-	-	-	-

SYLLABUS

This paper will have the following five units:

- Unit I & II - Novel
- Unit III & IV - Short story
- Unit V - Composition & Translation

Text books prescribed:

- Unit I & II - Naalukettu – M.T. Vasudevan Nair
(D. C. Books, Kottayam, Kerala)
- Unit III & IV - Nalinakanthi – T.Padmanabhan
(D. C. Books, Kottayam, Kerala)
- Unit V - Expansion of ideas, General Essay and Translation of a simple passage from English about 100 words) to Malayalam

Reference books:

1. Kavitha Sahithya Charitram –Dr. M. Leelavathi (Kerala Sahithya Academy, Trichur)
2. Malayala Novel Sahithya Charitram – K. M.Tharakan (N.B.S. Kottayam)
3. Malayala Nataka Sahithya Charitram – G. Sankarapillai (D.C. Books, Kottayam)
4. Cherukatha Innale Innu – M. Achuyuthan (D.C. Books, Kottayam)
5. Sahithya Charitram Prasthanangalilude - Dr. K .M. George, (Chief Editor) (D.C. Books, Kottayam)

SEMESTER-I

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science Information Technology	
Course Code	18U1ENLT01	Title :Language 2 : Functional English – I	Batch	2018-2021
			Semester	I
Hrs/ Week	5		Credits	3

COURSE OBJECTIVES:

- To enable the students to understand the basic English grammar.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students should be able to

CO Number	CO Statement
CO1	develop an interest in the minds of the students to enjoy and appreciate the literary works in English.
CO2	develop the skills of speaking and writing without flaws.
CO3	help the learners to have a good critical thinking.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	-	-	-	-	-	-	-	-	-	-	-
CO2	✓	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	✓	-	-	-	-	-	-

SYLLABUS**UNIT –I-POETRY****(Hours:12)**

- On His Blindness- John Milton
- Menelaus and Helen- Rupert Brooke
- The Solitary Reaper- William Wordsworth

UNIT- II- PROSE**(Hours:12)**

- Sweets for Angels- R.K.Narayan
- The Post Master- Rabindranath Tagore
- The Golden Touch- Nathaniel Hawthorne

UNIT- III- GRAMMAR AND VOCABULARY**(Hours:18)**

1. Subject Verb agreement
2. Articles, Preposition
3. Words Often Confused
4. Synonyms and Antonyms
5. Homophones

UNIT-IV- VERBAL APTITUDE**(Hours:18)**

1. Cloze Test
2. Phrasal Verbs
3. One Word Substitutes
4. Eponyms

UNIT- V- DIALOGUE WRITING (CONVERSATION EXERCISES) (Hours:15)

Greeting , Introducing , Requesting, Inviting & Congratulating

TEXT BOOKS**Recent editions of the following books only are recommended**

S. No.	Author Name	Title of the Book	Publishers
1	A.G.Xavier	An Anthology of Popular Essays and Poems	Macmillan Indian Limited
2	Prof. A.E.Subramanian	Gifts to Posterity- An Anthology of Modern Short Stories	Chitra Publications, Chennai

REFERENCE BOOKS

S. No.	Author Name	Title of the Book	Publishers
1	N.Krishnaswamy	Modern English- A Book of Grammar Usage and Composition	Macmillan Indian Limited
2	Prof.K.Ramappa, Retd.	Essential English Grammar Usage & Composition	M. I. Publications

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER I

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U1ITCT01	Title : Core 1: C Programming with Problem Solving Techniques	Batch	2018-2021
			Semester	I
Hrs/week	5		Credits	4

COURSE OBJECTIVES

To enable the Students

- To know about problem solving techniques and algorithm fundamentals and basics of C Programming.
- To clearly understand decision making and branching concepts with various statements.
- To know about the concept of arrays, strings and functions with its various operations.
- To learn about the concept of structure, pointers and file management.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Define the basic concepts of Problem solving and algorithms
CO2	Explain the loops and decision making statements to solve the problem
CO3	Apply different operations on arrays
CO4	Use functions to solve the given problem
CO5	Discuss about file system and operations on files

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	✓	-	-	-	-	-	✓
CO2	-	✓	✓	✓	-	✓	-	-	-	✓	-	✓
CO3	-	✓	✓	✓	-	✓	-	-	-	✓	-	✓
CO4	-	✓	✓	✓	-	✓	-	-	-	✓	-	✓
CO5	-	✓	✓	✓	-	-	-	-	-	✓	-	✓

SYLLABUS**UNIT - I****(Hours : 14)**

Introduction to Computer Problem Solving: Problem Solving aspects-Top down design-Implementation of Algorithms- Program verification - Efficiency-Analysis of Algorithm. Fundamental Algorithm:Exchanging the values of 2 Variables - Counting

UNIT - II**(Hours : 19)**

Overview of C - Introduction – Structure of C - Character set - C tokens - Keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Operators – Arithmetic Expressions: - Evaluation of expression - Type conversion in expression - operator precedence & associative.

Decision Making and Branching - Decision making with IF statement - simple IF statement - The IF ELSE Statement - Nesting of IF ...ELSE statements - The ELSE IF ladder - The switch statement – The GOTO statement -- Decision Making and Looping - The WHILE statement - The DO statement - The FOR statement – Jumps in Loop.

UNIT - III**(Hours : 15)**

Arrays - One Dimensional - Two Dimensional - Multidimensional arrays - Character string Handling - Declaring and initializing string variables - String:Introduction- Standard Functions. Functions: User - defined Functions - Need for user Defined functions - A multi function program - Return values and their types - Calling a function . Types of Functions :No Arguments and no return values - Arguments but no return values - Arguments with return values - Handling of non-integer functions – Recursion

UNIT - IV**(Hours : 14)**

Structure : Structure definition - Giving values to members – Structure initialization - comparison of structure variables - Arrays of structures - Structures within structures- size of structures-Pointers to structures. Pointers – Introduction-Features of Pointers - Declaring and initializing pointers - Accessing a variable through its pointers - pointers and arrays - pointers and character strings.

UNIT - V**(Hours : 13)**

File management in C – Concept of files - Defining and opening a file - closing file - I/O operations on files – Predefined streams – Stream manipulation- Error handling during I/O operations - Random access to files - Command line arguments - The Preprocessor.

TEXT BOOKS

Recent editions of the following books only are recommended

S.No	Author Name	Title of the Book	Publishers
1.	E. Balagurusamy	Programming in ANSI C	Tata Mc. Graw Hill, Fifth Edition (reprint),
2.	R.G.Dromey	How to Solve it by Computer	Prentice Hall of India, Delhi

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1.	Byron Gottfried	Programming with C” (Schaum's Outline Series)	Tata Mc.Graw Hill, Second Edition
2.	Yeswanth Kanethkar	Let us C	Tata McGrawhill, Third Edition

WEBSITE REFERENCES

1. <http://computer.howstuffworks.com/c.htm>
2. <http://www.eskimo.com/~scs/cclass/notes/top.html>
3. <http://www.cprogramming.com/tutorial.html>
4. <http://www.iu.hio.no/~mark/CTutorial/CTutorial.html>
5. <http://www.di-mgt.com.au/cprog.html>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER I

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U1ITCT02	Title : Core 2: Digital Fundamentals and Architecture	Batch	2018-2021
Hrs/week	5		Semester	I
			Credits	4

COURSE OBJECTIVES

- To provide a knowledge about the concepts of Computer Fundamentals and enable the students to understand Digital Logic Circuits and Gates.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Review various Numbering System and Conversion problems
CO2	Design basic circuit for gates.
CO3	Apply Boolean laws and rules to simplify simple expressions
CO4	Identify and illustrate basic input-output organization of computer.
CO5	Illustrate the memory concepts, I/O devices and peripherals

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	✓	-	-	-	-	-	-	-	✓
CO2	-	✓	✓	✓	-	-	-	-	-	✓	-	✓
CO3	-	✓	✓	✓	-	✓	-	-	-	-	-	✓
CO4	-	✓	✓	-	-	-	-	-	-	✓	-	-
CO5	-	✓	✓	-	-	-	-	-	-	✓	-	-

SYLLABUS**UNIT - I****(Hours: 14)**

Introduction to Number System – Binary Codes- Binary, Decimal, Octal and Hexadecimal- Conversions – Binary to Decimal, Binary to Octal, Binary to Hexadecimal (Vice-Versa) – Binary Addition, Multiplication, Division- Floating Point Representation- 1's, 2's, 9's and 10's Complements.

UNIT - II**(Hours: 14)**

BCD Code- Excess3 Code- Gray Code- Arithmetic Circuits: Half Adder, Full Adder, Parallel Binary Adder, BCD Adder, Half Subtractor- Full Subtractor- Parallel binary Subtractor- Digital Logic: Basic Gates- AND,OR,NAND,NOR, XOR and NOT.

UNIT - III**(Hours: 16)**

Combinational Logic Circuits: Boolean Algebra- Karnaugh Map- Canonical Form- Implicants- Don't Care Combinations- Product Of Sum and Sum Of Product- Sequential Circuits: Flip-Flops, RS, D, JK and T Flip Flops - Multiplexers- Demultiplexers.

UNIT - IV**(Hours: 15)**

Input-Output Organization: Input- Output Interface, I/O Bus-Interface- I/O Bus Versus Memory Bus- Isolated versus Memory- Mapped I/O- Asynchronous Data Transfer: Strobe Control and Handshaking.

UNIT - V**(Hours: 16)**

Direct Memory Access: DMA Controller, DMA Transfer, Input-Output Processor- CPU-IOP Communication- Memory Hierarchy- Main Memory-Associative Memory- Cache Memory- Hardware Organization- Read and Write Operation.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1.	V.K. Puri	Digital Electronics Circuits and Systems	Tata Mc. Graw Hill
2.	M.Morris Mano	Digital Electronics Circuits and Systems	Tata Mc. Graw Hill

REFERENCE BOOKS

S.No	Author Name	Title of the Book	Publishers
1.	Albert Paul Malvino, Donald P Leach, Goutam Saha	Digital principles and applications	Tata Mc. Graw Hill
2.	S.Salivahanan, S. Arivazhagan	Digital Circuits and Design	Vikas Publishing House Pvt.,Ltd.,
3.	Thomas C.Bartee	Computer Architecture & Logic Design	Tata Mc. Graw Hill

WEBSITE REFERENCES

1. https://www.tutorialspoint.com/computer_fundamentals/computernumbersystem.htm
2. <http://www.csd.nutn.edu.tw/Digital%20Fundamentals/ch04.pdf>
3. <https://www.geeksforgeeks.org/flip-flop-types>
4. <https://www.allaboutcircuits.com/textbook/digital>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER I

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U1ITCP03	Title : Core 3: C Programming - Practical	Batch	2018-2021
Hrs/week	4		Semester	I
			Credits	3

COURSE OBJECTIVES:

- To enable the students to gain knowledge in developing C Programs for certain specified problems.

COURSE OUTCOMES (CO)

At the end of the practical session, students should be well-versed in

CO Number	CO Statement
CO1	Write programs using various data types in C.
CO2	Use various operators and expressions.
CO3	Apply the concept of Arrays, Pointers and strings
CO4	Apply the concept of loops and functional programming
CO5	Use the file handling concepts for maintaining record.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	✓	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	✓	-	-	-	✓	-	✓
CO3	-	✓	✓	✓	-	✓	-	✓	-	✓	-	✓
CO4	-	✓	✓	✓	-	✓	-	✓	-	✓	-	✓
CO5	-	✓	✓	-	-	✓	-	✓	-	✓	-	✓

SYLLABUS

1. Write a C program to explain various data types in C.
2. Write a C program using various operators.
3. Write a C program to illustrate the concept of expressions
4. Write a C program using Loop & nested loop Statements (for, while, do-while)
5. Write a C program to using different dimensions of Array.
6. Write a C program to illustrate the concept of Strings.
7. Write a C Program to illustrate the concept of functions.
8. Write a C Program to using Structures(Array of structure & pointers to structures)
9. Write a C Program to demonstrate the concept of Pointers
10. Write a C program to illustrate the concept of file operations.

WEB REFERENCES

1. <http://computer.howstuffworks.com/c.html>
2. <http://www.le.ac.uk/cc/tutorials/c/>
3. <http://www.cprogramming.com/tutorial.html>
4. www.programiz.com/c-programming
5. <https://www.coursera.org/course/cprogramming>

Means of Curriculum Delivery : Power point presentation, Lab Assignments, Observation

SEMESTER I

Programme Code	B.Sc. IT	Programme Title	Bachelor of Science Information Technology	
Course Code	18U1ITAT01	Title :Allied 1- Numerical Methods and Statitics	Batch	2018-2021
Hrs/week	5		Semester	I
			Credits	4

COURSE OBJECTIVES

To enable the Students

- To understand the different Methods of solving numerical, algebraic and Transcendental Equations .
- To find derivatives of various formulae and Integration using numerical differentiation and integrate various functions using numerical integration.
- To have a knowledge of finding numerical solutions of ordinary differential Equations.
- To learn how to calculate various statistical constants.

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Find Numerical Solution of Algebraic and Transcendental Equations.
CO2	Solve Simultaneous Linear Algebraic Equations by using different methods.
CO3	Explain the methods of Numerical Differentiation, Integration of various functions and finding Numerical Solution of Ordinary Differential Equation using different methods.
CO4	Calculate the Statistical Constants.
CO5	Explain the concepts of Correlation and Regression and their applications in practical situations

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	✓	-	✓	-	-	-	-	-	-
CO2	-	-	-	✓	-	✓	-	-	-	-	-	-
CO3	-	-	-	✓	-	✓	-	-	-	-	-	-
CO4	-	-	✓	✓	-	✓	-	-	✓	✓	-	✓
CO5	-	-	✓	✓	-	✓	-	-	-	✓	✓	✓

SYLLABUS**UNIT I****(Hours : 12)**

The Numerical Solution of Algebraic and Transcendental Equations –The Bisection method, The method of false position , Newton – Raphson method.

UNIT II**(Hours:12)**

Solution of Simultaneous Linear Algebraic Equations – Gauss Elimination method, Gauss Jordan method, Gauss – Jacobi method, Gauss – Seidel method. Interpolation (For Equal Intervals) Newton’s Forward interpolation, Newton’s Backward interpolation.

UNIT III**(Hours : 12)**

Numerical Differentiation – Newton’s Forward formula, Newton’s Backward Formula, Numerical Integration – Trapezoidal Rule, Simpson’s one third rule, Simpson’s three-eight’s rule. Numerical solution of Ordinary differential equations – Taylor Method (first order)– Runge-Kutta method (fourth order)

UNIT IV**(Hours :12)**

Measure of Central Tendency – Mean, Median, Mode - Measure of Dispersion – Range, Quartile Deviation, Standard Deviation and Mean Deviation -problems.

UNIT V**(Hours :12)**

Correlation and Regression. No derivation required.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1	P.Kandasamy, K.Thilagavathy, K.Gunavathi	Numerical methods	S.Chand & Company
2	P.A. Navanitham	Business Mathematics and Statistics	Jai publishers

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1	Dr.M.K. Venkataraman	Engineering Mathematics Volume II	National publishing company
2	R.S.N. Pillai and V. Bhagavathi	Statistical Methods	Sultan chand and Sons company
3	P.R.Vittal	Business Mathematics	Margham Publications
4	A.Singaravelu	Numerical Methods	Meenakshi Publications

WEBSITE REFERENCE

- <https://arxiv.org/pdf/0809.0465>
- www.cfm.brown.edu/people/sg/AM35odes.pdf
- www.maths.manchester.ac.uk/cds/internal/tables/numerical.pdf
- <https://www3.nd.edu/~zxu2/acms40390F12/Lec-7.3.pdf>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER I

Programme Code	B.Sc. IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U1VBET01	Title : Value Based Education 1: Environmental Studies	Batch	2018-2021
			Semester	I
Hrs/ Week	2		Credits	2

COURSE OBJECTIVES:

- To make the students understand the various types of natural resources and their responsibility in the conservation of the same.
- To impart on various eco systems, biodiversity at various levels and their conservation
- To make the students know on various types of environmental pollution, their causes , effects, their prevention and the students role in the same.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students should be able to

CO Number	CO Statement
CO1	Be a responsible citizen in the conservation of natural resources.
CO2	To be able to make others to know about various ecosystems.
CO3	Make the society aware of the importance of conservation of biodiversity and take suitable steps towards that direction.
CO4	Make others to know about how this earth is being polluted by various types of pollution and realised the responsibility to take various measures to control such pollution.
CO5	Make the public aware of the dangerous of global warming and the immediate steps to be taken to reduce its impact.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	-	-	-	-	-	✓
CO2	-	-	-	-	-	-	-	-	-	✓	✓
CO3	-	-	-	-	-	-	-	✓	-	-	✓
CO4	-	-	-	-	-	-	-	✓	-	-	✓

SYLLABUS**UNIT I****(Hours :6)**

The Multidisciplinary Nature of Environmental Studies - Definition, Scope and Importance; Need for public awareness, Natural resources - Forest resources, Mineral resources, Food resources, Energy resources and Land resources. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable life style.

UNIT II**(Hours :6)**

Ecosystems - Concept of ecosystem, Structure and Functions of an ecosystem. Producer, Consumer, Decomposers, Energy flow in ecosystem, Ecological succession, food chain, food webs and ecological pyramids. Introduction, types, characteristics, features, structure and functions of forest ecosystem, grass land, desert and Aquatic Ecosystems (ponds, streams, lakes, rivers, oceans and estuaries).

UNIT III**(Hours :6)**

Biodiversity and its Conservation – Introduction - Definitions: Genetic, Species and ecosystem diversity. Biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values, Biodiversity at Global, National and local levels. India as a mega-biodiversity nation. Hot spots of biodiversity. Threads of biodiversity: habitat loss, poaching of wild life. Man wild life conflicts. Endangered and endemic species of India. Conservation of biodiversity-insitu and Exsitu conservation of biodiversity.

UNIT IV**(Hours :6)**

Environmental Pollution - Definitions, causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution and Thermal pollution. Solid waste management: causes, effects and control measures of Urban and Industrial wastes. Role of an individual in prevention of pollution. Pollutions case studies. Disaster management: Foods, Earthquake, Cyclone and Landslides.

UNIT V**(Hours :6)**

Social issues and the Environment - Sustainable development, urban problems related to energy, water conservation, rain water harvesting, water shed management. Resettlement and rehabilitation of people. Environmental ethics: issues and possible solution. Climate change, global warming, ocean layer depletion, acid rain, nuclear accident and holocaust, case studies. Consumerism and waste product. Environmental protection Act. Air (prevention and control of pollution) Act. Wild life protection act. Forest conservation Act. Issues involved in enforcement of environmental legislation. Public awareness. Human population and the environment.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publishers
1	Prof. R. Ranganathan	Environmental Studies.	Bharathiar University Publications

REFERENCE BOOKS

S. No.	Author Name	Title of the Book	Publishers
1	Ritu Bir	Environmental Studies	Vayu Education of India
2	Erach Bharucha	Textbook for Environmental Studies	University Press India Pvt. Ltd
3	Anubha Kaushik & C.P.Kaushik	Perspectives in Environmental Studies	New Age International Publishers

Means of Curriculum Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER I

Programme Code	B.Sc..IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U1SBST01	Title :Skill Based Subject 1: Mathematics For Competitive Examinations - I	Batch	2018-2021
			Semester	I
Hrs/week	2		Credits	2

COURSE OBJECTIVES

To enable the Students

- To understand the fundamental arithmetic skills and problem solving.
- To learn about the average and Problems on numbers.
- To solve problem related to Ages and Calander and Clocks.

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement
CO1	Recall the basic concepts of numerical computation.
CO2	Solve problems on ages, races and games of skills, stocks and shares.
CO3	Find solution to the problems on calender and clocks.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	✓	-	✓	✓	-	-	✓	-	✓
CO2	-	✓	✓	✓	-	✓	✓	-	-	✓	-	✓
CO3	-	✓	✓	✓	-	✓	✓	-	-	✓	-	✓

SYLLABUS

UNIT I (Hours :6)
Numbers – H.C.F and L.C.M of Numbers – Decimal Fractions – Simplification

UNIT II (Hours :6)
Square Roots and Cube Roots – Average - Problems on Numbers

UNIT III (Hours :6)
Problems on Ages - Surds and Indices-Percentage

UNIT IV (Hours :6)
Races and games of skill – Calendar

UNIT V (Hours :6)
Clocks – Stocks and shares (Simple Problems only)

TEXT BOOK

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1	R. S. Agarwal	Quantitative Aptitude (for Competitive Examinations)	S. Chand and Company Limited

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1	R. V. Praveen	Quantitative Aptitude and Reasoning,	PHI Learning pvt. Ltd
2	Abhijit Guha	Quantitative Aptitude for Competitive Examinations	Tata Mc-Graw Hill Publishing Company

WEBSITE REFERENCE

1. <https://www.careerbless.com/aptitude/qa/home.php>

2. <https://www.indiabix.com/>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER II

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U2TALT02	Title : Language 2: Tamil - II	Batch	2018-2021
Hrs/week	5		Semester	II
			Credits	3

நோக்கம்

- சங்க இலக்கியத்தின் மாண்பு, இலக்கிய நயம், நீதி நெறிகள், பக்தியின் தன்மை, சங்ககால இலக்கண நெறிகள் ஆகியவற்றை அறிந்து கொள்ளுதல்
- வாழ்க்கையை வாழும் நெறிமுறைகள், வெற்றிக்கான உத்திகள், தமிழ் வளர்ச்சிக்கான நமது கடமைகள் ஆகியன குறித்து தெளிவு பெறுதல்

Course Outcome (CO)

CO Number	CO Statement
CO1	தமிழ் மொழியின் வாயிலாக பண்பாடு, பகுத்தறிவு, கலை மற்றும் மரபு முதலியவற்றை அறிந்து வாழ்க்கையில் பயனடைதல்.
CO2	வாழ்வியல் நெறிமுறைகளை உணர்ந்து மனிதநேயத்துடனும் உயர்ந்த குறிக்கோளுடனும் சமுதாயத்தில் மதிக்கத்தக்கவர்களாக இருத்தல்.
CO3	இலக்கியங்களின் வாயிலாக வாழ்க்கை முறைகளைத் தெரிந்து கொள்ளுதல்.
CO4	அறத்தின் வழிநின்று பொருளீட்டி இன்பம் துய்ப்பது உன்னத வாழ்வின் அடிப்படை என்பதை திருக்குறள் மூலம் மாணவர்கள் உணர்தல்.
CO5	நாட்டுப்பற்று, சமூகம், பெண்ணியம் குறித்த விழுமியங்கள் சார்ந்த கவிதைகளும், கருத்து பரிமாற்றத்திறனுக்கு அடிப்படையாக உள்ள இலக்கணப் பகுதியும், தன் சுய சிந்தனையுடன் படைப்பாக்கத்திறனை வளர்த்தெடுக்கும் வகையில் சிறுகதைப்பகுதியும் காலவோட்டத்துடன் இணைந்து மாணவர்களுக்கு சிந்திக்கும் ஆற்றலைப் பெற வழி வகை செய்தல்.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	✓	✓	✓	-	-	-	-	-	✓
CO2	-	-	-	✓	✓	✓	✓	✓	✓	-	✓	✓
CO3	-	-	-	✓	✓	✓	-	-	-	-	-	✓
CO4	-	-	-	✓	✓	✓	-	-	-	-	-	✓
CO5	✓	-	-	✓	✓	✓	✓	✓	✓	✓	-	✓

பாடத்திட்டம்

அலகு – 1 செய்யுள் திரட்டு : சங்க இலக்கியங்கள் (20 மணிநேரம்)

- குறுந்தொகை - முதல் 5 பாடல்கள் (கடவுள் வாழ்த்து உட்பட)
- நற்றிணை - பிரசங்கலந்த வெண்சுவைத்தீம்பால் (பா.எண்-110), விளையாடு ஆயமோடு (பா.எண்-68)
- கலித்தொகை - சுடர்த் தொடிகு கேளாய் (பா.எண்-51)
- புறநானூறு - ஆவுமானிய பார்ப்பன மாக்களும் (பா.எண்-9), காய்நெல் லறுத்துக் கவளம்கொளினே (பா.எண்-184)
- பத்துப்பாட்டு - குறிஞ்சிப்பாட்டு முழுவதும்

அலகு – 2 செய்யுள் திரட்டு : நீதி, பக்தி இலக்கியம் (15 மணிநேரம்)

1. திருக்குறள் - அடக்கமுடைமை (அதிகாரம்-13),
புறங்கூறாமை (அதிகாரம்-19)
2. நாலடியார் - கல்வி (அதிகாரம்-14), நல்லினம் சேருதல்(அதிகாரம்-18)
3. திருவெம்பாவை - முதல் 10 பாடல்கள்
4. நாச்சியார் திருமொழி - ஆறாம் திருமொழி

அலகு – 3 உரைநடை: கட்டுரைத் தொகுப்பு (15 மணிநேரம்)

1. இறையன்பு - கல்வியும் கடவுள் தன்மையும்
(வாழ்க்கையே ஒரு வழிபாடு)
2. அகிலன் - பதினாறு பேறுகள் (வெற்றியின் ரகசியங்கள்)
3. முனைவர் பாஞ்.இராமலிங்கம் - மானிட உளவியல் (மானிட உளவியல்)
4. வ.செ.குழந்தைசாமி - தமிழ் வழிக்கல்வி-தயக்கங்கள், தடைகள்
(தமிழ் வளர்ச்சி)
5. மணவை முஸ்தபா - தமிழுக்கு அறிவியல் அன்னியமா? (அறிவியல்
நோக்கில் கம்பர்)
6. சுகி.சிவம் - வாழப்பழகுவோம் வாருங்கள்
(வாழப்பழகுவோம் வாருங்கள்)
7. இரா. பிரேமா - பெண்ணியக் கோட்பாடுகளும் தமிழிலக்கிய
ஆய்வில் அதன் தேவையும் பயனும்
(பெண்ணியம் அணுகுமுறைகள்)

அலகு – 4 இலக்கிய வரலாறு (15 மணிநேரம்)

1. எட்டுத்தொகை, பத்துப்பாட்டு நூல்கள்
2. நீதி நூல்கள் - அறிமுகம்
3. நாயன்மார்கள் ஆழ்வார்கள் - அறிமுகம்
4. உரைநடையின் தோற்றமும் வளர்ச்சியும்

அலகு – 5 இலக்கணமும் பயன்பாட்டுத் தமிழும் (10 மணிநேரம்)

1. அகம், புறம் – திணை, துறை விளக்கங்கள்
2. முதல் , கரு, உரிப்பொருள்
3. மடல்கள், விண்ணப்பங்கள்
4. மொழிபெயர்ப்பு (அலுவலகப் பகுதி, பொதுப்பகுதி)

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1	தமிழ்த்துறை	பொதுத்தமிழ் - II (செய்யுள் திரட்டு , கட்டுரைத் தொகுப்பு)	கோவை கலைமகள் கலை அறிவியல் கல்லூரி

REFERENCE BOOKS

S. No.	Author Name	Title of the Book	Publishers
1	-	குறுந்தொகை	கழக வெளியீடு
2	புலவர் நா.இராமையாபிள் ளை (உ.ஆ)	நற்றிணை	வர்த்தமானன் பதிப்பகம், சென்னை.
3	-	கலித்தொகை,	கழக வெளியீடு
4	-	புறநானூறு,	கழக வெளியீடு
5	புலவர் அ.மாணிக்கனார் (உ.ஆ)	பத்துப்பாட்டு – II ஆம் தொகுதி	வர்த்தமானன் பதிப்பகம், சென்னை.
6	பேரா.அ.மாணிக்க ம்(ப.ஆ)	நாலடியார்	மணிவாசகர் பதிப்பகம், சென்னை.
7	பேரா.அ.மாணிக்க ம்(உ.ஆ)	பன்னிரு திருமுறைகள் (தொகுதி 11)	வர்த்தமானன் பதிப்பகம், சென்னை.
8	டாக்டர் கதிர்முருகு	நாச்சியார் திருமொழி	சாரதா பதிப்பகம், சென்னை.
9	வெ.இறையன்பு	வாழ்க்கையே ஒரு வழிபாடு	விஜயா பதிப்பகம், கோவை.
10	அகிலன்	வெற்றியின் ரகசியங்கள்	தாகம் பதிப்பகம், சென்னை.
11	முனைவர் பாஞ்.இராமலிங்கம்	மானிட உளவியல்	சாரதா பதிப்பகம், சென்னை.
12	வ.செ.குழந்தைசா மி	தமிழ் வளர்ச்சி	பாரதி பதிப்பகம், சென்னை.
13	முணவை முஸ்தபா	அறிவியல் நோக்கில் கம்பர்	வானதி பதிப்பகம், சென்னை.
14	சுகி.சிவம்	வாழப்பழகுவோம் வாருங்கள்	வானதி பதிப்பகம், சென்னை.
15	இரா.பிரேமா	பெண்ணியம் அணுகுமுறைகள்	தமிழ்ப் புத்தகாலயம், சென்னை- 17.
16	கா.கோ.வெங்கட்ரா மன்	தமிழ் இலக்கிய வரலாறு	கலையக வெளியீடு, திண்டுக்கல்.
17	மது.ச.விமலானந்த ம்	தமிழ் இலக்கிய வரலாறு	முல்லை நிலையம், சென்னை
18	மு.பரமசிவம்	நற்றமிழ் இலக்கணம்	சைவசித்தாந்த பதிப்பகம், திருநெல்வேலி.

SEMESTER II

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science Information Technology	
Course Code	18U2FRLT02	Title : Language 2: French II	Batch	2018-2021
			Semester	II
Hrs/week	5		Credits	3

COURSE OBJECTIVES

- To enable the students to understand the basic structure of French language.

COURSE OUTCOMES (CO)

On Successful Completion of the course the students should be able to

CO Number	CO Statement
CO1	have access to the works of great french writers.
CO2	Develop the skills of speaking and writing without flaws.
CO3	Help the learners to have a good critical thinking.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	-	-	-	-	-	-	-	-	-	-	-
CO2	✓	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	✓	-	-	-	-	-	-

SYLLABUS

Prescribed text : ALORS I

Units : 6 – 10

Authors : Marcella Di Giura
Jean-Claude Beacco

Available at : Goyal Publishers Pvt Ltd
86, University Block
Jawahar Nagar (Kamla Nagar)
New Delhi – 110007.
Tel : 011 – 23852986 / 9650597000

Question Paper Pattern : Semester II

(ALL QUESTIONS TO BE SET ONLY FROM THE PRESCRIBED TEXT)

Maximum Marks: 75

Time: 3 hrs.

SECTION A (10)

1. CHOISISSEZ LA MEILLEURE RÉPONSE: (10X1=10)

SECTION B (20)

2. TRADUISEZ LES TEXTES SUIVANTS EN ANGLAIS:(4/5) (4X5=20)

(Pg Nos :86 ex-4,104 ex-3,116 ex-3a,b,134 ex-4,146 ex-2,162,163,164,165,166,167)

SECTION C (45)

3. COMPRÉHENSION (8x1=8)

4. EXERCICES DE GRAMMAIRE:(5X5=25) (EITHER/OR)

5. FAITES DES PHRASES:(6/8) (6X1=6)

6. TRADUISEZ LES EXPRESSIONS EN ANGLAIS :(6/8) (6X1=6)

SEMESTER II

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science Information Technology	
Course Code	18U2HILT02	Title : Language 2: Hindi II	Batch	2018-2021
Hrs/week	5		Semester	II
			Credits	3

COURSE OBJECTIVES

- To enable the students to understand the basic structure of Hindi language.

COURSE OUTCOMES (CO)

On Successful Completion of the course the students should be able to

CO Number	CO Statement
CO1	help the learners to communicate with others in any part of India with ease.
CO2	Develop the skills of speaking and writing without flaws.
CO3	Help the learners to have a good critical thinking.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	-	-	-	-	-	-	-	-	-	-	-
CO2	✓	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	✓	-	-	-	-	-	-

SYLLABUS

1. MODERN POETRY : Draupadi by Narendra Sharma

PUBLISHER : Rajkamal Prakashan,
1B Nethaji Subash Marg,
New Delhi.

2. ONE ACT PLAY: EKANKĪ SANKALAN – Lesson ‘Strike’ omitted

By Veerendra kumar mishra

PUBLISHER : VANI PRAKASHAM
NEW DELHI – 110 002.

3. TRANSLATION : HINDI – ENGLISH ONLY,
(ANUVADH ABYAS – III)
Lessons.1 – 15 only
- PUBLISHER : DAKSHIN BHARATH HINDI PRACHAR SABHA
CHENNAI – 600 017.
4. LETTER WRITING : (Leave letter, Job Application, Ordering books,
Letter to Publisher, Personal letter)
5. CONVERSATION : (Doctor & Patient, Teacher & Student, Storekeeper &
Buyer, Two Friends, Booking clerk & Passenger at Railway
station, Autorickshaw driver and Passenger)

Reference: Bolchal Ki Hindi Aur Sanchar by Dr. Madhu Dhavan, Vani Prakashan, New Delhi.

SEMESTER II

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U2MLLT02	Title :Language 2: Malayalam II	Batch	2018-2021
Hrs/week	5		Semester	II
			Credits	3

COURSE OBJECTIVES

- To enable the students to understand the basic structure of Malayalam language.

COURSE OUTCOMES (CO)

On Successful Completion of the course the students should be able to

CO Number	CO Statement
CO1	Help the learners to learn other Indian languages like Sanskrit,Tamil etc., through Malayalam without much effort.
CO2	Develop the skills of speaking and writing without flaws.
CO3	Help the learners to have a good critical thinking.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	-	-	-	-	-	-	-	-	-	-	-
CO2	✓	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	✓	-	-	-	-	-	-

SYLLABUS

Unit I & II - Biography

Unit III, IV & V - Smaranakal

Text books prescribed:

Unit I & II - Kanneerum Kinavum- V.T.Bhatahirippad
(D.C. Books, Kottayam)

Unit III, IV & V - Balyakalasmaranakal – Madhavikkutty
(D.C. Books, Kottayam)

Reference books:

1. Jeevacharitrasahithyam – Dr. K.M. George (N.B.S. Kottayam)
2. Jeevacharitrasahithyam Malayalathil – Dr. Naduvattom Gopalakrishnan (Kerala Bhasha Institute, Trivandrum)
3. Athmakathrasahithyam Malayalathil – Dr. Vijayalam Jayakumar (N.B.S. Kottayam)
4. Sancharasahithyam Malayalathil – Prof. Ramesh chandran. V, (Kerala Bhasha Institute, Trivandrum)

SEMESTER-II

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U2ENLT02	Title : Language 2: Functional English II	Batch	2018-2021
Hrs/ Week	5		Semester	II
			Credits	3

COURSE OBJECTIVES:

- To enable the students to understand the basic English grammar.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students should be able to

CO Number	CO Statement
CO1	Develop an interest in the minds of the students to enjoy and appreciate the literary works in English.
CO2	Develop the skills of speaking and writing without flaws.
CO3	Help the learners to have a good critical thinking.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	-	-	-	-	-	-	-	-	-	-	-
CO2	✓	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	✓	-	-	-	-	-	-

SYLLABUS**UNIT –I-POETRY****(Hours:12)**

- Stopping By Woods On a Snowy Evening – Robert Frost
- The Ballad of Father Gilligan – William Butler Yeats
- The Daffodils - William Wordsworth

UNIT- II- PROSE**(Hours:12)**

- The Selfish Giant- Oscar Wilde
- My lost Dollar- Stephen Butler Leacock
- On The Rule of The Road- A.G. Gardiner

UNIT- III- GRAMMAR AND VOCABULARY**(Hours:12)**

1. Tenses
2. Transformation of Sentences
3. Describing a Simple Process, Paraphrasing
4. Homonyms
5. Word Blends

UNIT-IV- VERBAL APTITUDE AND COMPOSITION**(Hours:12)**

1. Common Errors
2. Reading Comprehension
3. Essay Writing
4. Letter Writing (Formal and In- Formal)

UNIT- V- DIALOGUE WRITING (CONVERSATION EXERCISES)**(Hours:12)**

1. Suggestions , Sympathy, Complaining, Agreement & Apologising

TEXT BOOKS

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publishers
1	A.G.Xavier	An Anthology of Popular Essays and Poems	Macmillan Indian Limited.
2.	Prof. A.E.Subramanian	Gifts to Posterity- An Anthology of Modern Short Stories	Chitra Publications, Chennai.

REFERENCE BOOKS

S. No.	Author Name	Title of the Book	Publishers
1.	N.Krishnaswamy	Modern English- A Book of Grammar Usage and Composition	Macmillan Indian Limited
2.	Prof.K.Ramappa, Retd.	Essential English Grammar Usage & Composition	M. I. Publications

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER II

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U2ITCT04	Title : Core 4 :C++ PROGRAMMING	Batch	2018-2021
			Semester	II
Hrs/week	5		Credits	4

COURSE OBJECTIVES

- To provide knowledge on object oriented programming concepts using C++.
- To enable the students to provide an indepth knowledge about the concepts of language structure, program divisions of C++ programming language.
- To enhance the knowledge about dynamic memory management.
- To gain the knowledge about polymorphism.
- To enhance the students knowledge in writing C++ programs and the concepts of File Handling.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Describe the object oriented paradigm with concepts of streams, classes, functions, data and objects
CO2	Summarize advanced use of arrays, structures in C++ programming.
CO3	Apply pointers, constructors, destructors in dynamic memory management.
CO4	Describe the concept of function overloading, operator overloading, virtual functions and polymorphism.
CO5	Explain about exception handling and class templates.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	✓	-	✓	-	-	-	✓
CO2	-	✓	✓	✓	-	✓	-	✓	-	✓	-	✓
CO3	-	✓	✓	-	-	✓	-	✓	-	✓	-	✓
CO4	-	✓	✓	✓	-	✓	-	✓	-	✓	-	✓
CO5	-	✓	✓	-	-	✓	-	✓	-	✓	-	✓

SYLLABUS**UNIT - I****(Hours : 12)**

Evolution of OOP, OOP Paradigm, advantages of OOP, Comparison between functional programming and OOP Approach, Characteristics of object oriented language. Introduction to C++, I/O in C++, Identifier and keywords, constants, C++ operators, type conversion, Variable declaration, statements, expressions, features of iostream.h and iomanip.h, conditional expression loop statements, breaking control statements.

UNIT - II**(Hours : 12)**

Defining function, types of functions, storage class specifiers, recursion, preprocessor, header files and standard functions, Arrays, Strings, Pointer arithmetics, structures, unions, bit fields typed, enumerations, Passing array as an argument to function.

UNIT - III**(Hours : 12)**

Classes, member functions, objects, arrays of class objects, pointers and classes, nested classes, constructors, destructors, inline member functions, static class member, friend functions, dynamic memory allocation. Inheritance, single inheritance, types of base classes, types of derivations, multiple inheritance, container classes, member access control

UNIT - IV**(Hours : 12)**

Function overloading, operator overloading, polymorphism, early binding, polymorphism with pointers, virtual functions, virtual destructors, late binding, pure virtual functions, Streams and Files: Stream Classes & Errors - Disk File I/O with Streams -

UNIT - V**(Hours : 12)**

File Pointers - Error Handling in File I/O - File I/O with Member Functions - Multifile Programs, Templates and Exceptions : Function Templates - Class Templates – Exception handling - Need of Exception handling - Name spaces: defining namespace, benefit of namespace.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publishers
1.	Robert Lafore	Object Oriented Programming in Turbo C++	Galgotia Publications
2.	E.Balagurusamy	Object Oriented Programming with C++	Tata Mc.Graw Hill

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1.	Bjarne Stroustrup	The C++ Programming Language	Wesley Publications
2.	M.T.Somashekara, D.S. Guru, H.S.Nagendrasamy, K.S.Manjunath	Object Oriented Programming in C++	Tata McGrawhill, Second Edition

WEBSITE REFERENCES

1. <https://www.geeksforgeeks.org/c-plus-plus/>
2. <https://www.tutorialspoint.com/cplusplus/>
3. <https://www.linkedin.com/learning/topics/c-plus-plus>
4. <https://www.hackerrank.com/domains/cpp>
5. <https://trainings.internshala.com/c-plus-plus-training>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER II

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U2ITCT05	Title : Core 5 : Data Structures	Batch	2018-2021
			Semester	II
Hrs/week	4		Credits	4

COURSE OBJECTIVES

- To study about the design and implementation of the data structure and how the data are manipulated in order to develop an application and also helps the students in understanding the use of data structure in the real world.
- To make the students to understand the basic concepts of Data Structures and Algorithms.
- To understand the abstract data types stack, queue, dequeue, and list.
- To understand the performance of the implementations of basic linear data structures.
- To understand prefix, infix, and postfix expression formats.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Recalls information for writing algorithms in solving problems.
CO2	Choose appropriate data structure as applied to specified problem definition.
CO3	Apply problem solving skills and provide a foundation for advanced programming courses using an object-oriented programming methodology.
CO4	Use linear and non-linear data structures like stacks, queues, linked list etc., and show operations like searching, insertion, deletion, traversing mechanism etc. on various data structures
CO5	Illustrate to store and retrieve data stored in both main memory and in secondary memory.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	✓	-	✓	-	-	-	-	-	✓
CO2	-	✓	✓	✓	-	✓	-	-	-	-	-	✓
CO3	-	✓	✓	-	-	✓	-	-	-	-	-	✓
CO4	-	✓	✓	-	-	✓	-	-	-	-	-	✓
CO5	-	✓	✓	-	-	✓	-	-	-	-	-	✓

SYLLABUS

UNIT - I

(Hours:09)

Introduction - Overview - How To Create Programs and Analyze them -Arrays - Structures - Ordered Lists- Representation of Arrays - Simple Applications.

UNIT - II**(Hours: 10)**

Stacks: Operations on stack - Polish Expressions and their compilation using Stacks. Queues: Representation of Queues - operation on Queues - priority queues - Evaluation of Expressions on Applications - Sparse Matrices.

UNIT - III**(Hours: 10)**

Linked Lists: Representation - Types of Linked List - Operations on Single Linked Lists - Double Linked Lists - Operations - Stacks using Linked List - Queues using Linked List - Adding Polynomial using Linked Lists - Dynamic Storage Management - Garbage Collection and Compaction – Trees: Basic trees concept, Binary tree representation, Binary tree operation, Binary tree traversal, Binary search tree implementation, Thread Binary.

UNIT - IV**(Hours: 10)**

Searching: Linear Search, Binary Search, Interpolation Search - Hash Tables – Sorting: Internal Sorting with Insertion Sort, Bubble Sort, Heap Sort, Merge Sort, Quick Sort – External Sorting with Disks – Merging: Kway Merging – Two way Merge – Three way Merge - Recursion – Tower of Hanoi – Symbol Tables.

UNIT -V**(Hours: 11)**

Files: Sequential Files, Indexed Files, Hash Files - Index Techniques. File Organizations Sequential, Random, Linked Organizations - Inverted Files – Cellular Partitions.

TEXT BOOKS

Recent editions of the following books only are recommended

S.NO	Author Name	Title of the Book	Publishers
1.	Ellis Horowitz & Sartaj Sahani	Fundamentals of Data Structure	Galgothia book source
2.	Ashok N Kamthane	Programming and Data Structures	Pearson Education
3.	Jeen-Paul Tremblay and Paul G Sorenson	An Introduction to Data structures with Applications	Tata Mc. Graw Hill

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publishers
1.	Aaron M. Taenbaum, Yedidyah Langsam	Data Structures Using C	Prentice Hall of India
2.	ISR D group	Data structures using C	Tata Mc. Graw Hill

WEBSITE REFERENCES

- https://www.tutorialspoint.com/data_structures_algorithms/
- <http://www.icodeguru.com/vc/10book/books/book1/toc.htm>
- <https://code.tutsplus.com/series/data-structures-succinctly-part-1--cms-551>
- <https://www.geeksforgeeks.org/data-structures/>
- <https://visualgo.net/en>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER II

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U2ITCP06	Title : Core 6 :Programming in C++ Practical	Batch	2018-2021
Hours/week	5		Semester	II
			Credits	3

COURSE OBJECTIVES:

- To enable the students to gain knowledge in developing C++ Programs for certain specified problems.

COURSE OUTCOMES (CO)

At the end of the practical session, students should be well-versed in

CO Number	CO Statement
CO1	Write programs in C++ to demonstrate Classes and objects
CO2	Use various types of arrays and constructors
CO3	Apply the concepts of virtual functions and function overloading
CO4	Write programs in C++ using special functions, constructor and destructor.
CO5	Use the file handling concepts

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	✓	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	✓	-	-	-	-	-	✓
CO3	-	✓	✓	✓	-	✓	-	-	-	✓	-	✓
CO4	-	✓	✓	✓	-	✓	-	-	-	✓	-	✓
CO5	-	✓	✓	✓	-	✓	-	-	-	✓	-	✓

SYLLABUS

1. Write a program which demonstrates Classes and objects
2. Write a C++ program to illustrate the concept of arrays.
3. Write a program to demonstrate different types of constructors
4. Write a program for overloading operator++ and operator—using friend functions.
5. Write a C++ program to implement function overloading and virtual functions.
6. Write a C++ program to overload unary operator using friend function.
7. Write a C++ program to create single inheritance and multilevel inheritance.
8. Write a C++ program to illustrate ‘this’ pointer and pointers to derived classes.
9. Write a C ++ program to demonstrate the use of special functions, constructor and destructor in the class template.
10. Write a C++ program to copy the contents of a file into another.

WEB REFERENCE

1. <https://www.tutorialspoint.com/cplusplus/>
2. <https://www.programiz.com/cpp-programming>
3. <https://www.class-central.com/tag/c++>
4. http://www.cplusplus.com/doc/tutorial/program_structure/
5. <https://www.hscripts.com/tutorials/cpp>

Means of Curriculum Delivery : Power point presentation, Lab Assignments, Observation

SEMESTER II

Programme Code	B.Sc. IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U2ITAT02	Title : Allied 2 :Discrete Mathematics	Batch	2018-2021
Hours/week	5		Semester	II
			Credits	4

COURSE OBJECTIVES

To enable the Students

- To understand the concept of set theory, Logic and Relations
- To learn the concept of languages and Grammars
- To know the concept of Graph theory and its applications

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Define the concepts of set theory, partition of sets, inclusion and exclusion principles.
CO2	Write an argument using logical notation and determine if the argument is valid or invalid.
CO3	Describe the binary relations between two sets and determine if the relation is partial order relation or equivalence relation using set operations.
CO4	Explain the concepts of formal languages and construct the finite state automata.
CO5	State the concept of graphs, enumerate the types of graphs and their applications practical situations.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	✓	-	✓	-	-	-	-	-	✓
CO2	-	✓	✓	✓	-	✓	-	-	-	✓	-	✓
CO3	-	✓	✓	✓	-	✓	-	-	-	-	-	✓
CO4	-	-	✓	✓	-	✓	-	-	-	-	-	✓
CO5	-	-	✓	✓	-	✓	-	-	-	-	-	✓

SYLLABUS**UNIT I****(Hours: 12)**

Set Theory - Types of sets - Venn - Euler Diagrams - Set operations & Laws of set theory - Fundamental Products - Partitions of Sets – Minsets - Algebra of sets and Duality - Inclusion and Exclusion Principle.

UNIT II**(Hours:12)**

Mathematical Logic – Introduction - Propositional Calculus – Basic logical Operations - Tautologies – Contradiction – Argument - Predicate Calculus.

UNIT III**(Hours:12)**

Relations – Binary Relations – Set operation on relations - Types of Relations – Partial order relation – Equivalence relation – Functions – Types of functions – Invertible functions.

UNIT IV**(Hours:12)**

Languages – Operations on Languages – Grammar – Types of Grammars – Finite State Machine – Finite State Automata.

UNIT V**(Hours: 12)**

Graph Theory – Basic terminology – Paths, Cycle & Connectivity – Sub graphs – Types of Graphs – Representation of Graphs in Computer Memory - Trees – Properties of Trees – Binary trees- Traversing Binary Tree.

TEXT BOOK

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1	J.K. Sharma	Discrete Mathematics	Macmillan India Ltd

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1	J. P Tremblay R Manohar	Discrete Mathematics Structures with Applications to Computer Science	Mc Graw Hill International Publications
2	Dr.M.K.Venketaramen, Dr.N.Sridharan, N.Chandarasekaran	DiscreteMathematics	The National publishing Company
3	V.Sundaresan	Discrete Mathematics	A.R.Publications
4	M.K.Chandborthy	Introduction to Discrete Mathematics	Books and Allied Pvt.Ltd.

WEBSITE REFERENCE

- 1.www.coursera.com
- 2.www.tutorialpoint.com

Means of Curriculum Delivery : Lecture, Group learning, Seminar, Assignment, Google classroom.

SEMESTER II

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U2VVET02	Title : Value Education 2: Ethics and Culture (அறவியலும் பண்பாடும்)	Batch	2018-2021
Hours/week	2		Semester	II
			Credits	2

Ethics and Culture (மனிதவள மாண்பு - தனிமனித விழுமியங்கள், சமுதாய விழுமியங்கள்)

நோக்கம்

- ஒவ்வொருவரும் தன்னை உயர்த்திக் கொண்டு, சமுதாய மக்களுடன் இணக்கமாக வாழ்ந்து சமுதாயத்தையும் உயர்த்த வேண்டும். உன்னத இலட்சியத்திற்காக வாழ்ந்து நமது வாழ்க்கையை அர்த்தமுள்ளதாக ஆக்கிக் கொள்ள வேண்டும்.
- கவலைக்கு ஆதாரமான ஆசை மற்றும் சினம் ஆகியவற்றைத் தவிர்ப்பதன் மூலம் கவலையை ஒழிப்பதற்கான பயிற்சி பெறுதல்
- கல்வி, அரசியல், பொருளாதாரம் மற்றும் விஞ்ஞானம் ஆகியவற்றுக்கும் சமுதாயத்திற்கும் உள்ள தொடர்பினை அறிந்து கொள்ளுதல்

Course Outcome (CO)

CO Number	CO Statement
CO1	தன்னை உள்நோக்க அறிவால் ஆராய்ந்து தன்னிடமுள்ள உணர்ச்சி வயப்பட்ட குணங்களை எல்லாம் மாற்றியமைத்துக் கொள்ளச் செய்தல்.
CO2	தனி மனித ஒழுக்கங்களை அறிந்து, முறைப்படி வாழ்ந்து சமுதாயத்தில் தங்களை உயர்த்திக் கொள்ளச் செய்தல்.
CO3	வாழ்க்கையின் இலக்கை அடையத் தேவையான தகுதியை வளர்த்துக் கொள்ளச் செய்தல்.
CO4	சமுதாயத்தோடு இணக்கமாக வாழவும், சுயசிந்தனை, ஆற்றலை வளர்த்து பிரச்சினைகளுக்குத் தீர்வுகாணவும் வழி வகுத்தல்.
CO5	போட்டிகள் நிறைந்த இவ்வுலகில் சமுதாயம், அரசியல், பொருளாதாரம் ஆகிய சூழல்களைத் துணிச்சலாக எதிர்கொள்ள தன்னம்பிக்கையை வழங்குதல்.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	✓	✓	-	-	-	✓	-	-	✓
CO2	-	✓	-	-	✓	-	-	✓	✓	-	✓	-
CO3	-	-	-	-	✓	-	-	-	✓	-	-	-
CO4	-	-	✓	-	✓	✓	✓	✓	✓	✓	✓	-
CO5	-	-	-	-	✓	✓	-	✓	✓	-	-	-

பாடத்திட்டம்**அலகு - 1****(5 மணிநேரம்)**

மனிதவள மாண்பின் அவசியம் - குறிக்கோள் , மதிப்புகள் - வாழ்வின் நோக்கமும் தத்துவமும் - வாழ்க்கைத் தேவைகள் , காப்புகள் - அறநெறிகள் , அறிவின் நிலைப்பாடிகள்.

அலகு - 2**(5 மணிநேரம்)**

எண்ணம் ஆராய்தல் - எண்ணம் எழக்காரணங்கள் - எண்ணம் ஆராய்தல் பயிற்சி - ஆசை சீரமைத்தல் - ஆசை சீரமைத்தல் பயிற்சி.

அலகு - 3**(5 மணிநேரம்)**

சினம் தவிர்த்தல் - சினத்தின் விளைவுகள் - சினம் தவிர்த்தல் பயிற்சி - கவலை ஒழித்தல் - கவலையின் வகைகளும் விளைவுகளும் - கவலை ஒழித்தலுக்கான பயிற்சி.

அலகு - 4**(8 மணிநேரம்)**

மனிதனின் பரிணாமம் - பிரபஞ்ச தன்மாற்றம் - உயிரினத் தன்மாற்றம் - ஆறாம் அறிவின் மேம்பாடு - மனித வேறுபாட்டிற்கான காரணங்கள் - ஏழு சம்பத்துகள் - பதினாறு காரணங்கள் - மனத் தூய்மை தரும் சமுதாய நலன்.

அலகு - 5**(7 மணிநேரம்)**

கல்வியும் சமுதாயமும் - கல்வியின் சமுதாய நோக்கங்கள் - கல்வியின் சமுதாயப் பணிகள் - அரசியலும் சமுதாயமும் - பொருளாதாரமும் சமுதாயமும் - விஞ்ஞானமும் சமுதாயமும்.

TEXT BOOKS**Recent editions of the following books only are recommended**

S. No	Author Name	Title of the Book	Publishers
1	-	தனிமனித விழுமியங்கள்	என்.ஜி.எம். கல்லூரி, பொள்ளாச்சி.
2	-	சமுதாய விழுமியங்கள்	என்.ஜி.எம். கல்லூரி, பொள்ளாச்சி.

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1	-	வாழ்வியல் விழுமியங்கள்,	வேதாத்திரி பதிப்பகம் , ஈரோடு.
2	-	மனவளக்கலை யோகா	வேதாத்திரி பதிப்பகம் , ஈரோடு.

SEMESTER II

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U2SBST02	Title : Skill Based Subject 2 : Mathematics for Competitive Examinations -II	Batch	2018-2021
			Semester	II
Hrs/week	2		Credits	2

COURSE OBJECTIVES

To enable the Students

- To know about concept of Interest and Profit and loss.
- To develop the ability in solving Permutation , Combinations and Bankers Discount.
- To Solve Problems of Permutations and combinations.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to achieve the following outcomes.

CO Number	CO Statement
CO1	Explain the basic concepts of mathematics of finance.
CO2	Solve the problems on time and distance, time and work.
CO3	Apply the concept of permutation and combinations to solve problem.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	✓	-	✓	✓	-	-	✓	-	✓
CO2	-	✓	✓	✓	-	✓	✓	-	-	✓	-	✓
CO3	-	✓	✓	✓	-	✓	✓	-	-	✓	-	✓

SYLLABUS**UNIT I****(Hours:6)**

Profit and Loss – Ratio and Proportion

UNIT II**(Hours:6)**

Partnership – Chain Rule

UNIT III**(Hours:6)**

Time and Distance – Time and work

UNIT IV**(Hours:6)**

Permutation & Combinations

UNIT V**(Hours:6)**True Discount- Bankers Discount (**Simple Problems only**)**TEXT BOOK:****Recent editions of the following books only are recommended**

S. No	Author Name	Title of the Book	Publishers
1	R. S. Agarwal	Quantitative Aptitude (for Competitive Examinations)	S. Chand and Company Limited

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1	R.V.Praveen	Quantitative Aptitude and Reasoning	PHI Learning pvt. Ltd
2	Abhijit Guha	Quantitative Aptitude for Competitive Examinations	ata Mc-Graw Hill Publishing Company

WEBSITE REFERENCE1.<https://www.careerbless.com/aptitude/qa/home.php>2.<https://www.indiabix.com/>**Means of Curriculum Delivery** : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER III

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U3ITCT07	CORE 7: OPERATING SYSTEMS	Batch	2018-2021
Hrs/week	5		Semester	III
			Credits	4

COURSE OBJECTIVES:

- To gain knowledge on OS concepts and functioning of modern OS.
- To understand the basics of operating systems like kernel, shell, types and views of operating systems
- To understand the structure of OS, process and Interprocess Communications.
- To understand the deadlock & Memory management concepts.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the basics of operating systems like kernel, shell, types and views of operating systems
CO2	Implement operating system functions.
CO3	Describe the various CPU scheduling algorithms and remove deadlocks
CO4	Explain various memory management techniques and concept of thrashing
CO5	Recognize file system interface, protection and security mechanisms.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO3	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO4	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO5	-	✓	✓	-	-	-	-	-	-	-	-	✓

SYLLABUS**UNIT I****(Hours:12)**

Introduction: What is OS -History of OS -Computer Hardware Review- OS Concepts: Processes-Deadlocks-Memory Management-I/O-Files-Security-The Shell.

UNIT II**(Hours:12)**

OS Structure: Monolithic Systems- Layered Systems- Virtual Machines- Exo Kernels-Client Server Models - Virtual Machines - Processes: The Process Model-Process Creation-Process Termination-Process Hierarchies - Process States.

Threads: The Thread Model-Thread Usage-Implementing Threads In User Space & Kernel Space-Hybrid Implementations.

UNIT III**(Hours:12)**

Interprocess Communication: Race Condition-Critical Regions-Mutual Exclusion With Busy Waiting-Sleep & Wakeup-Semaphores-Message Passing- Mutexes-Monitors-Barriers.Classical IPC Problems:The Dining Philosophers Problem-The Readers and riters Problems-The Sleeping Barber Problem.

Scheduling:Introduction to Scheduling-Scheduling Batch Systems-Scheduling in Interactive Systems—Scheduling in Real-Time Systems-Policy versus Mechanism-Thread Scheduling.

UNIT IV**(Hours : 10)**

Deadlocks: Introduction, Deadlock Detection And Recovery: Deadlock Detection With One Resource of Each Type- Deadlock Detection With Multiple Resources of Each Type-Recovery From Deadlock.

Deadlock Avoidance: Bankers Algorithm for Single Resource, Bankers Algorithm for Multiple Resources. Dead Prevention:Attacking the Mutual Exclusion Condition- Attacking the Hold and ait Condition- Attacking the No Preemption Condition-Attacking the Circular Wait Condition.

UNIT V**(Hours : 14)**

Memory Management: Virtual Memory-Paging-Page Tables-Page Replacement Algorithm: The Optimal Page Replacement Algorithm-The Not Recently Used Page Replacement Algorithm- The First In First Out.

File Systems: Files: File Naming- File Structure-File Types—File Attributes-File Operation.

Directories: Single Level Directory Systems-Two Level Directory Systems-Hierarchical Directory Systems.

Text Book

Recent editions of the following books only are recommended

S.NO.	Author Name	Title of the Book	Publishers
1.	Andrew STanenbaum	“Modern Operating Systems”	Prentice Hall of India Pvt. Ltd

Reference Books

S.NO.	Author Name	Title of the Book	Publishers
1.	Harvey M. Deitel	Operating Systems	Pearson Education Pvt. Ltd
2.	Abraham Silberschatz Peter Baer Galvin and Greg Gagne	Operating System Concepts	John Wiley & Sons (ASIA) Pvt. Ltd

WEBSITE REFERENCES

1. https://en.wikipedia.org/wiki/Operating_system
2. https://www.tutorialspoint.com/computer.../computer_operating_system.htm
3. https://www.webopedia.com/TERM/O/operating_system.html
4. <https://www.geeksforgeeks.org/operating-systems-need-and-functions/>
5. <https://www.lifewire.com > How To > Windows > Key Concepts > Computer Concepts>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER – III

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U3ITCT08	Core 8: Java Programming	Batch	2018-2021
			Semester	III
Hrs/week	5		Credits	4

COURSE OBJECTIVES

- To introduce the OOP concepts and basic syntax of java.
- To provide knowledge on classes, inheritance, interfaces and packages.
- To make the students to understand exception handling and multithreading.
- To gain the knowledge on Input/Output concepts and applets.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain object oriented programming concepts of java.
CO2	Comprehend building blocks of OOPs language, inheritance, package and interfaces
CO3	Identify exception handling methods
CO4	Develop multithreading object oriented programs
CO5	Develop an object oriented program handling data file.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	✓	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	✓	-	-	-	✓	-	✓
CO3	-	✓	✓	-	-	✓	-	-	-	✓	-	✓
CO4	-	✓	✓	-	-	✓	-	-	-	✓	-	✓
CO5	-	✓	✓	-	-	✓	-	-	-	✓	-	✓

UNIT I**(Hours : 12)**

Introduction to Object-Oriented Programming: Fundamentals – Object oriented Paradigm – Basic Concepts of -Benefits of OOP – Applications of OOP. Java Evolution : History – Features – Difference between Java,C,C++.Overview : Simple Java Program - Java Program Structure – Java Tokens- Statements -JVM - Constants – Variables – Data types – Operators and Expressions.

UNIT II**(Hours : 12)**

Decision Making and Branching: if, if..else, switch – **Decision making and looping:** While statement, do statement, for statement, Jumps in Loops, Labelled Loops - **Classes, Objects and Methods:** Defining a class, Field declaration, Methods declaration, Creating objects Accessing class members, Constructors, Method Overloading,

Inheritance: Extending a class, Overriding Methods. - Arrays, Strings and vectors: One and Two dimensional Array, Creating an Array, Strings.

UNIT III**(Hours : 10)**

Interfaces: Multiple Inheritance – Packages : Putting classes together – Multithreaded programming : Creating threads, Extending Threads, Life cycle of a Thread, Using Thread Methods, Implementing ‘Runnable’ Interface

UNIT IV**(Hours : 14)**

Exception Handling: Exception Handling Fundamentals-Exception types- Uncaught Exceptions- Using try and catch-Multiple Catch clauses- Nested try statements-Throw- Throws-Finally- Java’s Built-in Exceptions- **Applet Programming:** – Types of Applets-Applet Basics-Applet Architecture- An Applet Skeleton- Simple Applet Display Methods- Requesting Repainting.

UNIT V**(Hours : 12)**

Managing Input / Output Files in Java: Concepts of Streams – Stream classes – Byte stream classes – Character stream classes - Using streams – File classes - I/O Exceptions – Creation of files – Reading / Writing characters, Byte - Handling Primitive data types – Random Access Files.

TEXT BOOKS

Recent editions of the following books only are recommended

S.NO	Author Name	Title of the Book	Publishers
1.	E.BalaGurusamy	“Programming with Java” (Unit 1,2,3,5)	Tata McGraw Hill Pvt Ltd
2.	Patrick Naughton & Hebert Schildt	“The Complete Reference Java 2” (Unit 4)	Tata McGraw Hill Pvt Ltd.

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publishers
1.	John R.Hubbard,	Programming with Java	Tata McGraw
2.	Aaron Walsh and John Fronckowiak	“ Java Programming Bible”	IDG Books

WEBSITE REFERENCES

- 1) <https://www.tutorialspoint.com>
- 2) <https://www.geeksforgeeks.org>
- 3) <http://javanotes.co.in>
- 4) <https://www.leepoint.net>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER – III

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U3ITCT09	Core 9: Microprocessor and ALP	Batch	2018-2021
			Semester	III
Hrs/week	6		Credits	4

COURSE OBJECTIVES

- To make the students to have basic Knowledge and understanding of fundamental microprocessor architecture, and operating models.
- To understand various types of processors and data process using Microprocessor architectures
- Understand the programs to run on 8086 microprocessor based systems.
- Understand and devise techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the various types of processors and data process using Microprocessor architectures.
CO2	Explain the programs to run on 8086 microprocessor based systems.
CO3	Design system using memory chips and peripheral chips for 16 bit 8086 microprocessor.
CO4	Describe the devise techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors.
CO5	Distinguish between RISC and CISC processors and understand multi core processor and its advantages

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	√	√	-	-	-	-	-	√	-	√	√
CO2	-	√	√	-	-	-	-	-	√	-	√	√
CO3	-	√	√	-	-	-	-	-	√	-	√	√
CO4	-	√	√	-	-	-	-	-	√	-	√	-
CO5	-	√	√	-	-	-	-	-	√	-	-	-

SYLLABUS**UNIT I****(Hours:13)**

Introduction Evolution-Single chip micro computer – Embedded microprocessors – Bit slice processors – Microprogramming – RISC and CISC processors – Vector processing – Array

Processors – Digital Signal Processors Transputers – Microprocessor with MMX Technology - von Neumann Architecture - Harvard Architecture – Data Flow Architecture.

UNIT II**(Hours:14)**

16-Bit Intel Microprocessors : Intel 8086 – Pin Description of Intel 8086 - Pin description of Minimum mode – Pin description of Maximum mode –Bus interface and execution units(BIU and EU)- Register organization of 8086 – Interrupts – Addressing modes of 8086 – Intel 80186 – Intel 80286.

UNIT III**(Hours : 15)**

Instruction Set – 8086 Instruction Groups – Addressing mode byte – Segment Register Selection – Segment override. – 8086 Instructions.Assembly Language Programs for 8086:Arrange numbers in Ascending and Decending order-Block Move using REP instruction.Debug and Assembler:DEBUG-DEBUG Commands-Assembler-I/O Procesor-Co-Processor.

UNIT IV**(Hours:15)**

Input and Output devices- Input devices – Output devices – Memory and I/O Addressing – 8086 Qaddressing and address decoding – Programmable I/O ports – DMA data transfer – Programmable counter. Cache Controller – Memory Controllers – Floppy Disk controller – Hard Disk Interface – Intel 440FX PCI set – Intel 82430FX PCI set.

UNIT V**(Hours:15)**

Multiprocessor Configurations:Coprocessor Configurations-Closely Coupled Configurations-Loosely Coupled Configurations-Scheme of establishing priority:Daisy chaining,polling and Independent requesting -8087 numeric data processor architecture-The 8089 I/O procesor architecture-Communication between CPU and IOP.

Text Books:

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publishers
1.	Badri Ram	Advanced Microprocessors and Interfacing	Tata McGraw Hill Pvt Ltd
2.	Yu-Cheng Liu & Glann A.Gibson	Microcomputer Systems:the 8086/8088 Family architecture,programming and design	Second Edition PHI Private Ltd.

Reference Books:

S. No	Author Name	Title of the Book	Publishers
1.	Douglas Hal	Microprocessor and Interfacing	Tata McGraw Hill Pvt Ltd
2.	Daniel Tabak	Advanced Microprocessor	Tata McGraw Hill Pvt Ltd.

WEBSITE REFERENCES:

1. <https://en.m.wikipedia.org>>org wiki
2. <https://simple.m.wikipedia.org>>wiki
3. <https://www.tutorialspoint.com>>microprocessor
4. <https://computer.howstuffworks.com>>
5. <https://electrosome.com>>microprocessor

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER – III

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U3ITCP10	Core 10: Java Programming - Practical	Batch	2018-2021
			Semester	III
Hrs/week	6		Credits	3

COURSE OBJECTIVES

- Understand fundamentals of object – oriented programming in Java, including defining classes, invoking methods using class libraries.
- To be able to use the Java SDK environment to create, debug and run simple Java programs.
- To enable the students to gain knowledge in developing Java Programs for certain specified problems.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.
CO2	Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
CO3	Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
CO4	Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
CO5	Identify and describe common user interface components to design GUI in Java using Applet

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	✓	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	✓	✓	✓	-	-	-	✓
CO3	-	✓	✓	-	-	✓	✓	✓	-	-	-	✓
CO4	-	✓	✓	-	-	✓	✓	✓	-	-	-	✓
CO5	-	✓	✓	-	-	✓	✓	✓	-	-	-	✓

SYLLABUS

1. Write a Java Program to define a class, define instance methods for setting and Retrieving values of instance variables and instantiate its object.
2. Write a Java Program to define a class, define instance methods and overload them and use them for dynamic method invocation.
3. Write a Java Program to define a class, describe its constructor, overload the Constructors and instantiate its object.
4. Write a Java Program to demonstrate use of sub class.
5. Write a Java Program to demonstrate use of nested class.
6. Write a Java Program to implement array of objects.
7. Write a Java program to practice using String class and its methods.
8. Write a Java program to practice using String Buffer class and its methods.
9. Write a Java Program to implement inheritance and demonstrate use of method overriding.
10. Write a Java Program to implement multilevel inheritance by applying various access controls to its data members and methods.
11. Write a program to demonstrate use of implementing interfaces.
12. Write a program to implement the concept of threading by extending Thread Class.
13. Write a program using Applet to display a message in the Applet.

WEB REFERENCES

- http://www3.ntu.edu.sg/home/ehchua/programming/java/j3f_oopexercises.html
<https://www.javatpoint.com>
<https://www.w3resource.com/java-exercises/>
<http://enggedu.com/object-oriented-programming-lab-exercise-programs/index.php>
<http://www.java67.com/2013/01/10-programming-questions-and-exercises.html>

Means of Curriculum Delivery : Power point presentation, Lab Assignments, Observation

SEMESTER III

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U3CAAT03	Title : Allied 3:Operations Research	Batch	2018-2021
Hours/week	5		Semester	III
			Credits	4

COURSE OBJECTIVES

To enable the Students

- To Know Operation Research and LPP, solving LPP
- To solve transportation and assignment problems
- To acquire knowledge of queueing theory, PERT and CPM

CO Number	CO Statement
CO1	Define Operations Research, Linear Programming Problem and explain the methods of solving Solution of LPP using Graphical Method simplex method and Big M method
CO2	Solve Transportation and Assignment problems
CO3	Explain the concepts of Game Theory
CO4	Study the concepts of Queueing theory and solving simple problems
CO5	Know distinction between PERT & CPM

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	✓	-	✓	-	-	-	-	-	-
CO2	-	-	-	✓	-	✓	-	-	-	-	-	-
CO3	-	-	-	✓	-	✓	-	-	-	-	-	-
CO4	-	-	✓	✓	-	✓	-	-	✓	✓	✓	-
CO5	-	-	✓	✓	-	✓	-	-	-	✓	✓	-

SYLLABUS**UNIT I****(Hours:12)**

Linear Programming-Mathematical Model assumption of Linear programming-Graphical Method-Simplex method- Big-M Method-Problems

UNIT II**(Hours:12)**

The Transportation Problems- Initial Basic Feasible Solution by North West Corner rule-Least Cost Method-Vogel's Approximation Method-The Assignment Problems-Assignment Algorithm-Optimum Solution-Unbalanced Assignment problem-Travelling Salesman Problem.

UNIT III**(Hours :12)**

Game Theory-Concept of pure and Mixed Strategies-Solving 2x2 matrix with and without saddle point- nx2-2xm games-Dominance Property.

UNIT IV**(Hours:12)**

(Derivations Not included) Queueing Theory- definition of waiting line model- Queue discipline- Traffic Intensity- Poison Arrival- Birth Death process- Problems from single server: finite population model- Problems from multi server: finite population model.

UNIT V**(Hours:12)**

PERT and CPM- Network representation- Backward pass- forward pass- Computation- PERT network.

*Questions in theory and problems carry 20% and 80% marks respectively

Text Book:

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publisher
1.	Prof. V. Sundaresan, K.S. Ganapathy Subramanian, K. Ganesan	Resource Management Techniques	A.R. Publications, Chennai.

REFERENCE BOOKS

S. No.	Author Name	Title of the Book	Publisher
1	Kanti Swarup, P.K. Gupta and Man Mohan	Operation Research	Sultan Chand & sons, New Delhi
2	Prof.V.Sundaresan, K.S.Ganapaty Subramanian, K. Ganesan	Resource Management Techniques	A.R. Publications, Chennai
3	Prem Kumar Gupta D.S, Hira S	Operation Research	Chand & Company Ltd, Ram Nagar, New Delhi

WEBSITE REFERENCE

- 1.<https://www.nptel.ac.in/courses/Webcourse-contents-OPTIMIZATION-METHODS-pdf-Module>
2. <https://www.mech.iitm.ac.in/nspch.pdf>
3. <https://www.shodhganga.inflibnet.ac.in/bitstream/10603/11449/.pdf>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER – III

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code:	18U3NMET01	NON MAJOR ELECTIVE 2 : Food Science and Nutrition	Batch	2018-2021
Hrs/ Week	2		Semester	III
			Credits	2

COURSE OBJECTIVES

On successful completion of the course, students will be able to achieve the following outcomes

- To understand the importance of Nutrition and the role of food in the maintenance of good health.
- To know about the functions, deficiency and toxicity of nutrients.
- To understand Malnutrition and its prevention
- To know about various adulterants in food and the methods of detecting them.
- To have an awareness on the prevailing laws, hygiene and sanitation relating to food safety..

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to achieve the following outcomes.

CO Number	CO Statement
CO1	Identify the properties of various food comonenets
CO2	Explain the role of Nutrition in the maintenance of good health.
CO3	Explain about classification, sources, functions, requirements, health hazards due to deficiency and excess of thses vitamins
CO4	Explain the problems of malnutrition and measures to overcome the same.
CO5	Explain the various laws available for food safety and find out whether the food is a adulterated.

SYLLABUS**UNIT 1****(Hours : 6)**

Introduction to Nutrition: Terms used in Nutrition and Health. Definitions - Health, Nutrition, Nutrients, Foods, Diet, R.D.A., Balanced diet, Malnutrition, Under nutrition, Over nutrition, Optimum nutrition. Five Food Groups, relationship between food and nutrition, functions offood,classification of nutrients.

UNIT 2**(Hours ; 6)**

Basic Nutrition: WATER - Functions, sources, requirements.
CARBOHYDRATE - Functions, sources, requirements.

UNIT 3**(Hours : 6)**

LIPIDS - Composition, sources, functions, requirements, deficiency and excess.

PROTEINS- composition, classification sources, functions, requirements, deficiency.

UNIT 4**(Hours : 6)**

VITAMINS- classification, sources, functions, requirements, deficiency and excess of the following: Vitamin A, D, E, K, C, Thiamin, Riboflavin, Niacin and B Complex.

MINERALS - functions and sources. FIBRE- definition, sources, functions.

UNIT 5**(Hours : 6)**

Ecology of malnutrition - Definition, causes and consequences of malnutrition. Measures to overcome malnutrition (only introduction)- Increased agricultural production through food technology, food fortification and enrichment, Nutrition education, Nutrition intervention programme genesis, objectives and operation of school lunch programme and ICDS, Organizations that combat malnutrition- International organization – FAO, WHO, UNICEF National Organizations – ICMR, NIN, CFTRI, DFRL, ICAR. Food Adulteration, definition, Types, Common adulterants and home scale methods of detecting adulterants.

TEXT BOOKS:

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1	Dr.A.Indhuleka and Dr.S.N.Suresh	Text Book of Food Science and Nutrition	SURE Publishers, Coimbatore

REFERENCE BOOKS:

S. No	Author Name	Title of the Book	Publishers
1	Guthrie Helen.	Introductory Nutrition	Mirror/ Mosby College Publishing Times
2	Mudambi, S.R., Rajgopal, M.V.	Fundamentals of Foods and Nutrition	NewAge International Pvt. Ltd

Means of Curriculum Delivery: Lecture, Group Learning, Seminar, Assignment, Case Studies, Google Classroom.

SEMESTER III

Programm Code :	B.Sc IT	Programme Title:	Bachelor of Science (Information Technology)	
Course Code :	18U3SBST03	Skill based subject 3: Mathematics for competitive Examinations III	Batch	2018-2021
Hrs/week	2		Semester	III
			Credits	2

COURSE OBJECTIVES :

To enable the Students

- To make the students to know the concept of Pipes, Cistern and Probability.
- To solve problem related to Problems on Boats and Streams .
- To make the students to know the concept of Alligation or mixture, Problem of Heights and distance, odd man out series.

COURSE OUTCOME (CO)

CO Number	CO Statements
C01	Several tricks and formulas for pipes and cisterns are available which reduces the effort to solve the problem.
C02	Solve the problems on time and distance train, boats and stream.
C03	Apply the concept of Alligation and height & distance to solve problem.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	✓	-	-	-	-	-	-
CO2	-	-	-	-	-	✓	-	-	-	-	-	-
CO3	-	-	-	-	-	✓	-	-	-	-	-	-

UNIT I**(Hour:06)**

Pipes and cistern – Probability

UNIT II**(Hour:06)**

Problems on trains

UNIT III**(Hour:06)**

Problems on Boats and Streams

UNIT IV**(Hour:06)**

 Alligation or mixture
UNIT V**(Hour:06)**Heights & Distance- Odd Man Out & Series (**Simple Problems only**)**TEXT BOOK****Recent editions of the following books only are recommended**

S. No.	Author Name	Title of the Book	Publishers
1	R. S. Agarwal	Quantitative Aptitude (for Competitive Examinations)	S. Chand and Company Limited

REFERENCE BOOKS

S. No.	Author Name	Title of the Book	Publishers
1	R.V.Praveen	Quantitative Aptitude and Reasoning,	PHI Learning pvt. Ltd
2	Abhijit Guha	Quantitative Aptitude for Competitive Examinations	Tata Mc-Graw Hill Publishing Company

WEBSITE REFERENCE1. <https://www.careerbless.com/aptitude/qa/home.php>2. <https://www.indiabix.com/>**Means of Curriculum Delivery** : Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER-III

Programme Code:	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code:	18U3SBST04	Skill based subject 4: Communication Skills- I	Batch	2018-2021
Hrs/ Week	2		Semester	III
			Credits	2

COURSE OBJECTIVES:

- To make the students to understand the barriers in their communication and the ways to overcome the same.
- To make the students to know various types of listening and the effect of enhancing the listening skills.
- To encourage Group discussion and introduce to speak in different situations and the etiquette to be maintained.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students should be able to achieve the following outcomes.

CO Number	CO Statement
CO1	To communicate meaningfully and effectively with others
CO2	To explain various types of listening and be a careful listener
CO3	To deal with different kinds of situations by conversing effectively and maintaining the etiquette required for such situations

SYLLABUS**UNIT –I- COMMUNICATION****(Hours:08)**

1. Verbal and Non-Verbal Communication
2. Barriers to Communication

UNIT- II- LISTENING SKILLS**(Hours:08)**

1. Types of Listening
2. Tips for Effective Listening
3. Traits of Good Listening

UNIT- III- SPEAKING**(Hours:08)**

Group Discussion

Speaking at Different Types of Interviews

Making Effective Telephone Calls

Telephone Etiquette

TEXT BOOKS:**Recent editions of the following books only are recommended**

S. No	Author Name	Title of the Book	Publishers
1	Meenakshi Raman	Communication Skills	Oxford University Press
2	Shalini Aggarwal	Essential Communication Skills	Ane Books Pvt.Ltd. New Delhi

REFERENCE BOOKS:

S. No	Author Name	Title of the Book	Publishers
1	Course team, Bharathiyar University	Communication Skills a multi- skill course	Macmillan Publishers India LTD.
2	Krishna Mohan	Developing Communication Skills	Macmillan Publishers India LTD.
3	Joyce Pereire	Technical English – II	Vijay Nicole Imprints Pvt.Ltd

Means of Curriculum Delivery: Lecture, Group Discussion, Seminar, Assignment, Google Class Room.

SEMESTER – III

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U3BTLT01	Non Credit Course 1: Basic Tamil-1 #	Batch	2018-2021
Hrs/week	-		Semester	III
			Credits	-

அடிப்படைத் தமிழ்

பகுதி - IV : தமிழ்த்தாள் - 1 - மூன்றாம் பருவம்
(12-ம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயிலாதவர்களுக்கு)

அகமதிப்பீட்டுத் தேர்வு மட்டும்

நோக்கம் :

- தமிழ் எழுத்துக்களை எழுத, படிக்க தெரிந்து கொள்ளுதல்.
- சொற்களின் வகைகளைத் தெரிந்து கொள்ளுதல்.
- தொடர் அமைப்புகளைத் தெரிந்து கொள்ளுதல்.
- வாக்கியங்களைப் பிழையின்றி எழுதக் கற்றுக் கொள்ளுதல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு - Course Outcome (CO)

CO Number	CO Statement
CO1	தமிழ் எழுத்துக்களைத் தெளிவாக எழுதுதல்.
CO2	சொற்கள் கொடுக்கப்பட்டால் அவைகள் எச்சொற்கள் என வகைகளைக் கூறுதல்.
CO3	ஒரு சொற்றொடரில் எழுவாய், செயப்படுபொருள், பயனிலை எனவ என கண்டறிந்து கூறுதல்.
CO4	வாக்கியங்களைப் பிழையின்றி எழுதுதல்.

நிரல் விளைவுகளைக் கொண்ட வரைபடம்

CO /PO	P	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	✓	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	-	✓	-	-	-

தமிழ் மொழியின் அடிப்படைக் கூறுகள்.

எழுத்துக்கள் : முதலெழுத்துக்கள் (உயிர் எழுத்து, மெய் எழுத்து, உயிர்மெய் எழுத்து)

சொற்கள் : வகைகள் (பெயர்ச்சொல், வினைச்சொல், இடைச்சொல், உரிச்சொல்)

தொடர் : தொடரமைப்பு (எழுவாய், செயப்படுபொருள், பயனிலை)

குறிப்பு எழுதுதல் : பத்துப் பதினைந்து தொடர்களில் குறிப்பு வரைதல்

பிழைநீக்கி எழுதுதல் : (ஒற்றுப்பிழை, எழுத்துப்பிழை)

	அக மதிப்பீட்டுத் தேர்வு மதிப்பெண் வழங்கும் முறை	மதிப்பெண்கள்
1	வகுப்புத்தேர்வு - 1	10
2	வகுப்புத்தேர்வு - 2	10
3	மாதிரித்தேர்வு	10
4	பயிற்சிக் கட்டுரை	10
5	வாய்மொழித் தேர்வு	10
	மொத்த மதிப்பெண்கள்	50

குறிப்பு : வாய்மொழித் தேர்வில் தமிழ்ச் செம்மொழி வரலாறு தொடர்பான வினாக்கள் மட்டுமே கேட்கப்பட வேண்டும்.

சிறப்புத் தமிழ்

பகுதி - IV : தமிழ்த்தாள் - 1 - மூன்றாம் பருவம்
(12-ம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயின்றவர்களுக்கு)

அகமதிப்பீட்டுத் தேர்வு மட்டும்

நோக்கம்:

மேல்நிலைக் கல்வியில் தமிழ் மொழி பயின்ற மாணவர்களுக்கு இளங்கலை பட்ட வகுப்பில்

தமிழ் இலக்கியத்தின் சிறப்பினை எடுத்துக் கூறுதல்.

மரபுக் கவிதைகள், புதுக்கவிதைகள் வேறுபாடு பற்றி மாணவர்கள் அறியச் செய்தல்.

சொற்களை உச்சரிக்கும் போது ஒலி வேறுபாடு அறிந்து வாக்கியங்களில் பிழை நீக்கி

எழுதச் செய்தல்.

பயன்பாட்டுத் தமிழில் கடிதங்கள் மற்றும் மடல்கள் எழுதுவதற்குப் பயிற்சியளித்தல்.

பாடப்பகுதியோடு இணைந்த இலக்கிய வரலாற்றுச் செய்திகளை அறியச் செய்தல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு - Course Outcome (CO)

CO Number	CO Statement
CO1	மரபுக்கவிதை, புதுக்கவிதைகளுக்கு இடையில் உள்ள வேறுபாடுகள் அறிதல்.
CO2	மொழித்திறன் பயிற்சியின் மூலம், மாணவர்கள் பிழைநீக்கி எழுதுதல்.
CO3	இன்றைய சூழலுக்கு ஏற்ப, விண்ணப்பங்கள், மடல்கள் மற்றும் கடிதங்கள் எழுதச்செய்தல்
CO4	இலக்கியங்களின் வாயிலாக படைப்புகளின் வரலாறுகள், நோக்கம் உணர்தல்.
CO5	சொற்களைக் கொண்டு வாக்கியங்கள் அமைப்பதற்குப் பயிற்சி எடுத்தல்.

கூறு - 1 : பாரதியார் கவிதைகள்
கண்ணன் என் சேவகன்
பாரதிதாசன் - அழகின் சிரிப்பு (முழுவதும்)
மீரா (கவிஞர்) - குக்கூ (புதுக்கவிதை)

கூறு - 2 மொழித்திறன்
பிழைநீக்கி எழுதுதல் - றன, ரண வேறுபாடு அறிதல்
ளன, ழன, லன வேறுபாடு அறிதல்
ன, ண, ந வேறுபாடு அறிதல்
குறில் நெடில் வேறுபாடு அறிதல்

கூறு - 3 : கடிதங்கள் எழுதுதல் - பாராட்டுக் கடிதம், நன்றிக்கடிதம், அழைப்புக்கடிதம், அலுவலக விண்ணப்பம்.

கூறு - 4 சொற்களைத் தந்து தொடர்களை அமைக்கும் பயிற்சி அளித்தல், வல்லினம் மிகும் இடங்கள்.

கூறு - 5 பாடந்தழுவிய வரலாறு.

	அக மதிப்பீட்டுத் தேர்வு மதிப்பெண் வழங்கும் முறை	மதிப்பெண்கள்
1	வகுப்புத்தேர்வு - 1	10
2	வகுப்புத்தேர்வு - 2	10
3	மாதிரித்தேர்வு	10
4	பயிற்சிக் கட்டுரை	10
5	வாய்மொழித் தேர்வு	10
	மொத்த மதிப்பெண்கள்	50

குறிப்பு : வாய்மொழித் தேர்வில் தமிழ்ச் செம்மொழி வரலாறு
தொடர்பான வினாக்கள் மட்டுமே கேட்கப்பட வேண்டும்.

SEMESTER – IV

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U4ITCT11	CORE 11 : COMPUTER GRAPHICS	Batch	2018-2021
			Semester	IV
Hrs/week	5		Credits	4

COURSE OBJECTIVES:

To enable the students

- Understand the basics of computer graphics, different graphics systems and applications of computer graphics
- To study how graphic objects are represented in computer.
- To learn the overview of graphic systems.
- To learn about the 2D , 3D Transformations.
- To provide the programmers perspective of working of computer graphics.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the basics of computer graphics, different graphics systems and applications of computer graphics.
CO2	Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.
CO3	Use of geometric transformations on graphics objects and their application in composite form.
CO4	Explore projections and visible surface detection techniques for display of 3D .
CO5	Apply the logic to develop animation and gaming programs.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-		-	-	-	-	-	-
CO2	-	✓	✓	-	-		-		-	✓	✓	✓
CO3	-	✓	✓		-		-		-	✓	✓	✓
CO4	-	✓	✓		-		-		-	✓	✓	✓
CO5	-	✓	✓	-	-	-	-	-	-	✓	✓	✓

SYLLABUS**UNIT I****(Hours: 12)**

Overview of Graphics System :Video Display Devices-Raster scan systems-Random Scan systems -Graphics Monitors and workstations-input devices-hard copy devices.

UNIT II**(Hours: 12)**

output Primitives : Points and lines-Line Drawing-DDA-Bresenham's line algorithm -parallel line drawing algorithm - Circle Drawing Algorithms.

UNIT III**(Hours: 12)**

2Dimensional: 2D Geometric Transformations: Basic Transformations –Matrix Representations –Composite Transformations. 2D Viewing: The Viewing Pipeline –Clipping Operations.

UNIT IV**(Hours: 12)**

3Dimensional: 3D Display methods :Parallel Projection - Perspective Projection . 3D Graphics: Bezier Curves and Surfaces. Color models – XYZ-RGB-YIQ- CMY-HSV Models. - Computer Animation.

UNIT V**(Hours: 12)**

Multimedia hardware & software: Components of multimedia - Text, Image - Graphics – Audio -Video - Animation – Authoring. -- Applications - Video conferencing - Interactive video - video on demand.

Text Books:

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1	Donald Hearn and M. Pauline Baker	Computer Graphics	Prentice Hall of India
2	Ralf Steinmetz, Klara Steinmetz	Multimedia Computing, Communications and Applications	Pearson education

Reference Books :

S. No	Author Name	Title of the Book	Publishers
1	Steven Harrington	Computer Graphics Programming Approach	McGraw Hill
2	W.M.Newman and Sproul	“Principles of interactive Computer Graphics	Tata Mc-Graw Hill Publishing Company

WEBSITE REFERENCES

1. https://en.wikipedia.org/wiki/Computer_graphics
2. <https://www.geeksforgeeks.org/computer-graphics-2/>
3. https://www.tutorialspoint.com/computer_graphics/
4. ecomputernotes.com > Computer Graphics > Basic of Graphics

Means of Curriculum Delivery : Power point presentation, Lab Assignments, Observation, Google Classroom

SEMESTER IV

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U4ITCT12	Core 12:Systems Analysis and Design	Batch	2018-2021
Hrs/week	6		Semester	IV
			Credits	4

COURSE OBJECTIVES

To enable the students

- To Understand the principles and tools of systems analysis and design
- To gather data to analyse and specify the requirements of a system.
- To design system components and environments..
- To build general and detailed models that assist programmers in implementing a system. .
- To design a database for storing data and a user interface for data input and output, as well as controls to protect the system and its data.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the principles and tools of systems analysis and design
CO2	Solve a wide range of problems related to the analysis, design and construction of information systems
CO3	Apply Project Management and Requirement analysis,Principles to S/W project development.
CO4	Analyze the cost estimate and problem complexity using various Analyze estimation techniques
CO5	Plan and undertake a major individual project, prepare and deliver coherent and structured verbal and written technical reports

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓
CO2	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓
CO3	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓
CO4	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓
CO5	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓

SYLLABUS**UNIT - I****(Hours : 13)**

INTRODUCTION :The Systems Concept – Elements of a system – Types of system – Physical or Abstract systems – Open or closed systems – Man made Information systems-A Dynamic Personnel Information System model. The System development life cycle - Prototyping – Multifaceted role of the analyst

UNIT -II**(Hours : 14)**

SYSTEM ANALYSIS : Initial Investigation – Information gathering – Kind of information – Information gathering tools – types of interviews and Questionnaires. Structured Analysis – Tools- DFD-Data Dictionary-Decision tree and tables – Feasibility Study – Steps in feasibility Analysis-Feasibility report – Cost and benefit Analysis

UNIT -III**(Hours : 15)**

SYSTEM DESIGN : Process of Design – Design methodologies – Input/output and forms design – Input Design – Output Design – Forms – Types of forms – Layout considerations File Structure – File organization – Database Design – The Role of the Database Administrator

UNIT -IV**(Hours : 15)**

SYSTEM IMPLEMENTATION: System Testing and Quality Assurance- The Test plan – Types of system tests – Quality Assurance : QA goals in the systems life cycle – Levels of QA – Trends in Testing. Implementation : Conversion -Activity network for conversion -Review Plan -Software Maintenance

UNIT -V**(Hours : 15)**

HARDWARE SOFTWARE SELECTION AND PROJECT SCHEDULING:The Computer Industry – The Software Industry – Procedure for selection- Project Management – Crisis elimination through planning – Project Organization. System Security – Threats to security – Control Measures - Disaster/Recovery planning.

TEXT BOOK:

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publisher
1.	Elias M.Awad	Systems Analysis and Design	Galgotia.

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publisher
1.	Jeffrey A. Hoffer	Modern System Analysis and Design	Pearson Education
2.	Charles S.Wasson Leiserson,R.L. Rivest and C. Stein	System Analysis, Design, and Development: Concepts, Principles, and Practices	

WEBSITE REFERENCES

https://en.wikipedia.org/wiki/Systems_analysis_and_design

https://www.tutorialspoint.com/system_analysis_and_design

www.bcanotes.com/Sad.html

[https://www.wisdomjobs.com > ... > System Analysis and Design](https://www.wisdomjobs.com/>...>System_Analysis_and_Design)

https://en.wikibooks.org/wiki/Systems_Analysis_and_Design/Introduction

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Case studies,
Google Classroom

SEMESTER – IV

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U4ITCT13	Core 13 :Data Communication and Networks	Batch	2018-2021
			Semester	IV
Hrs/week	5		Credits	3

COURSE OBJECTIVES:

To enable the students to

- Build an understanding of the fundamental concepts of computer networking.
- Understand the various networking modals
- Understand the functions of each layer of OSI Layer.
- Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Describe the components of a data communications system.
CO2	Identify key considerations in selecting various transmission media in networks.
CO3	Identify and define roles and features of various data transmission protocols.
CO4	Describe various error detection and correction schemes.
CO5	Summarize the features and functions of multiplexing and modulation.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	√	√	-	-	-	-	-	-	√	√
CO2	-	-	√	-	-	-	-	-	-	-	√	√
CO3	-	√	√	-	-	-	-	-	-	-	√	√
CO4	-	√	√	-	-	-	-	-	-	-	√	√
CO5	-	√	√	-	-	-	-	-	-	-	√	√

SYLLABUS**UNIT - I****(Hours : 12)**

INTRODUCTION -Data communications – Networks – Network Types – Internet History – Standards and Administration – Network models : Protocol layering – TCP/IP Protocol Suite – OSI model.

UNIT - II**(Hours : 12)**

PHYSICAL LAYER -Data and Signals – Periodic analog signals – Digital signals – Transmission Impairment – Data rate limits – Performance – Digital transmission : Digital to Digital Conversion – Analog to Digital conversion - Transmission modes - Analog transmission : Digital to analog conversion – Analog to Analog conversion .

UNIT - III**(Hours : 12)**

DATA LINK LAYER-Error detection and correction : Block coding – Cyclic coding – Checksum – Forward error correction - Data Link Control (DLC) : DLC services – data link layer protocols – HDLC – Point to point Protocol(PPP) – Media Access Control(MAC) : Random Access – Controlled Access – Channelization.

UNIT - IV**(Hours : 12)**

NETWORK LAYER-Network Layer services - Packet switching – Network layer performance – IPV Address – Forwarding of IP packets – Network layer protocols : Internet protocol (IP) – ICMPv4 – Mobile IP – Next generation IP :IPv6 Addressing – The IPv6 Protocol – The ICMPv6 Protocol – Transition from IPv4 to Ipv6.

UNIT - V**(Hours : 12)**

TRANSPORT LAYER and APPLICATION LAYER-Transport layer protocols - User Datagram Protocol – Transmission Control Protocol – SCTP – Application Layer : Standard client server protocols : WWW and HTTP – FTP _ Electronic mail – Telnet – Secure Shell – Domain Name System – SNMP – ASN.1.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publishers
1.	BehrouzA.Forouzan	Data Communications and Networking	McGraw Hill Education pvt ltd.

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1.	Achyut S Godbole	Data Communications and Networks	Tata McGraw Hill Education pvt Ltd
2.	Uyless d. Black	Data Communications and Networks	Tata McGraw Hill Education Pvt Ltd

WEBSITE REFERENCES

https://www.tutorialspoint.com>data_communication
<https://what-when-how.com>data - communication>
<https://www.courseera.org>learn>data communication>
<https:// www.researchgate.net > publication>
<https://www.ecomputers.com>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Case studies, Google Classroom

SEMESTER – IV

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U4ITCP14	CORE 14 : COMPUTER GRAPHICS PRACTICAL	Batch	2018-2021
Hrs/week	6		Semester	IV
			Credits	3

COURSE OBJECTIVES

- To enable the students to gain knowledge in developing C Programs for certain specified problems.
- Understand the basics of computer graphics, different graphics systems and applications of computer graphics
- Understand the concepts of different type of geometric transformation of objects in 2D and 3D

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Demonstrate the basics of computer graphics, different graphics systems and applications of computer graphics.
CO2	Design scan conversion problems using C++ and c applications.
CO3	Apply clipping and filling techniques for modifying an object.
CO4	Implement the concepts of different type of geometric transformation of objects in 2D and 3D.
CO5	Apply the logic to develop animation and gaming programs.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	-	-	✓	-	✓	-	✓
CO3	-	✓	✓	-	-	-	-	✓	-	✓	-	✓
CO4	-	✓	✓	-	-	-	-	✓	-	✓	-	✓
CO5	-	✓	✓	-	-	-	-	✓	-	✓	-	✓

SYLLABUS

1. Write a C program with Fundamental Graphics Function
2. Write a program with menu option to input the line coordinates from the user to generate a line using DDA algorithm.
3. Develop a program to generate a complete circle based on Bresenham's circle algorithm
4. Write a C program for Clipping Algorithm using Line Clipping.
5. Write a program to draw the Indian Flag by using the primitives lines and circle.
6. Write a program to draw a car using the graphics primitives .
7. Write a simple program to illustrate the 2D and 3D functions.
8. Write a program to implement polygon filling.
9. Write a program to design a human face using the graphics primitives.
10. Write a program to demonstrate 2D animation such as clock simulation or rising sun.
11. Write a program to implement the bouncing ball inside a defined rectangular window.

WEBSITE REFERENCE:

1. vardhamancse.yolasite.com/resources/Computer%20Graphics%20Lab%20Manual.pdf
2. <https://www.slideshare.net/.../computer-graphics-lab-manual-70492057>
3. chettinadtech.ac.in/storage/14-06-30/14-06-30-13-18-28-2629-sakthivijayan80.pdf
4. <https://www.vidyarthiplus.com/vp/Thread-CS6513-Computer-Graphics-Lab-Manua>

Means of Curriculum Delivery : Power point presentation, Lab Assignments, Observation

SEMESTER-IV

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U4ITAT04	Title: ALLIED 4: BUSINESS ACCOUNTING	Batch	2018-2021
Hrs/week	5		Semester	IV
			Credits	4

COURSE OBJECTIVE

- To make the students understand the accounting principles, branches of accounting and journal, ledger and trial balance.
- To enable the students to prepare the final accounts.
- To enlighten the students of various methods of costing.
- To make the students to calculate the stock level and differentiate between cost, management and financial accounting.
- To provide knowledge on various types of budgets.

COURSE OUTCOMES(CO)

On successful completion of the course, students should be able to achieve the following outcomes

CO Number	CO Statement
CO1	Explain the basic Accounting concepts and the procedure to prepare journal and ledger.
CO2	Prepare Final Accounts of sole proprietor concern.
CO3	Prepare the cost sheet.
CO4	Calculate the Pricing of Material Issues.
CO5	Explain the Budgetary control system and Prepare the various types of budgets.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	✓	-	-	-	-	-	-	-	✓
CO2	-	-	-	✓	-	-	-	-	-	-	-	✓
CO3	-	-	-	✓	-	-	-	-	-	-	-	✓
CO4	-	-	-	✓	-	-	-	-	-	-	-	✓
CO5	-	-	-	✓	-	-	-	-	-	-	-	✓

SYLLABUS**UNIT –I****(Hours:12)**

Introduction – Accounting Principles – Branches of accounting – accounting rules - Journalising – Ledger – Subsidiary book including cash books – Trial balance

UNIT – II**(Hours:12)**

Preparation of Final accounts: Trading, Profit and Loss Account and Balance sheet with simple adjustments – Outstanding Expenses and Income, Prepaid expenses, Pre received Income, Depreciation – Provision for bad debts

UNIT – III**(Hours:12) Cost**

Accounting: Meaning and elements of cost – Preparation of cost sheet with simple adjustments

UNIT – IV**(Hours:12) Cost**

Accounting: Meaning and Importance - Stores Ledger: FIFO – LIFO – Weighted average and Simple average method. Management Accounting: Its meaning and objectives – Difference between management accounting, financial accounting and cost accounting.

UNIT – V**(Hours:12)**

Budget and Budgetary control – Preparation of various budgets: Flexible budget – Production budget – Cash budget – Sales budget.

(Questions on problems and theory carry 80% and 20% of marks respectively)

Text Books:

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publishers
1.	T. S. Reddy & A. Murthy	Financial Accounting	Margham Publication, Chennai
2.	K.L.Nagarajan, N.Vinayakam, P.L. Nagarajan	Principles of Accountancy S. Chand & Sons Company Limited	S. Chand & Sons Company Limited
3.	N.P.Srinivasan & Sakthivel Murugan	Accounting for management	S. Chand & Company Limited
4.	T.S.Reddy & Y Hari Prasad Reddy	Cost Accounting	Margham publications
5.	S.Reddy & Y Hari Prasad Reddy	Management Accounting	Margham publications

SEMESTER – IV

Programme Code:	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code:	18U4NMET04	NON MAJOR ELECTIVE 2 : FLORICULTURE	Batch	2018-2021
Hours/ Week	2		Semester	IV
			Credits	2

COURSE OBJECTIVES:

- To learn about the cultivation of flowers and ornamental crops from the time of planting to the time of harvesting.
- To focus on the promotional and awareness aspects by motivating them to grow traditional as well as non-traditional floral crops and houseplants for commercial purpose.
- To learn the basics of growing and fertilizing plants and flowers.
- To learn design techniques and work on dried and live bouquets, arrangements, corsages and boutonnières.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students should be able to

CO Number	CO Statement
CO1	Identify the basic classification of floricultural crops.
CO2	Understand the techniques and practices of production and use of floricultural crops.
CO3	Implement the techniques in gardening, arranging bouquets and shipping the cut flowers in Export & Import marketing

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	-	✓	✓	-	-	-	✓	-	-	-	-
CO2	✓	-	✓	✓	-	-	-	✓	-	-	-	-
CO3	✓	-	✓	✓	-	-	-	✓	-	-	-	-

SYLLABUS**UNIT I****(Hours: 6)**

Floriculture – Definition, Introduction and Scope of Floriculture. Status of floriculture in India.

Development of Floriculture

UNIT II**(Hours: 6)**

Cut Flowers- Types of cut flowers, Arranging bouquets, Using floral design tools. Loose Flowers

Scope of loose flower trade, Significance in the domestic market/export,

UNIT III**(Hours: 6)**

Design- Types of design Flower choice for design, Corsages/Boutonnieres, Vase design, Basket/mug design.

UNIT IV**(Hours: 6)**

Propagation-Types of propagation, Annuals & Perennials, Varieties, Growing seasons, Potting techniques.

UNIT V**(Hours: 6)**

Careers in Floriculture. Export/Import and marketing in floriculture. Government Incentives and Schemes. The role of supporting agencies.

TEXT BOOKS:

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publisher
1	Dr.S.N.Suresh, Dr. V. subha Priya and Dr. C. Initha LebanonEbency	Introduction to Floriculture	Teachers Publishing House.

REFERENCE BOOKS:

S. No	Author Name	Title of the Book	Publisher
1	Jacob Varghese Kunthara	Know your Garden Plants	H and C Books
2	Dr. B. Hemlanaik, Professor & Head (Hort.) cum Coordinator (PPMC)	Production Technology of Ornamental Crops and Landscape Gardening	UAHS, Shimoga

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER-IV

Programme Code:	B.Sc(IT)	Programme Title	Bachelor of Science (Information Technology)	
Course Code:	18U4SBST05	Skill Based Subject 5: Mathematics for Competitive Examinations -IV	Batch	2018-2021
Hours/ Week	2		Semester	IV
			Credits	2

COURSE OBJECTIVES

To enable the Students

- To make the students to know the concept of Problems of Interest and Venn Diagrams
- To solve problem related to Problems on Sequence and series.
- To develop the skills in solving problems in Mental Ability and Logical reasoning.

COURSE OUTCOME (CO)

CO Number	CO Statements
CO1	Explicate the concept of finance and discover the inference using Venn- diagram.
CO2	Solve the problems on logarithms,area,Volume, Sequence and series.
CO3	Find solution to the problems on Tabulation, graphs and puzzles.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	✓	-	-	-	-	✓	-	-	-	✓
CO2	✓	-	-	-	-	✓	-	-	-	✓
CO3	✓	-	-	-	-	✓	-	-	-	✓

UNIT I**(Hours:6)**

Simple Interest-Compound Interest -Logcal Venn Diagram

UNIT II**(Hours:6)**

Logarithms – Sequence and series

UNIT III**(Hours:6)**

Area-Volume and Surface areas

UNIT IV**(Hours:6)**

Tabulation-Bar Graphs-Puzzles

UNIT V**(Hours:6)**

Pie Charts-line Graphs- Mental Ability and Logical reasoning

(Simple Problems only)

TEXT BOOK

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publisher
1	R. S. Agarwal	Quantitative Aptitude (for Competitive Examinations)	S. Chand and Company Limited

REFERENCE BOOK

S. No.	Author Name	Title of the Book	Publisher
1	R.V.Praveen	Quantitative Aptitude and Resoning	PHI Learning pvt. Ltd
2	Abhijit Guha	Quantitative Aptitude for Competitive Examinations	ata Mc-Graw Hill Publishing Company

WEBSITE REFERENCE

1.<https://www.careerbless.com/aptitude/qa/home.php>

2.<https://www.indiabix.com/>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER-IV

Programme Code:	B.Sc(IT)	Programme Title	Bachelor of Science (Information Technology)	
Course Code:	18U4SBST06	Skill Based Subject 6: Communication Skills- II	Batch	2018-2021
Hours/ Week	2		Semester	IV
			Credits	2

COURSE OBJECTIVES:

- To know clearly the use of various symbols for pronouncing the words with proper sounds.
- To make aware of various techniques of reading and writing different reports.

COURSE OUTCOMES (CO)

On Successful Completion of the course the students should be able to achieve the following outcomes.

CO Number	CO Statement
CO1	To be able to pronounce the words clearly with proper pronunciation.
CO2	Read the given materials properly and to write meaningful reports

SYLLABUS**UNIT-I : READING & WRITING**

Resume Preparation
Report Writing
Minutes of a Meeting
Data Representation and Interpretation
Memos

UNIT- II : SOUNDS & SYMBOLS

1. Vowels
2. Consonants
3. Diphthongs
4. Stress and Intonation

TEXT BOOKS:

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publisher
1	Meenakshi Raman	Communication Skills	Oxford University Press
2	Shalini Aggarwal	Essential Communication Skills	Ane Books Pvt.Ltd. New Delhi

REFERENCE BOOKS:

S. No	Author Name	Title of the Book	Publisher
1	Course team, Bharathiyar University	Communication Skills a multi- skill course	Macmillan Publishers India LTD.
2	Krishna Mohan	Developing Communication Skills	Macmillan Publishers India LTD.
3	Joyce Pereire	Technical English – II	Vijay Nicole Imprints Pvt.Ltd.

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER-IV

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U4BTLT02	Non Credit Course 2: Basic Tamil -II	Batch	2018-2021
Hours/week	-		Semester	IV
			Credits	-

அடிப்படைத் தமிழ்

பகுதி - IV : தமிழ்த்தாள் - 2 - நான்காம் பருவம்
(12-ம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயிலாதவர்களுக்கு)

அகமதிப்பீட்டுத் தேர்வு மட்டும்**நோக்கம்:**

ஆத்திச்சூடி, கொன்றை வேந்தன், திருக்குறள் போன்ற நூல்களில் கூறப்பட்டுள்ள நீதிகளைத் தெரிந்து கொள்ளுதல்.

தடையில்லாமல், பிழையில்லாமல் படிப்பதற்கு எளிமையான கதைகளைப் படித்துப் பழகுதல். தமிழ் இலக்கியங்களின் வரலாறு மற்றும் சிறப்புகளை அறிந்து கொள்ளச்செய்தல்.

தமிழக மக்களின் வாழ்க்கை முறை உணவுமுறை, கலாச்சாரம், பண்பாடு பற்றி அறிந்துகொள்ளச் செய்தல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு (Course Outcome)

CO Number	CO Statement
CO1	ஆத்திச்சூடி, கொன்றை வேந்தன், திருக்குறள் போன்ற நூல்களின் வழி அக்கால மக்கள் பின்பற்றிய நீதிகளை அறிந்து அதன்படி வாழ்தல்.
CO2	எளிமையான நூல்களைப் படிப்பதன் மூலம், பிழையில்லாமல், தெளிவான உச்சரிப்போடு கதைகளைப் படித்துப் பழகுதல்.
CO3	தமிழ் இலக்கியங்களின் வரலாறு மற்றும் அதன் சிறப்புகளை அறிந்து கொள்ளுதல்.
CO4	பழங்கால மக்களின் வாழ்க்கை முறை, பண்பாடு, கலாச்சாரம் ஆகியவற்றை அறிந்து கொள்ளுதல்.

நிரல் விளைவுகளைக் கொண்ட வரைபடம்

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	✓	-	-	-	-	-	-	-
CO2	-	-	-	-	-	✓	-	-	✓	-	-	-
CO3	-	-	-	-	✓	-	-	-	-	-	✓	-
CO4	✓	-	✓	-	-	-	-	-	-	-	-	-

நீதி நூல்கள்(4) : ஆத்திச்சூடி (முதல் 12) “அறம் செய விரும்பு”, முதல் “ஒளவியம் பேசேல்” வரை.

கொன்றை வேந்தன் - “அன்னையும் பிதாவும் முன்னறி தெய்வம்” முதல் “எண்ணும் எழுத்தும் கண்ணெனத்தகும்” வரை (7)

- திருக்குறள் (5)**
1. அகர முதல... (1)
 2. செயற்கரிய... (26)
 3. மனத்துக் கண்... (34)
 4. கற்க கசடறக்... (391)
 5. எப்பொருள் யார் யார்... (423)

எளிய நீதிக் கதைகள் - (தெனாலிராமன் கதைகள், பீர்பால் கதைகள், கிராமியக் கதைகள், ஈசாப் கதைகள்)

தமிழ் இலக்கியங்கள் : வரலாறு - குறிப்பு - அறிமுகம்

எடுத்துக்காட்டு : குறள் பற்றி எளிய தொடர்களில் அறிமுகம்

தமிழகம் - உணவுமுறை, விழாக்கள், கலைகள் பற்றியக் குறிப்புகள்

	அக மதிப்பீட்டுத் தேர்வு மதிப்பெண் வழங்கும் முறை	மதிப்பெண்கள்
1	வகுப்புத்தேர்வு - 1	10
2	வகுப்புத்தேர்வு - 2	10
3	மாதிரித்தேர்வு	10
4	பயிற்சிக் கட்டுரை	10
5	வாய்மொழித் தேர்வு	10
	மொத்த மதிப்பெண்கள்	50

குறிப்பு : வாய்மொழித் தேர்வில் தமிழ்ச் செம்மொழி வரலாறு தொடர்பான வினாக்கள் மட்டுமே கேட்கப்பட வேண்டும்.

சிறப்புத் தமிழ்

பகுதி - IV : தமிழ்த்தாள் - 2 - நான்காம் பருவம்
(12-ம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயின்றவர்களுக்கு)

அகமதிப்பீட்டுத் தேர்வு மட்டும்

நோக்கம்:

இளங்கலை பட்ட வகுப்பில் தமிழ் - பயிலாதவர்களுக்கு, தமிழ் இலக்கியத்தின் சிறப்பினை எடுத்துக்கூறுதல்.

திருக்குறளின் சிறப்பை அறியச் செய்தல்.

சொற்களைப் பயன்படுத்தும் முறைகளையும், வாக்கியப் பிழைகள் ஏற்படுவதைத் தவிர்க்கும் முறைகளையும் அறியச் செய்தல்.

பேச்சு வழக்குகளில் நாம் பயன்படுத்தும் சொற்களையும், சொற்களில் உள்ள பிழைகளையும், சரியாகப் பயன்படுத்தும் சொற்களையும் தெரிந்து கொள்ளச் செய்தல்.

மாணவர்களின் கற்பனைத்திறன், படைப்பாற்றல் திறமை மேம்படுத்த பயிற்சி அளித்தல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு (Course Outcome)

CO Number	CO Statement
CO1	தமிழ் இலக்கியங்களின் சிறப்பினை உணரச் செய்தல்
CO2	திருக்குறளின் வாயிலாக மக்களின் வாழ்க்கைமுறைகளை அறிதல்
CO3	வாக்கியங்களை பிழையில்லாமல் சரியான முறையில் எழுதுதல்.
CO4	பேச்சு வழக்கில் நாம் பேசும் போது ஏற்படும் மரபுபிழைகளைத் தவிர்த்தல் மற்றும் தகுதியான வழக்குச் சொற்களைப் பயன்படுத்துதல்.
CO5	திறமையான மாணவர்களை ஊக்குவித்து படைப்பாளர்களாக, கவிஞர்களாக உருவாக்குதல்.

கூறு - 1 திருக்குறள் - ஒழிபியல் முதல் 5 அதிகாரங்கள் மட்டும்.

கூறு - 2 உரைநடை : (கட்டுரை)

(இளைஞர்களின் ஒளிமயமான எதிர்காலத்திற்கு - கு.வெ. பாலசுப்பிரமணியம்)

கூறு - 3 எழுத்துப்பிழை நீக்க வழிகள் - பிழையும் திருத்தமும், சொற்களைச் சரியாகப் பயன்படுத்தும் பாங்கு - வினைச்சொற்கள் துணை வினைகள்

(எடுத்துக்காட்டுகளுடன் விளக்குதல்)

கூறு - 4 வழக்கறிதல் : மரபு வழக்கு - இயல்பு வழக்கு - தகுதி வழக்கு அறிதல்

கூறு - 5 படைப்பாற்றல் பயிற்சி - கட்டுரை எழுதுதல்.

	அக மதிப்பீட்டுத் தேர்வு மதிப்பெண் வழங்கும் முறை	மதிப்பெண்கள்
1	வகுப்புத்தேர்வு - 1	10
2	வகுப்புத்தேர்வு - 2	10
3	மாதிரித்தேர்வு	10
4	பயிற்சிக் கட்டுரை	10
5	வாய்மொழித் தேர்வு	10
	மொத்த மதிப்பெண்கள்	50

குறிப்பு : வாய்மொழித் தேர்வில் தமிழ்ச் செம்மொழி வரலாறு
தொடர்பான வினாக்கள் மட்டுமே கேட்கப்பட வேண்டும்.

SEMESTER – V

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U5ITCT15	Core 15:ASP.Net and C#	Batch	2018-2021
			Semester	V
Hours/week	5		Credits	4

COURSE OBJECTIVES

To enable the students

- To learn about the basic concepts of ASP .NET.
- To learn about the ASP .NET object model and its architecture.
- To learn about the C# and its functions.
- Understand about ASP.Net environment and its applications

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain about ASP.Net environment and its applications.
CO2	Know about the various forms in Visual Basic and Session controls.
CO3	Write various applications using C# Language in the .NET Framework.
CO4	Develop distributed applications using .NET Framework.
CO5	Create various applications using C#.Net framework

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓
CO3	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓
CO4	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓
CO5	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓

UNIT -I**(Hours: 12)**

Getting set up: ASP .NET? Setting up, environment, overview. Programming basics: basics, program flow, coding techniques, designing applications, dynamic website application, processing ASP .NET applications, visual basic .NET.

UNIT -II**(Hours: 12)**

Programming ASP .NET with Visual Basic .NET Web Forms and ASP .NET: web forms. ASP .NET configuration, Scope and State: Configuration, state, Application object, ASP Sessions, Session object and sample project.

UNIT -III**(Hours: 14)**

ASP .NET objects and components: scripting object model, components and controls, project example, more active components. Web services and ASP .NET: web service development, WSDL and SOAP, web services background. ASP .NET and SQL Server: using SQL server, using databases in ASP .NET, ActiveX data objects, ADO .NET object model, Coding SQL and Project.

UNIT -IV**(Hours: 12)**

Understanding .NET: C# framework - .Net strategy, origins, framework, CLR, base classes, Visual Studio .Net, languages, benefits. Overview of C#: simple program, namespaces, main returning value, passing string objects, command line arguments, mathematical functions, compile time errors, structure. Literals, Variables and Data types.

UNIT -V**(Hours:10)**

Operators and Expressions, Decision making and branching, Decision making and looping, Handling Arrays.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1.	Dave Marcer	ASP .NET – A Beginner’s Guide	McGraw Hill Education India Private Limited.
2.	E. Balagurusamy	Programming in C# - A Primer	Tata McGraw Hill Pvt Ltd.

Reference Books:

S. No	Author Name	Title of the Book	Publishers
1.	Stephen C. Perry	Core C# and .NET	Pearson Education.
2.	Karli Watson, Christian Nagel, Jacob Hammer Pedersen, Jon Reid, and Morgan Skinner	BEGINNING VISUAL C#	Wiley Publishing, Inc.

WEBSITE REFERENCES

1. <https://www.quora.com/What-is-the-difference-between-C-and-ASP-net>
2. <https://docs.microsoft.com/en-us/visualstudio/get-started/csharp/tutorial-aspnet-core>
3. [https://softwareengineering.stackexchange.com/.../relationship-between-c-net-asp-asp-.](https://softwareengineering.stackexchange.com/.../relationship-between-c-net-asp-asp-)
4. <https://stackoverflow.com/questions/.../whats-the-difference-between-asp-net-and-c>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER – V

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U5ITCT16	CORE 16: PHP AND MYSQL	Batch	2018-2021
			Semester	V
Hours/week	5		Credits	4

COURSE OBJECTIVES:

- To understand the general concepts of PHP scripting language for the development of Internet websites.
- To understand the basic functions of MySQL database program.
- To learn the relationship between the client side and the server side scripts.
- To develop a final project using the learned techniques.
- To Understand the post and publish process in PHP .

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Use a PHP editing program and develop functional PHP script.
CO2	Explain how to post and publish a PHP website.
CO3	Convert current HTML based websites to integrate PHP and a database
CO4	De-bug PHP code and fix database problems.Develop Database connectivity using MySQL.
CO5	Debug script and develop Web Applications.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO3	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO4	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO5	-	✓	✓	-	-	-	-	-	-	-	-	✓

SYLLABUS**UNIT - I****(Hours:12)**

What is PHP? Why use PHP? Embedding PHP with HTML, Enhancing further, PHP Language Basics: Using variable in PHP, understanding Data types, operator and expressions. Making decisions: simple decision with if statements, switch, ternary operator, do..while loop, for statement, break, loop skip iteration, nested loop, Function: calling functions, working with variable functions, Writing own functions and working with references, Writing recursive functions.

UNIT - II**(Hours:12)**

Arrays: Creating and accessing array elements, looping through arrays, multidimensional array, manipulating array. Strings: creating and accessing strings, searching strings, replacing text within strings and formatting strings. Handling HTML forms with PHP: HTML forms work, capture form data with PHP, multi value fields, web forms with PHP.

UNIT -III**(Hours:12)**

Database Concepts: A Relational approach: Database –Relationships –DBMS –Relational Data Model –Integrity Rules –Theoretical Relational Languages. Database Design: Data Modelling and Normalization: Data Modelling –Dependency –Database Design –Normal forms –Dependency Diagrams–De-normalization.

UNIT- IV**(Hours:13)**

Working with Table: Data Management and Retrieval: DML –adding a new Row/Record – Customized Prompts Updating and Deleting an Existing Rows/Records –retrieving Data from Table –Arithmetic Operations –restricting Data with WHERE clause –Sorting – Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join –Set operations.

UNIT -V**(Hours:11)**

Introducing Database and SQL: Deciding how to store data, quick play with MYSQL, connecting to MYSQL from PHP. Retrieving data from MYSQL with PHP: Retrieving data with SELECT. Manipulating MYSQL data with PHP: INSERT, UPDATE, DELETE records.

TEXT BOOKS:

Recent editions of the following books only are recommended

S.NO	Author Name	Title of the Book	Publishers
1.	Matt Doyle	“Beginning PHP 5.3”	Wunley India Edition
2.	Nilesh Shah	“Database Systems using Oracle”	PHI

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publishers
1.	VikramVaswani	PHP: A Beginners guide	Tata McGraw
2.	Lawpoint	Guide to PHP”	LP Computer series
3.	Larry Ullman	“PHP 6 and MySQL 5”	Pearson Educatio
4.	Gerald V. Post	Database Management Systems”	Tata McGraw Hill Pvt Ltd

WEBSITE REFERENCES

1. https://www.w3schools.com/php/php_mysql_intro.asp
2. <http://php.net/>.
3. <http://php.net/manual/en/langref.php>.
4. <http://dev.mysql.com/doc/refman/5.7/en/sql-syntax.html>.
5. <http://www.mysqltutorial.org>.

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google

Classroom

SEMESTER V

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U5ITCP17	Core 17 : ASP .NET AND C# - PRACTICAL	Batch	2018-2021
Hours/week	6		Semester	V
			Credits	4

COURSE OBJECTIVES

- To enable the students to gain knowledge about the teaching methodologies useful for the implementation and console based application and web based application.

COURSE OUTCOMES (CO)

At the end of the practical session, students should be well-versed in

CO Number	CO Statement
CO1	Design, create, build, and debug arithmetic operations for displaying numeric output using .NET applications.
CO2	Developing a console application in ASP .NET.
CO3	Compute different operations using looping statements.
CO4	Developing applications using C#

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	✓	✓	-	-	-	-	✓
CO3	-	✓	✓	-	-	✓	✓	-	-	-	-	✓
CO4	-	✓	✓	-	-	✓	✓	-	-	-	-	✓

SYLLABUS

1. Write a ASP .NET program to perform arithmetic operation.
2. Write a ASP .NET program for conversion of numbers
3. Write a ASP .NET program to develop a simple calculator.
4. Write a ASP .NET program to demonstrate the text control.
5. Write a ASP .NET program to demonstrate the checkbox control.
6. Write a C# program using arrays.
7. Write a C# program for converting numbers into words.
8. Write a C# program for arithmetic operations
9. Write a C# program to check whether given string is a palindrome or not.
10. Write a C# program to read number and check ODD or EVEN.
11. Write a C# program that prints out Fibonacci Series.
12. Write a C# program to convert from Fahrenheit to Celsius and Celsius to Fahrenheit.

WEBSITE REFERENCES

www.codingfusion.com/Asp--Net-Practice-Questions
www.corporatebpl.com/cistuploads/DotNetMEAssignment.pdf
tusharkant.com/2013/04/asp-net-lab-manual-programs.html
<https://www.sanfoundry.com/csharp-programming-examples/>
<https://www.w3resource.com/csharp-exercises/>

Means of Curriculum Delivery : Power point presentation, Lab Assignments, Observation

SEMESTER -V

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U5ITCP18	CORE 18 : PHP AND MY SQL -PRACTICAL	Batch	2018-2021
Hours/week	6		Semester	V
			Credits	3

COURSE OBJECTIVE:

- To enable the students to gain knowledge in developing PHP and MySQL Programs for certain specified problems.

COURSE OUTCOMES (CO)

At the end of the practical session, students should be well-versed in

CO Number	CO Statement
CO1	Write PHP code to produce outcomes and solve problems.
CO2	Display and insert data using PHP and MySQL.
CO3	Test, debug, and deploy web pages containing PHP and MySQL.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	✓	✓	-	-	-	-	✓
CO3	-	✓	✓	-	-	✓	✓	-	-	-	-	✓

SYLLABUS

1. Write a program to create different variables.
2. Write a PHP program using controls and functions
3. Write a program to do different types of Sorting in PHP.
4. Write a program to implement explode and implode functions.
5. Write a program to do String Manipulation in PHP.
6. Write a program to pass information between web pages using GET and POST methods.
7. Write a program to send an HTML formatted Email in PHP.
8. Write a PHP program to do calculator functions.
9. Write a program to implement file concepts to open, read, close and to delete a file.
10. Write a program to upload a file in PHP.

Database exercises

1. Execute a DML query to create a database, Use it and create a table in it.
2. Execute the DML queries using the created table.
3. Execute DRL query to retrieve information from tables.
4. Execute to know the Arithmetic operations in Queries.
5. Write a program to read customer information like cust_no, cust_name, Item_purchase, and mob_no, from customer table and display all these information in table format on output screen. Write a program to edit name of customer to “Bob” with cust_no =1, and to delete record with cust_no=3.
6. Write a program to read employee information like emp_no, emp_name, designation and salary from EMP table and display all this information using table format.
7. Exercise on Normalization:
 - i) Create a Database of your choice with at least four tables.
 - ii) While creating tables make use of all required constraints like not null, unique, primary key, check, foreign key.
 - iii) Insert at least 5 records in each table.
 - iv) Convert the above created database into 1NF, 2NF and 3NF.
8. Create Website Registration Form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page
9. Create data base connectivity between PHP and MYSQL
10. Create web pages with PHP and MYSQL database.

WEBSITE REFERENCES

<https://www.phpexercises.com>
<https://www.w3resource.com/php-exercises/>
<https://www.geeksforgeeks.org/php/>

Means of Curriculum Delivery : Power point presentation, Lab Assignments, Observation

SEMESTER-V

Programme Code:	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code:	18U5NCCT01	Non Credit Course 3: Aptitude and Soft Skills- I	Batch	2018-2021
Hours/ Week	3		Semester	V
			Credits	-

COURSE OBJECTIVES:

- To acquire inter personal skills, problem solving skills and be an effective goal oriented team player.
- To equip the students with the required soft skills that would instill confidence and courage in them, to take up new opportunities for their career.
- To know about improving various soft skills required while working in a team.
- To understand the various methods of solving problems involving numerical and logical reasoning.
- To understand the methods of solving certain problems not using calculations but using only mental ability.
- To know how to face the personal interview effectively.
-

COURSE OUTCOMES (CO):

On Successful Completion of the course the students will be able to achieve the following outcomes.

CO Number	CO Statement
CO1	Apply the inter personal and problem solving skills in the placement drive.
CO2	Apply the behavioral skills required for promoting individual competence by implementing the principles of interpersonal communication and value – based living to meet the market expectations.
CO3	Grasp the approaches and strategies to solve problems with speed and accuracy.
CO4	Ability to reason critically by analyzing , elevating and extending arguments.
CO5	Explain the concepts deal with graphs,tables,number sequence and texts.

SYLLABUS**UNIT I: SOFT SKILLS**

1. Empathy
2. Intrapersonal Skills
3. Interpersonal Intelligence
4. Problem Solving Skills
5. Critical Thinking
6. Aptitude and Assessment Test

UNIT II: APTITUDE

1. Numerical Reasoning
2. Mental Ability
3. Logical Reasoning

TEXT BOOKS:

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1	Prof .N. Lakshmana Perumal	Technical English – I	Sri Krishna Hitech Publishing Company Pvt. Ltd.
2	R. S. Aggarwal	Quantitative Aptitude for Competitive Examinations.	English, Paperback

REFERENCE BOOKS:

S. No	Author Name	Title of the Book	Publishers
1	Joyce Pereire	Technical English – II	Vijay Nicole Imprints Pvt.Ltd.

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER VI

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U6ITCT19	Core 19:SOFTWARE TESTING	Batch	2018-2021
Hours/week	5		Semester	VI
			Credits	4

COURSE OBJECTIVES

- To make the students to understand Software Testing principles.
- To discuss the distinctions between types of testing.
- To understand the essential characteristics of tool used for test automation.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	List a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing method to the projects.
CO2	Distinguish characteristics of structural testing methods
CO3	Demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible
CO4	Discuss about the functional and system testing methods.
CO5	Demonstrate various issues for object oriented testing with planning, Management, Execution, and Reporting.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO3	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO4	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO5	-	✓	✓	-	-	-	-	-	-	-	-	✓

UNIT I**(Hours: 12)**

Principles of Testing: Context of Testing in Producing Software, A Test in Time, Automation Syndrome, Putting it All Together -Software Development Life Cycle Models: Phases of software project-Quality, Quality Assurance and Quality Control -Testing, verification and validation –Process model to represent different phases-Life cycle models.

UNIT II**(Hours: 12)**

White Box Testing: What is White box testing, Static testing, Structural testing; Challenges – Black Box Testing: What is? Why? When? and How to do? Black Box Testing –Integration Testing: What is Integration Testing?, Types, Phases, Scenario Testing, Defect Bash.

UNIT III**(Hours: 12)**

System and Acceptance Testing: Overview-Why is system testing done?, Functional vs. Non-Functional Testing, Functional system testing, Non-Functional testing, Acceptance testing – Performance Testing: Factors Governing, Methodology, Tools and Process for Performance Testing.

UNIT IV**(Hours: 12)**

Regression Testing: What is Regression testing? , Types of Regression testing, when to do Regression testing? and how to do Regression testing?–Testing –Ad hoc Testing: Overview, Buddy, Pair Testing, Exploratory Testing, Iterative Testing, Agile and Extreme Testing, Defect Seeding.

UNIT V**(Hours: 12)**

Test Planning, Management, Execution and Reporting: Test Planning, Test Management, Test Process, and Test Reporting –Software Test Automation: What to? and Scope of Automation, Design and Architecture of Automation, Requirements for Test Tool/Framework, Process Model, and Steps for Tool Selection and Deployment, Challenges in Automation –Test Metrics and Measurement: Types of Metrics

TEXT BOOK:

Recent editions of the following books only are recommended

S.NO	Author Name	Title of the Book	Publisher
1.	SrinivasanDesikan, Gopalsamy Ramesh	Software Testing Principles and Practices	Pearson Education

WEBSITE REFERENCES

- [1.https://www.softwaretestingmaterial.com/software-testing/](https://www.softwaretestingmaterial.com/software-testing/)
- [2.https://www.guru99.com/software-testing-introduction-importance.html](https://www.guru99.com/software-testing-introduction-importance.html)
- [3.https://en.wikipedia.org/wiki/Software_testing](https://en.wikipedia.org/wiki/Software_testing)
- [4.https://www.tutorialspoint.com/software_testing](https://www.tutorialspoint.com/software_testing)
- [5.https://www.softwaretestinghelp.com/types-of-software-testing](https://www.softwaretestinghelp.com/types-of-software-testing)

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google

Classroom

SEMESTER – VI

Programme Code	B.Sc.IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U6ITCT20	Core 20 : Operations Of E-Wallet And Information Security	Batch	2018-2021
			Semester	VI
Hours/week	6		Credits	3

Course Objectives:

- To learn about the basic operations of E-Wallet and Information Security.
- To Acquire knowledge in Risk Management and Planning.
- To understand the concepts of Logical and Physical Design.
- To enhance the key concepts of Security Technology.

COURSE OUTCOMES (CO)

At the end of the practical session, students would be well-versed in

CO Number	CO Statement
CO1	Explain the usage and operations of E-wallets
CO2	Explain the need of Information Security, polices, standards
CO3	Explain the various kinds of security technologies available.
CO4	Describe the information security implementation and maintenance models.
CO5	Describe the concepts of Information Security.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO3	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO4	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO5	-	✓	✓	-	-	-	-	-	-	-	-	✓

SYLLABUS**UNIT- I****(Hours:13)**

Introduction to E-Wallet :What is an E-wallet-Features of E-Wallet-Risks-Types of E-wallet-Various E-wallet paytm, MobiKwik, oxigenWallet , CitrusWallet, ItsCash, FreeCharge , AirtelMoney, Jiomoney, mRupee, SBIBuddy, Vodaphone M-Pesa. Advantages and disadvantages of E-Wallet.

UNIT-II**(Hours:14)**

Introduction to Information Security: Introduction--Security -Critical Characteristics of Information -NSTISSC Security Model -Components of an Information System -Security Components -Approaches to Information Security Implementation -The Systems Development Life Cycle -The SecuritySystems Development Life Cycle.

UNIT- III**(Hours:15)**

The Need for Security: Business Needs First -Threats -Attacks -Secure Software Development. Risk management: Overview -Risk Identification -Risk Assessment-Risk Control Strategies -Selecting a Risk Control Strategy -Quantitative Versus Qualitative Risk Control Practices Planning for Security: Information Security Policy, Standards and Practices -The Information Security Blue print

UNIT-IV**(Hours:15)**

Security Technology: Firewalls- VPNS - Access controls- -Intrusion Detection and Prevention Systems -Honey Pots -Honey Nets, and Padded Cell Systems -Scanning and Analysis Tools -Biometric Access Control.

UNIT-V**(Hours:15)**

Implementation of Information Security: Information Security Project Management -Technical Aspects of Implementation -Non Technical Aspects of Implementation. Information Security Maintenance: Security Management Maintenance Model -Digital Forensics.

TEXT BOOK

Recent editions of the following books only are recommended

S.No.	Author Name	Title of the Book	Publishers
1.	E.Michel Whitman, CISSP and Herbert, J. Mattord	Principles of Information Security	Course Technology, Cengage Learning

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publishers
1.	CharlesA.Sennwald	Effective Security Management	Elsevier
2.	Dhiren R. Patel	Information Security: Theory and Practice	Prentice Hall of India Pvt Ltd
3.	S.M. Bhaskar, S.I. Ahson	Information Security: A Practical Approach	Alpha Science
4.	Gerald L.Kovacich	Information System Security Officer's Guide,	Butterworth Hinemann

Reference Websites :

- http://odocmms.nic.in/OCMMS/SPCB_DOCUMENTS/eWallet_User_Guide.pdf
- <http://vikaspedia.in/e-governance/digital-payment/e-wallet>
- https://en.wikipedia.org/wiki/Digital_wallet
- <https://www.tutorialspoint.com/articles/types-of-mobile-wallets-and-leaders-in-india>
- <https://www.indiaonline.com/article/news-personal-finance/5-things-to-know-about-e-wallets>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER VI

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U6ITCP21	Core 21:SOFTWARE TESTING -PRACTICAL	Batch	2018-2021
Hours/week	5		Semester	VI
			Credits	3

COURSE OBJECTIVES

- To enable the students to gain software testing experience by applying software testing knowledge and methods to practice-oriented software testing projects.

COURSE OUTCOMES (CO)

At the end of the practical session, students should be well-versed in

CO Number	CO Statement
CO1	Implement Apache Jmeter Testing Tool for performance.
CO2	Analyze the Apache Jmeter Testing tool with suitable problem.
CO3	Develop the test cases for mathematical calculations.
CO4	Develop the test cases for Java programs.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓
CO2	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓
CO3	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓
CO4	-	✓	✓	-	-	✓	✓	-	-	✓	-	✓

SYLLABUS

- Performing a test in the Apache JMeter Testing Tool to implement the factorial concepts.
- Performing a test in the Apache JMeter Testing Tool to analyze the suitable problem and displaying the results.
- Performing a test in the Apache JMeter Testing Tool to find the fibonaaci series.
- Creating test cases and testing the functionality of calculator.
- Creating test cases and testing the Java Program which generates sum of a individual digit of a 5-digit number until a single digit is produced.
- Testing the Java program: Sort and store the elements two arrays of integers into the third list.
- Testing the Java program: multiple inheritance.
- Testing the Java Program: Palindrome string checking program.
- Testing the Java Program: String Manipulation.
- Testing the Java Program: Employee details using constructors.

WEBSITE REFERENCES

- <https://www.softwaretestinghelp.com>
- <https://www.softwaretestinghelp.com/types-of-software-testing>
- softwaretestingfundamentals.com/software-testing-basics/
- <https://www.geeksforgeeks.org/software-testing-basics>
- <https://www.guru99.com/software-testing.htm>

Means of Curriculum Delivery : Power point presentation, Lab Assignments, Observation.

SEMESTER- VI
CORE 22 :PROJECT VIVA-VOCE

Subject Code: 18U6ITCV22

Total Hours: 75

No.of Credits: 4

Course Objective: To enable the students to apply practically in a specific area using any specific domain knowledge he/she posses and get the results.

GUIDELINES FOR PROJECT WORK

1. The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied.
2. Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts.
3. The project work should be compulsorily done in the college only under the supervision of the department staff concerned.

FINAL VIVA-VOCE

Project work carries 100 marks with 4 credits.

Internal Assessment: 80 marks (60 marks for 3 reviews and 20 marks for record)

External Assessment : 20 marks (Viva-Voce).

For awarding a pass, a candidate should have obtained 40% of the total 100 Marks.

The evaluation would be done jointly by both the examiners(Internal and External). Students who fail in the project work and viva-voce examination or who are absent for the project viva-voce who fail to submit the project report before the due date will have to re-submit the project work and appear for the viva-voce examination during the subsequent year.

PROJECT WORK

TITLE OF THE DISSERTATION

Bonafide Work Done by

STUDENT NAME

REG. NO.

Dissertation submitted in partial fulfillment of the requirements
for the award of Bachelor of Information Technology Of
Bharathiar university, Coimbatore-46

College emblem

GUIDE

HOD

Submitted for the Viva-Vice Examination held on _____

Internal Examiner

External Examiner

MONTH – YEAR

CONTENTS

ACKNOWLEDGEMENT

CONTENTS

SYNOPSIS

1. INTRODUCTION

1.1 ORGANIZATION PROFILE

1.2 SYSTEM SPECIFICATION

1.2.1 HARDWARE CONFIGURATION

1.2.2 SOFTWARE SPECIFICATION

2. SYSTEM STUDY

2.1 EXISTING SYSTEM

2.1.1 DRAWBACKS

2.2 PROPOSED SYSTEM

2.2.1 FEATURES

3. SYSTEM DESIGN AND DEVELOPMENT

3.1 FILE DESIGN

3.2 INPUT DESIGN

3.3 OUTPUT DESIGN

3.4 DATABASE DESIGN

3.5 SYSTEM DEVELOPMENT

3.5.1 DESCRIPTION OF MODULES

(Detailed explanation about the project work)

4. TESTING AND IMPLEMENTATION

5. CONCLUSION

BIBLIOGRAPHY

APPENDICES

A. DATA FLOW DIAGRAM

B. TABLE STRUCTURE

C. SAMPLE CODING

D. SAMPLE INPUT

E. SAMPLE OUTPUT

F. REPORTS

SEMESTER-VI

Programme Code:	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code:	18U6NCCT02	Non-credit course 4-Aptitude & Soft Skills- II	Batch	2018-2021
Hours/ Week	2		Semester	VI
			Credits	-

COURSE OBJECTIVES:

- To acquire inter personal skills, problem solving skills and be an effective goal oriented team player.
- To equip the students with the required soft skills that would instill confidence and courage in them, to take up new opportunities for their career.
- To know about improving various soft skills required while working in a team.
- To understand the various methods of solving problems involving numerical and logical reasoning.
- To understand the methods of solving certain problems not using calculations but using only mental ability.
- To know how to face the personal interview effectively.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students should be able to achieve the following outcomes.

CO Number	CO Statement
CO1	Apply the inter personal and problem solving skills in the placement drive.
CO2	Apply the behavioral skills required for promoting individual competence by implementing the principles of interpersonal communication and value – based living to meet the market expectations.
CO3	Grasp the approaches and strategies to solve problems with speed and accuracy.
CO4	Ability to reason critically by analyzing , elevating and extending arguments.
CO5	Explain the concepts deal with graphs,tables,number sequence and texts.

SYLLABUS**UNIT I: E- MATERIALS**

Interactive Exercises for Grammar and Vocabulary

Audio/Video Excerpts of different Accents

Interpreting Posters

UNIT II: APTITUDE

1. Numerical Reasoning
2. Mental Ability
3. Logical Reasoning

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publisher
1	Prof .N. Lakshmana Perumal	Technical English – I	Sri Krishna Hitech Publishing Company Pvt. Ltd.
2	R. S. Aggarwal	Quantitative Aptitude for Competitive Examinations.	English, Paperback

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publisher
1	Joyce Pereire	Technical English – II	Vijay Nicole Imprints Pvt.Ltd.

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER-V

Programme Code	B.Sc IT	Programme Title	Bachlor of Science (Information Technology)	
Course Code	18U5ITET1A	ELECTIVE 1: DATA MINING AND WAREHOUSING	Batch	2018-2021
			Semester	V
Hours/week	4		Credits	3

COURSE OBJECTIVES:

To enable the students

- To know the basics of data mining and warehousing.
- To Understand various techniques in data mining.
- To learn about architecture of data warehouse and its applications

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the present survey on different learning, classification and data mining foundations.
CO2	Explain the various methods of Data Mining applications.
CO3	Solve problems for multi-core or distributed, concurrent/Parallel environments.
CO4	Discuss the latest trends and advances in data mining and warehousing.
CO5	Discuss the case study on Data warehouse.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	-
CO2	-	✓	✓	-	-	-	-	-	-	-	-	-
CO3	-	✓	✓	-	-	-	-	-	-	-	-	-
CO4	-	✓	✓	-	-	-	-	-	-	-	-	-
CO5	-	✓	✓	-	-	-	-	-	-	-	-	-

SYLLABUS**UNIT I****(Hours: 10)**

Introduction – Data mining – Association Rules – What is association rules -Methods to discover associaion rules – A Priori Algorithm – Partition Algorithm – Pincer Search Algorithm – Itemset counting Algorithm – F Tree Growth Algorithm – Incremental Algorithm.

UNIT II**(Hours: 10)**

Clustering techniques – Decession Trees – What is Decssion Tree – Tree construction principal – Best Split – Splitting Indices – Splitting Criteia – Decession tree Construction Algorithm

UNIT III**(Hours: 10)**

Web Data Mining – Other Techniques – What is Neural Networks – Learning in Neural Networks – Unsupervised learning – Genetic Algorithms .

UNIT IV**(Hours: 10)**

Data warehousing:An introduction – Characteristics of a data warehouse- Data marts - Other aspects of data marts – Online Analytical Processing.

UNIT V**(Hours: 11)**

Developing a Data Warehouse – Applications of Data Warehouse and Data Mining in Government – Case Study.

TEXT BOOKS

Recent editions of the following books only are recommended

S.NO	Author Name	Title of the Book	Publishers
1.	Jiwei Han, Michelen Kamber:	“Data Mining Concepts and Techniques”	Morgan Kaufmann Publishers an Imprint of Elsevier
2.	Arun K.Pujari	Data Mining Techniques	Universities Press (India) Limited

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publishers
1.	George M. Marakas	Modern Data warehousing, Mining and Visualization	Printice Hall

WEBSITE REFERENCES

- www.vssut.ac.in/lecture_notes/lecture1428550844.pdf
- https://www.tutorialspoint.com/dwh/dwh_overview.htm
- [https://www.educba.com > Data Science > Blog > Head to Head Differences](https://www.educba.com/Data Science > Blog > Head to Head Differences)
- <https://www.trifacta.com/data-warehousing-and-data-mining/>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER- V

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U5ITET1B	ELECTIVE 1: Internet of Things	Batch	2018-2021
			Semester	V
Hours/week	4		Credits	3

COURSE OBJECTIVES

- To understand state of the art IoT architecture,real world IoT deisgn constraints,industrial automation and commercial building automation in IoT.
- To understand the data analytics and cloud in the context of IoT
- To understand the concepts of SOCRADES

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the concept of IoT.
CO2	Analyze various protocols for IoT.
CO3	Analyze applications of IoT in real time scenario
CO4	Explain the data analytics and cloud in the context of IoT
CO5	Explain the concepts of SOCRADES.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	-
CO2	-	✓	✓	-	-	-	-	-	-	-	-	-
CO3	-	✓	✓	-	-	-	-	-	-	-	-	-
CO4	-	✓	✓	-	-	-	-	-	-	-	-	-
CO5	-	✓	✓	-	-	-	-	-	-	-	-	-

SYLLABUS**UNIT I****(Hours:10)**

Introduction- Concepts behind the Internet of Things- The IoT Paradigm- Smart Objects- Creative Thinking Techniques – Modifications- Combination Scenarios- Breaking Assumptions- Solving Problems.

UNIT II**(Hours:11)**

M2M to IoT – A Market Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies.

UNIT III**(Hours:10)**

M2M and IoT Technology Fundamentals- Devices and gateways, Local and wide area networking, Data management, Business processes in IoT, Everything as a Service(XaaS), M2M and IoT Analytics, Knowledge Management Introduction, Technical Design constraints- hardware is popular again.

UNIT IV**(Hours:10)**

Introduction, State of the art, Architecture Reference Model- Introduction, Reference Model and architecture, IoT reference ModelIoT Reference Architecture- Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views. Real-World Design Constraints.

UNIT V**(Hours:10)**

Service-oriented architecture-based device integration, SOCRADES: realizing the enterprise integrated Web of Things, IMC-AESOP: from the Web of Things to the Cloud of Things, Commercial Building Automation- Introduction, Case study: phase one-commercial building automation today.

TEXT BOOKS

Recent editions of the following books only are recommended

S.NO	Author Name	Title of the Book	Publishers
1.	Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle	From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence	Academic Press
2.	Vijay Madiseti and Arshdeep Bahga	Internet of Things (A Hands-on-Approach)	VPT

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publishers
1.	Vijay Madiseti and Arshdeep Bahga	Internet of Things (A Hands-on-Approach)	VPT
2.	Francis daCosta	Rethinking the Internet of Things: A Scalable Approach to Connecting Everything	Apress Publications
3.	Hakima chaouchi	The Internet Of Things Connecting Objects	

WEBSITE REFERENCES

1. https://en.wikipedia.org/wiki/Internet_of_things
2. <https://internetofthingsagenda.techtarget.com/definition/Internet-of-Things-IoT>
3. <https://www.techopedia.com/definition/28247/internet-of-things-iot>
4. <https://www.iotforall.com › #askIoT>
5. <https://www.wired.co.uk/article/internet-of-things-what-is-explained-iot>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER- V

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U5ITET1C	ELECTIVE 1: Enterprise Resource Planning	Batch	2018-2021
			Semester	V
Hours/week	4		Credits	3

COURSE OBJECTIVES

- To develop the capability to streamline the different organizational process and work flows in ERP.
- To understand the ways of improving efficiency, performance and productivity levels of ERP projects.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Make basic use of Enterprise software, and its role in integrating business functions
CO2	Analyze the strategic options for ERP identification and adoption
CO3	Design the ERP implementation strategies.
CO4	Create reengineered business processes for successful ERP implementation.
CO5	Analyze a current architecture and perform an effective gap analysis before an ERP implementation

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO2	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO3	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO4	-	✓	✓	-	-	-	-	-	-	-	-	✓
CO5	-	✓	✓	-	-	-	-	-	-	-	-	✓

UNIT I**(Hours:10)**

ERP AND TECHNOLOGY-Introduction – Related Technologies – Business Intelligence – E-Commerce and E-Business – Business Process Reengineering – Data Warehousing – Data Mining – OLAP – Product life Cycle management – SCM – CRM.

UNIT II**(Hours:10)**

ERP IMPLEMENTATION-Implementation Challenges – Strategies – Life Cycle – Pre-implementation Tasks –Requirements Definition – Methodologies – Package selection – Project Teams – Process Definitions – Vendors and Consultants – Data Migration – Project management – Post Implementation Activities.

UNIT III**(Hours:10)**

ERP IN ACTION & BUSINESS MODULES-Operation and Maintenance – Performance –

Maximizing the ERP System – Business Modules – Finance – Manufacturing – Human Resources – Plant maintenance – Materials Management – Quality management – Marketing – Sales, Distribution and service.

UNIT IV**(Hours:10)**

ERP MARKET- Marketplace – Dynamics – SAP AG – Oracle – PeopleSoft – JD Edwards – QAD Inc – SSA Global – Lawson Software – Epicor – Intuitive.

UNIT V**(Hours:10)**

Enterprise Application Integration – ERP and E-Business – ERP II – Total quality management – Future Directions – Trends in ERP.

TEXT BOOKS

Recent editions of the following books only are recommended

S.NO	Author Name	Title of the Book	Publishers
1.	Alexis Leon	ERP DEMYSTIFIED”	Tata McGraw Hill
2.	Mary Sumner	Enterprise Resource Planning	Pearson Education

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publishers
1.	Jim Mazzullo	SAP R/3 for Everyone	Pearson
2.	Jose Antonio Fernandz	he SAP R /3 Handbook	Tata McGraw Hill

WEBSITE REFERENCES

- 1.<https://www.webopedia.com/TERM/E/ERP.html>
- 2.https://en.wikipedia.org/wiki/Enterprise_resource_planning
- 3.<https://www.sap.com/india/products/what-is-erp.html>
- 4.<https://www.investopedia.com > Investing > Financial Analysis>
- 5.www.netsuite.com/portal/resource/articles/erp/what-is-erp.shtml

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google

Classroom

SEMESTER- V

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U5ITET2A	ELECTIVE 2: WEB TECHNOLOGY AND ITS APPLICATIONS	Batch	2018-2021
			Semester	V
Hours/week	4		Credits	3

COURSE OBJECTIVES: To enable the students

- To learn about the basic concepts of various networking model and its layers.
- To learn about the concepts of protocol and its architecture.
- To learn about the Scripting Languages and XML.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Define the fundamental ideas and standards underlying OSI Model.
CO2	Differentiate the major frameworks allowing to develop Tcp/IP and UDP and assess their suitability for specific usage scenarios.
CO3	Explain the link between the concepts of services and business processes and discuss and critique related standards.
CO4	Define the fundamental of scripting languages.
CO5	Write a valid XML Script.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	-
CO2	-	✓	✓	-	-	-	-	-	-	-	-	-
CO3	-	✓	✓	-	-	-	-	-	-	-	-	-
CO4	-	✓	✓	-	-	-	-	-	-	-	-	-
CO5	-	✓	✓	-	-	-	-	-	-	-	-	-

UNIT I**(Hours: 10)**

Networking Protocols and OSI Model: OSI Model, Layer functions. Internetworking concepts, devices, internet basics: why internetworking, problems, virtual network, repeaters, bridges, routers, gateways, history of internet, growth.

UNIT II**(Hours: 10)**

TCP/IP Part I: basics, addressing, IP addressing, logical addresses, concept of IP address, ARP, RARP, BOOTP, DHCP, ICMP. TCP / IP Part II: TCP, UDP – basics, features, relationship, ports and sockets, connections, TCP segment format, UDP, differences.

UNIT III**(Hours: 10)**

DNS, Email, FTP, TFTP – DNS, Email, FTP, TFTP. TCP / IP Part IV : WWW, HTTP, TELNET – history, basics, HTML, common gateway interface, remote login (TELNET).

UNIT IV**(Hours: 10)**

Java Script and AJAX. PHP / MySQL – scripting language, client side vs Server side, Features of PHP, reference, MySQL basics, using MySQL with PHP.ASP.NET: overview of .NET framework, Details, Server controls and web controls, validation controls.

UNIT V**(Hours: 10)**

Java Web Technologies – Java servlets and JSP, Creating and testing, servlet, session management, introduction to JSP, JSP and JDBC, EJB, architecture, overview, types of EJB, session beans. Web Security: principles, cryptography, plain text and cipher text, digital certificates, signatures, secure socket layer. XML – what is XML? XML versus HTML, EDI, Terminology, Document-Type Declaration, Element-Type declarations.

TEXT BOOKS

Recent editions of the following books only are recommended

S.NO	Author Name	Title of the Book	Publishers
1.	Achyut Godbole and Atul Kahate	Web Technologies TCP / IP, Web / Java Programming and Cloud Computing.	Tata McGraw Hil

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publishers
1.	Behrouz A. Forouzan	TCP / IP – Protocol Suite	McGraw Higher Education
2.	Paul Deitel, Harvey Dietel and Abbey Diets	Internet and World Wide Web – How to Program	Tata McGraw Hill. Fifth Edition

WEBSITE REFERENCES

- 1.<https://www.juet.ac.in/Department/CSE/WTechLab.php>
- 2.<https://www.ntnu.edu/studies/courses/IT2805>
- 3.vignan.ac.in/subjectspg/CS652.pdf
- 4.<https://www.ur.edu.pl/file/42104/Internet%20Technologies.doc>.

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER- V

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U5ITET2B	ELECTIVE 2: INTERNETWORKING WITH TCP / IP	Batch	2018-2021
			Semester	V
Hours/week	4		Credits	3

COURSE OBJECTIVES: To enable the students

- To learn about the basic concepts of Internetworking and its various protocols.
- To learn about the concepts of protocol addressing.
- To learn about the Email transactions and its protocol.

COURSE OUTCOMES (CO):

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the computer networking, and basic network services
CO2	Define layers of the OSI model; identify the protocols, and services associated with each layer.
CO3	Recognize and describe logical and physical network topologies in terms of media and network hardware.
CO4	Justify information security issues in computer networks.
CO5	Describe current common protocols in terms of their function, routing, addressing schemes, interoperability, and naming conventions.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	-
CO2	-	✓	✓	-	-	-	-	-	-	-	-	-
CO3	-	✓	✓	-	-	-	-	-	-	-	-	-
CO4	-	✓	✓	-	-	-	-	-	-	-	-	-
CO5	-	✓	✓	-	-	-	-	-	-	-	-	-

UNIT I**(Hours: 10)**

Introduction and Overview : TCP/IP internet, History, Scope, IAB, Internet RFC, Relationship between IPv4 and IPv6, Underlying network technologies : WAN, LAN, Ethernet, WIFI, ZigBee, Point-to-point Networks, VLAN technology, Bridging, Internetworking Concept and Architectural Model : Application Level interconnection, Network level interconnection, Properties of the internet.

UNIT II**(Hours: 10)**

Protocol Layering : Introduction, Need for multiple protocols, ISO layer Reference model, X.25, TCP / IP Layer model, Protocol layer principle, mesh networks, cross-layer optimizations, multiplexing and demultiplexing. Internet Addressing : Host identifiers, IPv4 – scheme, subnet addressing, Fixed length IPv4, Fixed length, variable length, subnet mask, classless Ipv4.

UNIT III**(Hours: 10)**

Mapping Internet Addresses to Physical Addresses: Address resolution problem, hardware addresses, ARP cache, timeout, refinements, implementation, encapsulation, message format, caches in layer 3 switches, proxy ARP. IP Connectionless Datagram Delivery : Virtual network, IP datagram, type of service, encapsulation, size, reassembly, header files, time to live, fragmentation, network byte order.

UNIT IV**(Hours:10)**

ICMP : introduction, error, conceptual layering, message format, testing, echo request and reply message format, checksum, reports of unreachable destinations, ICMP error, detecting circular. User Datagram Protocol: UDP protocol, message format, Interpretation, checksum, pseudo header format, encapsulation, UDP multiplexing, demultiplexing and protocol ports. Domain Name System: names of computers, flat namespace, hierarchy, delegation, subset authority.

UNIT V**(Hours:10)**

Electronic Mail: Email, mailbox names, SMTP, MIME, mail retrieval. World Wide Web: importance, architectural, URL, HTTP, GET request, Error messages, data length and program output, encoding and headers, conditional requests, proxy servers, caching. Voice and Voice Over IP: digitizing and encoding, audio, video transmission.

TEXT BOOKS

Recent editions of the following books only are recommended

S.No.	Author Name	Title of the Book	Publishers
1.	Douglas E.Comer	Internetworking with TCP / IP – Principles, Protocol and Architecture	Pearson Education

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publishers
1.	Achuyut S Godbole and Atul Kahate	Data Communications and Networks	Tata McGraw Hill
2.	Behrouz A. Forouzan	TCP / IP – Protocol Suite”	McGraw Higher Education ,

WEBSITE REFERENCES

- <https://www.dr-ait.org/wp-content/uploads/2016/04/SCS22.pdf>
- <https://www.techopedia.com/.../transmission-control-protocolinternet-protocol-tcpip>
- https://doc.lagout.org/.../Internetworking%20with%20TCP_IP%20%20Vol%20I.pdf
- <https://dl.acm.org/citation.cfm?id=545854>
- https://www.researchgate.net/.../272829944_Internetworking_with_TCPIP_Vol1_Principle.

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER- V

Programme Code	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code	18U5ITET2C	ELECTIVE 2: SOFTWARE PROJECT MANAGEMENT	Batch	2018-2021
			Semester	V
Hours/week	4		Credits	3

COURSE OBJECTIVES**To enable the students**

- To get knowledge on how to handle project development activities.
- To understand the threats and opportunities in Project Managements.
- To study various project cost, time estimation models.
- To study on how to make quality software products.
- To study management issues like team structure and group dynamics.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Select and implement different software development process models
CO2	Extract and analyze software requirements specifications for different projects.
CO3	Develop some basic level of software architecture.
CO4	Explain the concepts and importance of Software project management concepts like cost estimation, scheduling and reviewing the progress
CO5	Apply different testing and debugging techniques and analyzing their effectiveness.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO2	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO3	-	✓	✓	✓	-	✓	✓	-	-	✓	✓	✓
CO4	-	✓	✓	✓	-	✓	✓	-	-	✓	✓	✓
CO5	-	✓	✓	✓	-	✓	✓	-	-	✓	✓	✓

SYLLABUS**UNIT - I****(Hours : 10)**

SOFTWARE PROJECT MANAGEMENT :Introduction, Need for Software Project Management – Software Project versus other projects – Overview of Project planning.

UNIT -II**(Hours : 10)**

PROJECT EVALUATION :Introduction, Strategic assessment, Technical Assessment, Cost benefit Analysis, Cash flow forecasting, Cost benefit Evaluation Techniques Risk Evaluation – Selection of appropriate project planning.

UNIT -III**(Hours : 10)**

ACTIVITY PLANNING :Objectives of activity planning, Project schedules, Projects and activities, Sequencing and scheduling activities, Network Planning models –Formulating network models, Using dummy activities, Identifying critical path, identifying critical activities. Risk Analysis and Management: Nature of risk, Managing risk, Risk identification, Risk analysis, reducing the risks, evaluating the risks.

UNIT -IV**(Hours : 10)**

SOFTWARE EFFORT ESTIMATION: Problems with over and under estimate, the basis for software estimation, software estimation Techniques. Expert judgments, Estimating by analogy, Function point analysis. Resource Allocation: Identifying resource requirements, Scheduling resources, Monitoring and control, Managing people and organization teams.

UNIT -V**(Hours : 10)**

PROJECT MANAGEMENT :Project Management in the Testing phase – Introduction, test scheduling, test types, issues, management structures for testing, metrics for testing phase, Project Management in the Management phase – Introduction, activities, management issues, configuration management, estimating size, effort and people resources, advantages, metrics.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1.	Bob Hughes and Mike Cotterell	Software Project Management	Tata McGraw Hill
2.	Gopalaswamy Ramesh	Managing Global Software Projects	Tata McGraw Hill

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1.	Walker Royce	Software Project Management	Addison Wesley
2.	Stellman & Greener	Applied software project management	SPD.

WEBSITE REFERENCES

- https://www.tutorialspoint.com/software.../software_project_management.htm
- https://en.wikipedia.org/wiki/Software_project_management
- <https://www.geeksforgeeks.org/software-engineering-project-management-process>
- <https://www.mavenlink.com/resources/what-is-project-management-software>
- <https://technologyadvice.com/project-management/>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER- VI

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U6ITET3A	ELECTIVE 3 : ARTIFICIAL INTELLIGENT AND EXPERT SYSTEM	Batch	2018-2021
Hours/week	4		Semester	VI
			Credits	3

COURSE OBJECTIVES

To enable the students

- To Understand different planning problems and have the basic knowledge how to design and implement AI planning systems
- Understand the strengths and limitations of various state-space search algorithms and choose the appropriate algorithms for a problem

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the strengths and limitations of various state-space search algorithms and choose the appropriate algorithms for a problem
CO2	Learn the basics of the theory and practice of Artificial Intelligence as a discipline about intelligent agents capable of decision making.
CO3	Apply knowledge representation techniques and problem solving strategies to common AI applications
CO4	Design simple software to experiment with various AI concepts and analyze results
CO5	Build self-learning and research skills to be able to tackle a topic of interest on his/her own or as part of a team

MAPPING WITH PROGRAMME OUTCOMES

CO\PO	PO	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	-
CO2	-	✓	✓	-	-	✓	✓	-	-	-	✓	✓
CO3	-	✓	✓	✓	-	✓	✓	-	-	-	✓	✓
CO4	-	✓	✓	✓	-	✓	✓	-	-	-	✓	✓
CO5	-	✓	✓	✓	-	✓	✓	-	-	-	✓	✓

SYLLABUS**UNIT - I****(Hours : 10)**

Artificial Intelligence : Intelligence, AI Concepts, Various definitions of AI, Knowledge, Knowledge Pyramid, People and Computers: What computers can do better than people, what people can do better than computers; Characteristics of AI Problems, Problem Representation in AI, Components of AI, AI Evolution, Application Areas of AI, History of AI, The Turing Test, The Revised Turing Test.

UNIT -II**(Hours : 10)**

Expert System: Components of Expert System: Knowledge Base, Inference Engine, User Interface, Features of Expert System, Expert System Life Cycle, Categories of Expert System, Rule Based vs. Model Based Expert Systems, Advantages/Limitations of Expert System

UNIT -III**(Hours : 10)**

Developing an Expert System: Identification, Conceptualization, Formalization, Implementation, Testing, Using an Expert System, Application Areas of Expert System.

UNIT -IV**(Hours : 10)**

AI and Search Process: Brute Force Search –Depth First/Breadth First Search, Heuristic Search: Hill Climbing, Constraint Satisfaction, Mean End Analysis, Best First Search, A* Algorithm, AO* Algorithm, Beam Search.

UNIT -V**(Hours : 10)**

Natural Language Processing: Introduction, Need, Goal, Fundamental Problems in Natural Language Understanding, How People overcome Natural Language Problems. Speech Recognition: Introduction, Advantages and Approaches, Introduction to Robotics: Parts of a Robot, Controlling a Robot, Intelligent Robots, Mobile Robots.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1.	Henry C. Mishkoff	Understanding Artificial Intelligence	Tata McGraw Hill
2.	V S Janakiraman	Foundation of Artificial Intelligence and Expert Systems	Tata McGraw Hill

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1.	Vinod Chandra S.S and Anand Hareendran .S	Artificial Intelligence and Machine Learning	PHI Learning
2.	Elaine Rich, Kevin Knight, Shivashankar B.Nair	Artificial Intelligence	Tata McGraw Hill

WEBSITE REFERENCES

- <https://www.techopedia.com/definition/190/artificial-intelligence-ai>
- https://en.wikipedia.org/wiki/Artificial_intelligence
- <https://www.techopedia.com/definition/190/artificial-intelligence-ai>
- https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_overview.h
- <https://www.britannica.com/technology/artificial-intelligence>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER- VI

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U6ITET3B	ELECTIVE 3 : SOFTWARE ENGINEERING	Batch	2018-2021
			Semester	VI
Hrs/week	4		Credits	3

COURSE OBJECTIVES

To enable the students

- To understand various techniques of cost estimation of software , software design and software Requirements and various issues in implementation of software , verification , validation and maintenance of software to give a roadmap to design a new software project.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the principles at various phases of software development
CO2	Analyze and identify an appropriate process model for a given project
CO3	Discuss the software project estimation models and estimate the work to be done, resources required and the schedule for a software project
CO4	Translate specifications into design, and identify the components to build the architecture for a given problem, all using an appropriate software engineering methodology
CO5	Define a Project Management Plan and tabulate appropriate Testing Plans at different levels during the development of the software

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	-
CO2	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO3	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO4	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO5	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓

SYLLABUS**UNIT - I****(Hours : 10)**

Introduction to Software Engineering : Introduction-Basic definitions- Distribution of effort- Project Size Categories – Managerial Issues -Quality and Productivity Factors – Software Cost Factors. Planning a Software Project: Introduction – Software life Cycle Models – Waterfall Model – Work Products and Reviews – Prototype Model – Spiral Model.

UNIT -II**(Hours : 10)**

Software Cost Estimation : Introduction- Software Cost Estimation Techniques – Staffing Level Estimation – Software Maintenance Cost Estimation. Software Requirements Analysis: Software Requirements Analysis – Facilitated Application Specification Technique – Quality Function Deployment – Elements of Requirements Analysis- Classical Analysis Methods.

UNIT -III**(Hours : 10)**

Software requirements Definition: Software Requirements Specification- Formal Specification Techniques – Languages and Processors for SRS. Software Design: Introduction – Types of Design – Design Strategies – Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Distributed and Real Time System Design.

UNIT -IV**(Hours : 10)**

Source Code Development : Introduction – Structured Programming Techniques – Coding Style – Documentation Guidelines. Verification and Validation : Introduction – Software Quality – Verification and Validation Methods – Software Quality Assurance – Formal Technical review- Structured Walkthrough – Inspection – Audit – Testing – Testing Strategies – Debugging.

UNIT -V**(Hours : 10)**

Software Testing Methods: Flowgraph and Graph Matrix- Software Testing Methods – White box testing – White Box Testing Techniques – Black box Testing - Black box Testing Techniques – Characteristics of testable software. Software maintenance: Introduction: Managerial Aspects of software maintenance – Enhancing Maintainability during development

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1.	A.K.R.S. Anusha	Software Engineering	Charulatha Publications

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1.	Pressman	Software Engineering: A Practitioner's Approach	Paperback-Import

WEBSITE REFERENCES

- 1 https://www.tutorialspoint.com/software_engineering/
2. <https://www.geeksforgeeks.org/software-engineering/>
3. https://www.tutorialspoint.com/software_engineering/
4. https://en.wikipedia.org/wiki/Software_engineering
5. <https://www.guru99.com/software-engineering-tutorial.html>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER- VI

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U6ITET3C	Elective 3: MOBILE AND WIRELESS TECHNOLOGY	Batch	2018-2021
			Semester	VI
Hours/week	4		Credits	3

COURSE OBJECTIVES

To enable the students

- To learn the wireless communication on digital mobile communication system and integration of services and applications from fixed networks into networks supporting mobility of end user and wireless access .

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	Explain the basics of radio access and networks
CO2	Learn to simulate wireless networks and analyze the simulation results
CO3	Describe the concepts of ad hoc networks, design and implementation issues, and available solutions
CO4	Apply knowledge of wireless sensor networks to various application areas
CO5	Explain advanced knowledge of networking and wireless networking

MAPPING WITH PROGRAMME OUTCOMES

CO\PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	-
CO2	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO3	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO4	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO5	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓

SYLLABUS**UNIT - I****(Hours : 10)**

Introduction: Applications – A Simplified Reference Mode. Wireless Transmission: Cellular System. Medium Access Control : Motivation for a Specialized MAC : Hidden and exposed terminals – Near and far terminals – SDMA – FDMA – TDMA : Fixed TDM – Classical Aloha – Slotted Aloha – Carrier Sense Multiple Access – Demand assigned Multiple Access .

UNIT -II**(Hours : 10)**

Telecommunication Systems: GSM: Mobile Services – System Architecture – Radio Interface – Protocols - Localization And Calling – Handover – Security – New Data Services. DECT: System Architecture – Protocol Architecture – TETRA.

UNIT -III**(Hours : 10)**

UMTS and IMT 2000: UMTS Releases and Standardization – UMTS System Architecture -UMTS Radio Interface – UTRAN – Core Network – Handover. Satellite System: History –Applications – Basics: GEO – LEO – MEO . Routing – Localization – Handover.Broadcast Systems: Overview – Cyclical Repetition Of Data – Digital Audio Broadcasting –Digital Video Broadcasting.

UNIT -IV**(Hours : 10)**

Wireless LAN: Infra Red Vs Radio Transmission – Infrastructure and Ad-Hoc Network –IEEE 802.11: System Architecture – Protocol Architecture – Physical Layer – MediumAccess Control Layer – MAC Management – HIPERLAN: HIPERLAN1 -WATM – BRAN– HiperLAN2. Bluetooth: User scenarios – Architecture – Radio layer – Base band layer –Link manager protocol

UNIT -V**(Hours : 10)**

Mobile Network Layer: Mobile IP – Dynamic Host Configuration Protocol – Mobile Ad-Hoc Networks. Mobile Transport Layer: Traditional TCP-Classical TCP Improvement-TCP Over 2.5/3G Wireless Networks – Performance Enhancing Proxies.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1.	Asoke K Talukder and Roopa R Yavagal	Mobile Computing	Tata McGraw-Hill
2.	John Schiller	Mobile communication	Pearson Edition

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1.	William C.Y.Lee	Mobile Communication Design Fundamentals	John Wiley
2.	Ivan Stojmenoric	Wireless network & Mobile communication	Tata McGraw-Hill

WEBSITE REFERENCES

1. https://en.wikipedia.org/wiki/Mobile_technology
2. <https://www.techopedia.com/7/.../what-is-the-difference-between-mobile-and-wireless>
3. https://en.wikipedia.org/wiki/Mobile_technology
4. <https://searchmobilecomputing.techtarget.com/tip/Mobile-and-wireless-protocols>
5. https://www.researchgate.net/.../282392489_Enabling_5G_mobile_wireless_technologies

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER VI

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U6ITET4A	Elective: 4 COMPILER DESIGN	Batch	2018-2021
Hours/week	4		Semester	VI
			Credits	3

COURSE OBJECTIVES

To enable the students

- To learn the fundamentals of Compiler Designs and its knowledge on High level Programming languages .
- Understand the basics of compilation(computing) and grammar of compilers
- Understand the intermediate form of codes in compilers and the code generation technique(Machine code)
- Understand the optimization of code in compilers

COURSE OUTCOMES

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the basics of compilation(computing)
CO2	Discuss the grammar of compilers.
CO3	Discuss the intermediate form of codes in compilers
CO4	Explain the code generation technique(Machine code)
CO5	Discuss the optimization of code in compilers

MAPPING WITH PROGRAMME OUTCOMES

CO\PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	✓	✓	-	-	-	-	✓
CO2	-	✓	✓	-	-	✓	✓	-	-	-	-	✓
CO3	-	✓	✓	-	-	✓	✓	-	-	-	-	✓
CO4	-	✓	✓	-	-	✓	✓	-	-	-	-	✓
CO5	-	✓	✓	-	-	✓	✓	-	-	-	-	✓

SYLLABUS**UNIT - I****(Hours : 10)**

Introduction to Compilers: Compilers and Translators – The Structure of a Compiler Lexical Analysis – Syntax analysis – Intermediate Code generation – Optimization – Code generation- Book keeping – Error handling – Compiler writing tools. Programming languages: High level Programming languages- Definitions – lexical and Syntactic structure of a language – data elements data structures – operators – assignment – statements.

UNIT -II**(Hours : 10)**

Finite Automata and lexical Analysis: The role of the lexical analyzer – simple approach – regular expressions -finite automata – from regular expressions to finite automata – minimizing the number of states – implementation of lexical analyzer. The Syntactic Specifications of programming languages : Context free Grammers – Derivations and Parse Trees – Capabilities of Context free Grammers.

UNIT -III**(Hours : 10)**

Basic Parsing Techniques: Parsers – Shift – reduce parsing – operator- precedence parsing – Top down parsing – Predictive parsers. Automatic Constuction of Effective parsers : LR parsers – Canonical Collection of LR (0) items - Constructing SLR parsing tables – Constructing Canonical LR paqrsing tables – Constructing LALR parsing tables.

UNIT -IV**(Hours : 10)**

Symbol tables : the Contents of a symbol tables – data structures – Representing scope information. Error Detection and Recovery : Errors – Lexical phase errors – Syntactic phase errors – Semantic errors.

UNIT -V**(Hours : 10)**

Introduction to Code Optimization :The principal sources of optimization – Loop Optimization – DAG representation of basic blocks – Value numbers and algebraic laws- global data flow analysis. Loop Optimization: Dominators – Reducible Flow graphs – depth first search – Loop invariant computations – Induction variable elimination – Some other loop optimizations.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1.	Alfred V. Aho, Jeffrey D.Ullman,	Principles of Compiler Design	Narosa publishing house

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1.	Alfred V.Aho and Monica S.Lam	Compilers : Principles, Techniques and Tools Design Fundamentals	PHI

WEBSITE REFERENCES

1. <https://www.geeksforgeeks.org/compiler-design-tutorials/>
2. https://www.tutorialspoint.com/compiler_design
3. <https://www.javatpoint.com/compiler-tutorial>
4. <https://www.guru99.com/compiler-design-tutorial.html>
5. ecomputernotes.com/compiler-design

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER VI

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U6ITET4B	Elective :4 MOBILE OPERATING SYSTEM	Batch	2018-2021
Hours/week	4		Semester	VI
			Credits	3

COURSE OBJECTIVES

To enable the students

- To understand the process of developing software for the mobile and create mobile applications on the Android Platform.
- To understand the limitations and challenges of working in a mobile and wireless environment.
- To learn how and when to apply the different components to develop a working system

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	Explain the limitations and challenges of working in a mobile and wireless environment.
CO2	Describe and apply the different types of application models/architectures used to develop mobile software applications.
CO3	Describe the components and structure of a mobile development frameworks (Android SDK and Eclipse Android Development Tools)
CO4	To learn how and when to apply the different components to develop a working system
CO5	Design, implement and deploy mobile applications using an appropriate software development environment.

MAPPING WITH PROGRAMME OUTCOMES

CO\PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	-
CO2	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO3	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO4	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO5	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓

SYLLABUS**UNIT - I****(Hours : 10)**

Introduction to ANDROID: Android System Architecture, Creating and Running Android Applications, Types of Android Applications, Building blocks. Android OS Concepts: Mobile technology : Overview of Android - An Open Platform for Mobile development Open Handset Alliance. Use Android for mobile app development- Android Marketplaces - Android Development Environment setup.

UNIT -II**(Hours : 10)**

Android development Framework -Android-SDK, Eclipse Emulators /Android AVD. Creating & setting up custom Android emulator .Android Project Framework and its applications- Application Manifest, Application Life Cycle, Application Priority and Process States, Creating and Using Resources, The Activity Life Cycle.

UNIT -III**(Hours : 10)**

Android Architecture : Linux Kernel –Libraries- Android Runtime- Application Framework – Applications. Android Startup and Zygote. Android Debug bridge.Android Permission model -Android Manifest File.

UNIT -IV**(Hours : 10)**

Using Bluetooth and Managing Networks in ANDROID: Using Bluetooth -Introducing the Bluetooth Service, Controlling the Local Bluetooth Device, Discovering and Bonding with Bluetooth Devices, Managing Bluetooth Connections, Communication with Bluetooth. Managing Networks - Monitoring and Managing Your Internet Connectivity, Managing Active Connections, Managing Your Wi-Fi .

UNIT -V**(Hours : 10)**

Event driven Programming in Android- Creating a splash screen- Introduction to threads in Android- Develop application with menus and dialog boxes- Menu: Custom Vs. System Menus - Creating and Using Handset menu Button (Hardware)- Android Themes, Dialog, create an Alter Dialog- SQLite: Open Helper and create with database- Open and close a database.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publisher
1.	Reto Meier	Professional Android 2 Application Development	Wiley India Pvt Ltd,
2	Ed Burnette	Hello, Android	Wiley India Pvt Ltd.
3	Rick Rogers, John Lombardo	Android Application Development	Wiley India Pvt Ltd,

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publisher
1.	Mark L Murphy	Beginning Android	Wiley India Pvt Ltd,
2	Sayed Y Hashimi and Satya Komatineni	Professional Android	Wiley India Pvt Ltd.
3	Marko Garaenta	Learning Android	O'ReillyPublication

WEBSITE REFERENCES

1. https://en.wikipedia.org/wiki/Mobile_operating_system
2. [https://en.wikipedia.org/wiki/Android_\(operating_system\)](https://en.wikipedia.org/wiki/Android_(operating_system))
3. https://www.webopedia.com/TERM/M/mobile_operating_system.html
4. <https://www.webopedia.com/.../mobile-operating-systems-mobile-os-explained.html>
5. <https://searchmobilecomputing.techtarget.com/definition/mobile-operating-system>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER VI

Programme Code :	B.Sc IT	Programme Title	Bachelor of Science (Information Technology)	
Course Code :	18U6ITET4C	Elective 4: CLOUD COMPUTING	Batch	2018-2021
			Semester	VI
Hours/week	4		Credits	3

COURSE OBJECTIVES

To enable the students

- To understand security implications in cloud computing
- To understand the Cloud computing architectures, applications and challenges and learn about various cloud storages

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the security implications in cloud computing
CO2	Analyse the trade-offs inherent in cloud computing
CO3	Identify the architecture and infrastructure of cloud computing, including Service models and Cloud Access.
CO4	Explain the core issues of cloud computing such as security, privacy, and interoperability
CO5	Identify problems, and explain, analyze, and evaluate various cloud computing solutions

MAPPING WITH PROGRAMME OUTCOMES

CO\PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	✓	✓	-	-	-	-	-	-	-	-	-
CO2	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO3	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO4	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓
CO5	-	✓	✓	-	-	✓	✓	-	-	✓	✓	✓

SYLLABUS**UNIT - I****(Hours : 10)**

INTRODUCTION: Cloud Computing Introduction, From, Collaboration to cloud, Working of cloud computing, pros and cons, benefits, developing cloud computing services, Cloud service development, discovering cloud services.

UNIT -II**(Hours : 10)**

CLOUD COMPUTING FOR EVERYONE: Centralizing email communications, cloud computing for community, collaborating on schedules, collaborating on group projects and events, cloud computing for corporation, mapping schedules managing projects, presenting on road.

UNIT -III**(Hours : 10)**

USING CLOUD SERVICES : Collaborating on calendars, Schedules and task management, exploring on line scheduling and planning, collaborating on event management, collaborating on contact management, collaborating on project management, collaborating on word processing, spreadsheets, and databases.

UNIT -IV**(Hours : 10)**

OUTSIDE THE CLOUD : Evaluating web mail services, Evaluating instant messaging, Evaluating web conference tools, creating groups on social networks, Evaluating on line groupware, collaborating via blogs and wikis

UNIT -V**(Hours : 10)**

STORING AND SHARING: Understanding cloud storage, evaluating on line file storage, exploring on line book marking services, exploring on line photo editing applications, exploring photo sharing communities, controlling it with web based desktops.

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publishers
1.	Michael Miller	Cloud Computing	Pearson Education, New Delhi
2	Anthony T. Velte	Cloud Computing A Practical Approach	Tata Mcgraw Hill Education Private Limited

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1.	Arshdeep Bahga	Cloud Computing: A Hands-On Approach	Paperback-Import,

WEBSITE REFERENCES

1. https://en.wikipedia.org/wiki/Cloud_computing
2. <https://searchcloudcomputing.techtarget.com/definition/cloud-computing>
3. <https://www.salesforce.com/what-is-cloud-computing/>
4. <https://aws.amazon.com/what-is-cloud-computing>
5. <https://www.techopedia.com/definition/2/cloud-computing>

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

EXTRA CREDIT COURSE

சுற்றுலா வளர்ச்சி

Course Code: 2018ECC001

No. of Credits: 2

அலகு I

1. சுற்றுலா – ஒரு விளக்கம்
2. உலக நாடுகளில் சுற்றுலா வளர்ச்சி
3. பாரதத்தில் சுற்றுலா வளர்ச்சி

அலகு II

1. தமிழ்நாட்டில் சுற்றுலா வளர்ச்சி
2. பன்னாட்டு பலவகைப் பயணிகள்
3. சுற்றுலாவின் சமூக பொருளாதார விளைவுகள்

அலகு III

1. சுற்றுலாப் பயணிகள் பற்றிய புள்ளி விவரங்கள்
2. சுற்றுலாவைத் திட்டமிடுதலும் மேம்படுத்தலும்
3. சுற்றுலா விடுதிகள்

அலகு IV

1. சுற்றுலாப் பயணிகளின் பல்வேறு போக்குவரத்துகள்
2. சுற்றுலாக் கழகங்கள்
3. சுற்றுலாப் பயண முகவர்கள்

அலகு V

1. சுற்றுலாவின் வணிகச் சந்தைகள்
2. சுற்றுலாவின் வழிகாட்டிகள்
3. தமிழ் இலக்கியத்தில் பயணநூல்கள்

பாடநூல் : சுற்றுலா வளர்ச்சி

ஆசிரியர் - வெ. கிருட்டிணசாமி

மணிவாசகர் பதிப்பகம்

சென்னை,

ஆகஸ்டு - 2009

EXTRA CREDIT COURSE

இதழியல் கலை

Course Code: 2018ECC002

No. of Credits: 2

அலகு I இதழியல் - இயல்பும் பரப்பும்

1. இதழியல் விளக்கம்.
2. இதழ்களின் பணிகள், கடமைகள், பொறுப்புகள்.
3. இதழ்கள் வகைகளும் இயல்புகளும்.
4. மக்களாட்சியில் இதழியல்.
5. இதழ்களின் சுதந்திரம்.
6. இதழியல் நடத்தையறக் கட்டளைகள்.
7. இதழியல் தொழில் வாய்ப்புகள்.

அலகு II இதழியல் தோற்றமும் வளர்ச்சியும்

1. இதழியல் வளர்ச்சி
2. தமிழகத்தில் இதழியல் வளர்ச்சி
3. பத்திரிக்கைச் சட்டங்கள்
4. பத்திரிக்கை மன்றம்

அலகு III இதழ்களின் அமைப்பு முறை

1. இதழ்கள் தொடங்குவதற்கான வழிமுறைகள்
2. செய்தித்தாள் நிர்வாக அமைப்பு

அலகு IV செய்திகள், சேகரித்தல், எழுதுதல்

1. செய்தியாளர்
2. செய்தி
3. செய்தியின் உள்ளடக்கங்கள்
4. செய்தி திரட்டுதல்
5. செய்தி நிறுவனங்கள்
6. பேட்டி
7. குற்றச் செய்தி
8. பல்வேறு வகையான செய்திகள்
9. செய்திகளும் சிறப்புத்தனி இயல்புகளும்
10. படங்களும் இதழ்களும்

அலகு V செப்பனிடுதல் (பதிப்பித்தல்)

1. செய்திகளைச் செப்பனிடுதல் - நுட்பங்கள்
2. ஆசிரியர்
3. செய்தி ஆசிரியர்
4. துணை ஆசிரியர்
5. செய்தியின் கட்டமைப்பு
6. பக்க வடிவமைப்பு
7. அச்சுப்படி திருத்துதல்
8. இதழியல் கலைச் சொற்கள்

பாடநூல் : இதழியல் கலை

ஆசிரியர் : டாக்டர் மா.பா. குருசாமி

ஸ்ரீ சக்தி .:பைன் ஆர்ட்ஸ்

சிவகாசி

ஜனவரி – 2009.

EXTRA CREDIT COURSE

நாட்டுப்புறவியல்

Course Code: 2018ECC003

No. of Credits: 2

அலகு I

நாட்டுப்புற இயல் என்றால் என்ன?
நாட்டுப்புற இயலின் வரலாறு
நாட்டுப்புற அயல் கல்வி – ஒரு விளக்கம்

அலகு II

நாட்டுப்புற ஆடல்கள்
நாட்டுப்புற கூத்துகள்
நாட்டுப்புற கைவினைக் கலைகள்

அலகு III

நாட்டுப்புற விளையாடல்கள்
நாட்டுப்புற மருத்துவம்
நாட்டுப்புற நம்பிக்கைகள்

அலகு IV

நாட்டுப்புற வழிபாடுகள்
நாட்டுப்புறக் கதைகள்
நாட்டுப்புறப் பாடல்கள்
கதைப்பாடல்கள்

அலகு V

விடுகதைகள்
பழமொழிகள்
புராணங்கள்

பாடநூல் : நாட்டுப்புறவியல்

ஆசிரியர் : சு. கண்முக சுந்தரம்
காவ்யா பதிப்பகம்,
ஏப்ரல் - 2017.

EXTRA CREDIT COURSE

கணிப்பொறியில் தமிழ்

Course Code: 2018ECC004

No. of Credits: 2

அலகு I

கணிப்பொறியில் தமிழ்
விசைப்பலகை அமைப்பு முறைகள்
எழுத்துருவின் வகைகள்

அலகு II

தமிழ் எழுத்துருக்கள்
எழுத்துரு / விசைப்பலகை இயக்கியை நிறுவுதல்

அலகு III

தமிழில் தட்டச்சு செய்யும் முறை
சிக்கல்களும் தீர்வுகளும்

அலகு IV

இணையத்தில் தமிழ்
தமிழ் இணையப் பல்கலைக்கழகம்
மின்னஞ்சல்

அலகு V

யூனிக்கோடு
விண்டோஸ் எக்ஸ்பீயில் தமிழ்
தமிழ் இணையதளங்கள்

ஆசிரியர் : த. பிரகாஷ்

பெரிகாம் நூல் வெளியீடு மற்றும் விற்பனை
ஆகஸ்டு – 2007.

EXTRA CREDIT COURSE

தமிழக வரலாறும் மக்கள் பண்பாடும்

Course Code: 2018ECC005

No. of Credits: 2

அலகு I

1. தமிழக வரலாற்றுக்கான அடிப்படை ஆதாரங்கள்
2. தமிழகத்தின் இயற்கை அமைப்புகள்.
3. வரலாற்றுக் காலத்துக்கு முந்திய தமிழகம்.
4. சிந்து வெளி அகழ்வாராய்ச்சி.

அலகு II

1. பண்டைய தமிழரின் அயல்நாட்டு தொடர்புகள்
2. தமிழ் வளர்த்த சங்கம்
3. சங்க இலக்கியம்
4. பண்டைய தமிழரின் வாழ்க்கை

அலகு III

1. களப்பிரர்கள்
2. பல்லவர்கள்
3. தமிழகத்தில் நான்காம் நூற்றாண்டு முதல் ஒன்பதாம் நூற்றாண்டு வரையில் சமூக நிலை.

அலகு IV

1. சோழப் பேரரசின் தோற்றம்.
2. சோழப் பேரரசின் வளர்ச்சியும் வீழ்ச்சியும்.
3. சோழர் காலத்தில் தமிழரின் சமுதாயம்.
4. பாண்டியரின் ஏற்றமும் வீழ்ச்சியும்.

அலகு V

1. மதுரை நாயக்கர்கள்.
2. தமிழகத்தில் 13 முதல் 18 ஆம் நூற்றாண்டு வரை சமூகநிலை
3. ஐரோப்பியரின் வரவு.
4. 19 ஆம் நூற்றாண்டின் அரசியலும் தமிழகத்தின் சமூக நிலையும்.
5. 20 ஆம் நூற்றாண்டில் தமிழகம் மேற்கோள் நூல்கள்.

பாடநூல் : தமிழக வரலாறும் மக்கள் பண்பாடும்

ஆசிரியர் - கே. கே. பிள்ளை.

உலகத் தமிழாராய்ச்சி நிறுவனம்.

செப்டம்பர் - 2016.

EXTRA CREDIT COURSE

தமிழ் இலக்கிய வரலாறு

Course Code : 2018ECC006

No. of Credits: 2

அலகு I

1. காலப்போக்கில் கன்னித்தமிழ் ஒரு கண்ணோட்டம்
2. தமிழ்ச்சங்கம்
3. அகத்தியர்
4. தொல்காப்பியர்
5. சங்க இலக்கியம்
6. பதினெண் கீழ்கணக்கு

அலகு II

1. இரட்டைக் காப்பியங்கள்
2. நாயன்மார்கள்
3. ஆழ்வார்கள்
4. சமயமும் தமிழும் (பௌத்தம், சமணம், சைவம், வைணவம்)
5. கன்னித் தமிழ் காப்பிய வளர்ச்சி
6. புராணங்களும் பிறவும்.

அலகு III

1. சிற்றிலக்கியங்கள்.
2. பதினெண் சித்தர்கள்.
3. உரையாசிரியர்கள்.
4. பிற்காலப் புலவர்கள்.
5. கிருத்துவமும் தமிழும்.
6. இஸ்லாமியமும் இன்தமிழும்.

அலகு IV

1. சோழப் பேரரசின் வளர்ச்சியும் வீழ்ச்சியும்.
2. கவிஞர் பெருமக்கள்.
3. புதக்கவிதை.
4. உரைநடை இலக்கியம், சிறுகதை இலக்கியம்.

அலகு V

1. தமிழ் நாவல் இலக்கியம்.
2. தாளிகைகள்.
3. இசைத்தமிழ் வரலாறு.
4. நாடகத் தமிழ் வரலாறு
5. 20 ஆம் நூற்றாண்டில் இன்தமிழ் வளர்ச்சி.
6. பிற நாடுகளில் பைந்தமிழ்

பாடநூல் : தமிழ் இலக்கிய வரலாறு

ஆசிரியர் : பேராசிரியர் மது.சா. விமலானந்தம்

முல்லைநிலையம்,

சென்னை, 2018

EXTRA CREDIT COURSE

NEW MEDIA

Course Code: 2018ECC007

No. of Credits: 2

Course Objectives :

To enable the students to understand the new age media sources.

UNIT I:

Spread of Internet; Salient features and advantage over traditional media; History and spread of internet in India, reach and problem of access; Internet and Knowledge Society; Convergence and Multi-media: Print, radio, TV, internet and mobile.

UNIT II:

Online journalism; Earlier websites of newspapers, E-books and E-publishing Status of online journalism today.

UNIT III:

Digital storytelling: Tools of multimedia journalists; Learn to report, write and produce in a manner that is appropriate for online media; Feature writing for online media: Story idea, development and news updates.

UNIT IV:

Open source journalism: Responding to the audience, Annotative reporting; Citizen Journalists, Problem of verification, accuracy and fairness.

UNIT V:

Use of blogs, tweets, etc. for story generation and development; Protecting copyright, Exploring Cyberspace: Individual Blog; Group weblog

TEXT BOOKS:

Recent editions of the following books only are recommended

- 1.Jagdish Chakravathy, Net, Media and the Mass Communication,Authors press, New Delhi,2004.
2. Gopal Bhargava ,Mass Media and Information Revolution,Isha Books, New Delhi ,2004.

REFERENCE BOOKS:

- 1.Nath, Shyam ,Assessing the State of Web Journalism ,Authors Press, New Delhi,2002.
- 2.Narayana Menon, The Communication Revolution.National Book Trust ,1976.

EXTRA CREDIT COURSE

PROOFREADING AND COPYEDITING

Course Code: 2018ECC008

No. of Credits: 2

Course Objectives

To enable the students to proofread and edit texts.

UNIT I:

Introduction to Proofreading and Copyediting, The use of style sheets and style guides in Proofreading and copyediting, finding the appropriate style guides, how to create and use a style sheet.

UNIT II:

Proofreaders' marks and how they are used to copyedit and proofread, your job as a proofreader.

UNIT III:

How to proofread, Proofreading practice.

UNIT IV:

The job of copyediting, how to copyediting, copyediting practice.

UNIT V:

How to copyedit or proofread one's own Work, copyediting or proofreading as a career.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. [Laura Anderson](#) ,Proofreading Handbook ,McGraw-Hill ,2nd Edition2006.
2. [Elsie Myers Stainton](#), The Fine Art of Copyediting ,Columbia University Press ,2002.

REFERENCE BOOKS:

1. [Suzanne Gilad](#) ,Copyediting and Proofreading For Dummies ,1st Edition
2011
2. [Peter Ginna](#) ,What Editors Do: The Art, Craft, and Business of Book Editing (Chicago Guides to Writing, Editing, and Publishing) ,University of Chicago Press ,2017

EXTRA CREDIT COURSE

PERSONALITY DEVELOPMENT

Course Code: 2018ECC009

No. of Credits: 2

Course Objectives :

To make students groom their personality and prove themselves as good Samaritans of the society

UNIT I:

Introduction to Personality Development ; The concept of personality, Theories of Freud & Erickson, Significance of personality development; The concept of success and failure: What is success-Hurdles, What is failure- Causes of failure.

UNIT II:

Attitude & Motivation, Factors affecting attitudes-Positive attitude, Advantages, Negative attitude-Disadvantages - Concept of motivation - Significance – Internal and external motives -Importance of self- motivation-Factors leading to de-motivation

UNIT III:

Term self-esteem, Symptoms, Advantages - Do's and Don'ts to develop positive self-esteem, Low self-esteem, Symptoms - Personality having low self esteem - Positive and negative self esteem. Interpersonal Relationships.

UNIT IV:

Other Aspects of Personality Development, Body language - Problem-solving - Conflict and Stress Management - Decision-making skills -Leadership and qualities of a successful leader – Character building -Team-work – Time management - Work ethics –Good manners and etiquette.

UNIT V:

Employability Quotient , Resume building- The art of participating in Group Discussion – Facing the Personal (HR & Technical), Interview, Psychometric Analysis, Mock Interview Sessions.

TEXT BOOKS:

Recent editions of the following books only are recommended

- 1.E.B. Hurlock ,Personality Development ,Tata McGraw Hill ,28th Reprint. New Delhi: 2006
2. Stephen P. Robbins and Timothy A. Judge ,Organizational Behavior ,Prentice Hall. 16th Edition, 2014.

REFERENCE BOOKS:

1. Sudhir Andrews , How to Succeed at Interviews, New Delhi.Tata McGraw-Hill ,21st (rep.) 1988
2. Heller, Robert., Effective leadership, Essential Manager series. Dk Publishing,2002.

EXTRA CREDIT COURSE

TECHNICAL WRITING

Course Code: 2018ECC010

No. of Credits: 2

Course Objectives :

- To enable the students to practice professional writing.

UNIT I:

Technical Writing Basics, Technical Communication: Definition & Purpose.

UNIT II:

Characteristics of Technical Communication, Audience, Centered Communication.

UNIT III:

Legal and Ethical Communication: Description & Importance, Implicit and Explicit Rules of Communication: Definitions & Examples.

UNIT IV:

Types of Technical Documents.

UNIT V:

The Technical Writing Process: Prewriting, Writing & Rewriting, Spread of Internet; Salient features and advantage over traditional media.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Kieran Morgan , Technical Writing Process: The simple, five-step guide that anyone can use to create technical documents such as user guides, manuals, and procedures , Better on paper publications ,2015
2. Thomas Arthur Rickard ,A Guide to Technical Writing ,Bibliolife, 2008.

REFERENCE BOOKS:

1. Gerald J. Alred, Charles T. Brusaw_& [Walter E. Oliu](#) , Handbook of Technical Writing ,Bedford/St. Martin's ,2008.
2. Mike Markel, Technical Communication, Palgrave MacMillan ,2012

EXTRA CREDIT COURSE

AN INTRODUCTION TO PSYCHOLOGY

Course Code: 2018ECC011

No. of Credits: 2

Course Objectives :

- To enable the students to articulate how psychological research adheres to ethical and scientific principles, and communicate the difference between personal views and scientific evidence in understanding behavior.

UNIT I:

Introducing Psychology, Psychological Science, Brain, Body and Behavior.

UNIT II:

Sensing and Perceiving Remembering and Judging, Intelligence and Language.

UNIT III:

States of Consciousness, Growing and Developing, Learning.

UNIT IV:

Emotions and Motivation, Personality

UNIT V:

Defining Psychological Disorders, Treating Psychological Disorders, Psychology in Our Social Lives.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. David Myer , David Myer's Psychology , Worth Publishers ,(7th ed.) 2004.
2. Daniel Kahneman, Thinking Fast and Slow , Farrar , Straus and Giroux , 2011

REFERENCE BOOKS:

1. Roger R. Hock, Forty Studies That Changed Psychology , Prentice hall ,2008.
2. Robert Feldman, Understanding psychology, McGraw Hill Education, 2017
- 3.Thomas E. Ludwig , Psychsims ,WortSh Publishers ,2004

EXTRA CREDIT COURSE

ASTRONOMY

Course Code: 2018ECC012

No. of Credits: 2

Course Objectives:

- On successful completion of this course the students should gain knowledge about Astronomy.

UNIT I:

General description of the Solar system. Comets and meteorites – Spherical trigonometry.

UNIT II:

Celestial sphere – Celestial co – ordinates – Diurnal motion – Variation in length of the day.

UNIT III:

Dip – Twilight – Geocentric parallex.

UNIT IV:

Refraction – Tangent formula – Cassinis formula.

UNIT V:

Kepler's laws – Relation between true eccentric and mean anamolies.

TEXT BOOK

Recent editions of the following books only are recommended

“ASTRONOMY” by S.Kumaravelu and Susheela Kumaravelu.

EXTRA CREDIT COURSE

FUZZY MATHEMATICS

Course Code: 2018ECC013

No. of Credits: 2

Course Objective:

- To know the basic concepts of fuzzy sets and its characteristics.
- To understand the concept of various operations on fuzzy sets.
- To learn the concept of fuzzy relations and its applications.

UNIT 1

From classical sets to Fuzzy sets: Introduction-Crisp Sets: An overview-Fuzzy set: Basic types-Fuzzy sets: Basic Concepts-Characteristics and significance of the paradigm Shift

UNIT 2

Fuzzy sets versus crisp sets: Additional properties of α - Cuts- Representations of fuzzy sets- Extension Principle of Fuzzy sets.

UNIT 3

Operations on fuzzy sets: Types of Operations-Fuzzy complements-Fuzzy Intersections: t-Norms-Fuzzy unions: t-conorms

UNIT 4

Fuzzy Arithmetic: Fuzzy Numbers-Linguistic Variables-Arithmetic Operations on intervals

UNIT 5

Fuzzy Relations: Crisp versus Fuzzy Relations-Projections and Cylindrical Extensions-Binary Fuzzy Relations-Binary relations on a single set-Fuzzy Equivalence Relations-Fuzzy Compatibility Relations.

TEXT BOOK:

Fuzzy Sets Uncertainty and Information, George, J.Klir and Tina A, Folger, Printice Hall of India Pvt Ltd, New Delh, 2006

UNIT 1: Page no: 1-30 UNIT 2: Page no: 35-48

UNIT 3: Page no: 50-96

UNIT 4: Page no: 97-102

UNIT 5: Page no: 119-135

Reference Book:

1. Fuzzy Logic Intellegence, Control and information, John Yuan, Reza Langari, Pearson Education, New Delh, 1999
2. Fuzzy logic and Neural Networks, M.Amirthavalli, Scitech Publications Pvt Ltd, Chennai and Hyderabad, 2007
3. Fuzzy Logic with Engineering Applications, Timothy , Jo Ross, McGraw-Hill INC, New York, 1996.

EXTRA CREDIT COURSE

OPERATION RESEARCH

Course Code: 2018ECC014

No. of Credit :2

Course Objectives:

- To understand the basic concepts of Operations Research and Solving LPP
- To solve Transportation and Assignment problems
- To understand the concept of Game theory , Queuing theory PERT and CPM.

UNIT I

Introduction to Operations Research - Meaning - Scope – Models - Limitation. Linear Programming - Formulation – Graphical method only.

UNIT II

Transportation (Non- degenerate only) - Assignment problems - Problems.

UNIT III

CPM - Principles - Construction of Network for projects – Types of Floats – Slack- crash programme.

UNIT IV

PERT - Time scale analysis - critical path - probability of completion of project - Advantages and Limitations.

UNIT V

Game Theory: Graphical Solution – $m \times 2$ and $2 \times n$ type. Solving game by Dominance property - fundamentals - problems . Replacement problem – Replacement of equipment that deteriorates gradually (value of money does not change with time).

Text Book:

Recent editions of the following books only are recommended

Prof. V. Sundaresan., K.S. Ganapathy Subaramanian ., K.Ganesan: Resource Management Techniques (Operations Research) A.R.Publications- 2002

Unit I : Chapter 1 – Section 1.1,1.2,1.4,1.9, Chapter 2 – Section 2.1- 2.5

Unit II : Chapter 7 – Section 7.1- 7.2, Chapter 8 – Section 8.1 ,8.2,8.4,8.5

Unit III : Chapter 15 – Section 15.1,15.2,15.5,15.8

Unit IV : Chapter 15 – Section 15.6

Unit V : Chapter 16 – Section 16.6, 16.7, Chapter 11 – Section 11.1, 11.2

ReferenceBook :

1. Kanti Swarup, Gupta P.K, Man Mohan : Operations Research, Sultan Chand & Sons- 1997
2. P.R. Vittal and V.Malini : Operations Research, Margham Publications -2011.
- 3.P.K.Gupta.,ManMohan: Problems in Operations Research,Sultan Chand &sons-2004
- 4.V.K.Kapoor: Operations research, Sultan Chand&sons-2007

EXTRA CREDIT COURSE

MATHEMATICS FOR PROFESSIONAL COURSES

Course Code: 2018ECC015

No. of Credits: 2

COURSE OBJECTIVES

- To understand the fundamental concepts of Set Theory and Linear Equations.
- To solve the problems in Mathematics of Finance, sequence and series.
- To acquire the knowledge of correlation, regression and problem solving.

UNIT 1:

Sets, Functions and Relations -Equations Linear equations–Homogeneous linear equations .

UNIT 2:

Sequence and Series–Arithmetic progression-Geometric progression; Mathematics of Finance: Simple interest-Compound interest.

UNIT 3:

Limits – Basic concepts of Differentiation - Integration

UNIT 4:

Measures of Central Tendency and Dispersion, Arithmetic Mean, Median – Mode, Geometric Mean and Harmonic Mean, Standard deviation, Quartile deviation

UNIT 5:

Correlation and Regression.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Discrete Mathematics, B.S. Vatsa, Wishwa Prakashan Private Limited, 3rd Edition.
2. Business Mathematics and Statistics, P.A. Navanitham, Jai Publisher, June 2004.

Reference Book:

- 1 .Dr.M.K.Venketaramen,Dr.N.Sridharan,N.Chandarasekaran: DiscreteMathematics The National publishing Company – 2006.
- 2.P.R.Vittal :Business Mathematics and Statistics, Margham Publications.-2011
3. Sanchetti, D.C and Kapoor, V.K: Business Mathematics, Sultan chand Co & Ltd-2002.

Unit 1: Chapter 2 and 3, chapter 7, 7.1-7.4 (Text Book 1)

Unit 2: Chapter 1 and 2 (Text Book 2, Part 1)

Unit 3: Chapter 5, 6 and 8 (Text Book 2, Part 1)

Unit 4: Chapter 7 (Text Book 2, Part 2)

Unit 5: Chapter 12 and 13 (Text Book 2, Part 2)

Chapter 3 , Section 3.1-3.4 and Chapter 6, Section 6.1-6.3 (Text Book 3)

EXTRA CREDIT COURSE

MULTIMEDIA AND ITS APPLICATIONS

Course Code: 2018ECC016

No.of Credits: 2

Course Objectives:

- To enable the students learn the overview of Multimedia systems.
- To provide knowledge about the Basic concepts of Sound and Image Processing.
- To enhance the knowledge about the Multimedia Applications.

UNIT I

Media and Data Streams : Medium – Main Properties of a Multimedia Systems – Multimedia – Traditional Data Streams Characteristics – Data Streams characteristics for continuous media.

UNIT II

Sound / Audio: Basics sound Concepts – Music – Speech . Video and Animation : Basics concepts – Television – Computer Based Animations.

UNIT III

Images and Graphics : Basics concepts – Computer Image Processing – Data Compression : Storage space – coding requirement – source entropy and hybrid coding – some basic compression techniques – JPEG – MPEG – DVI.

UNIT VI

Multimedia Communication system : Application subsystem – Transport subsystem – quality of services and resource management.

UNIT V

Multimedia Applications : Introduction – Media Preparation – Media Composition – Media Integration – Media Communication – Media Entertainment.

Reference Books:

1. Ralf Steinmetz and Klara Nahrstedt , Multimedia : Computing , Communication & Applications. ,Pearson Education.

EXTRA CREDIT COURSE
MANAGEMENT INFORMATION SYSTEM

Course Code: 2018ECC017

No. of Credits: 2

Course Objectives:

- To familiarise the students with Business Information through Computers.
- To enable the students aware of utilization of business information for decision making.
- To bestow knowledge about Database Management System

UNIT I

Management information system: meaning – features – requisites of effective MIS – MIS Model – components – subsystems of an MIS – role and importance – corporate planning for MIS – growth of MIS in an organization – centralization vs decentralization of MIS - Support – Limitations of MIS.

UNIT II

System concepts – elements of system – characteristics of a system – types of system – categories of information system – system development life cycle – system enhancement.

UNIT III

Information systems in business and management: Transaction processing system: Information repeating and executive information system.

UNIT IV

Database management systems – conceptual presentation – client server architectures networks.

UNIT V

Functional management information system: Financial – accounting – marketing – production – Human resource – business process outsourcing.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Gordon B.Davis and Margrethe H.Olson: “Management Information System”, Tata McGraw Hill Publication, New Delhi, 1st Edition, 2005.
2. Aman Jindal: “Management Information system”, Kalyani Publishers, New Delhi, First Edition, 2004.

REFERENCE BOOKS:

1. Kenneth C. Laudon: “Management Information System”, Pearson Education, New Delhi, First Edition, 2004.
2. Stephen Haag: “Management Information System”, Tata McGraw Hill Publication, New Delhi, First Edition, 2008.

EXTRA CREDIT COURSE
THEORY OF COMPUTATION

Course Code: 2018ECC018

No. of Credits: 2

Course Objectives:

- To learn about the basic of theory of computing
- To understand the concept of finite automata and push down automata
- To acquire knowledge in formal language
- To enhance the concept of conversion of deterministic automata to non deterministic automata.

UNIT- I

Introduction to theory of Computing – Why Study the theory of Computing- What is Computation- Set theory-Alphabets-Strings and Languages-Relations-Functions-Graphs and Trees.

UNIT -II

Finite Automata: Introduction-Finite state Machines -Deterministics Finite Automata(DFA)- Finite Automata with and without Epsilon Transitions-Language of Deterministic Finite Automata-Acceptability of a String by a Deterministic Finite Automata-Processing of Strings by Deterministic Finite Automata;Non-Deterministic Finite Automata(NFA)- Language of Non- Deterministic Finite Automata-Equivalence between DFA and NFA-Non Deterministic Automata with or without Epsilon Transitions.

UNIT -III

Formal Language: Introduction-Theory of Formal Language-Kleene and positive Closure-Defining Language-Recursive Definition of Language-Arithmetic Expression-Grammar-Classification of Grammar and Language-Language and their Relation-Operations On Language-Chomsky Hierarchy.

UNIT- IV

Regular Language: Introduction-Regular Language and Expression-Operations of Regular Expression-Identity Rules-Algebraic Laws for Regular Expression-Finite Automata and Regular Expression- Kleene's Theorem-Problems-Context Free Grammar and Context Free Language: Introduction-Derivation Tree-Parse Tree-Right Most and Left most Derivation -Ambiguity-Problems

UNIT- V

Push Down Automata: Description and Definition-Language of PDA-Graphical Notation of PDA-Acceptance by Final State and Empty Stack, From Empty Stack to Final State and Vice versa-Deterministic Pushdown Automata and Non deterministic Pushdown Automata-Language-Problems.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Theory of Computing-A Gentle Introduction, Efim Kinber, Carl Smith, published by Pearson Education.(UNIT 1)
2. Theory of Automata, Language & Computation, Rajendra Kumar, Tata McGraw Hill Education Private Limited, New Delhi. (UNIT 1to 5)

REFERENCE BOOK:

A Textbook Automata Theory, S.F.B.Nasir, P.K.Srimani, Published by Cambridge University Press India Pvt, Ltd, New Delhi.

UNIT 1: Chapter 1: Section 1.1, 1.2 (Text Book 1)

Chapter 1: Section 1.1-1.6 (Text Book 2)

UNIT 2: Chapter 2: Section 2.1-2.11

UNIT 3: Chapter 3: Section 3.1-3.10

UNIT 4: Chapter 4: Section 4.1-4.5, 4.6, 4.6.1, 4.6.2

Chapter 6: Section 6.1-6.10

UNIT 5: Chapter 7: Section 7.1-7.10

EXTRA CREDIT COURSE

OOPS WITH JAVA PROGRAMMING

Course Code: 2018ECC019

No. of Credits: 2

Course Objectives :

- To Understand fundamentals of object – oriented programming in Java, including defining classes,invoking methods,using class libraries,etc.
- To be able to use the Java SDK enviroment to create, debug and run simple Java programs.
- To understand the Java Programming concepts so as to enable the students of Applications and Applets using Java

UNIT I

Introduction to Object-Oriented Programming : Fundamentals – Object oriented Paradigm – Elements of the OOP – Abstraction – Encapsulation – Modularity – Hierarchy –Concurrency Persistence – Inheritance – Polymorphism – Benefits of OOP – Applications of OOP.

UNIT II

Java Evolution : History – Features – Difference between Java,C,C++ - Java and Internet – Java and WWW – Web Browsers . Overview : Simple Java Program - Structure – Java Tokens-Statements -JVM - Constants – Variables – Data types – Operators and Expresions.

UNIT III

Decision Making and Branching :if,if...else, nested if, switch – Decesion making and looping : while,do,for – Jumps in Loops – Labeled loops – Classes, Objects and Methods.
Arrays, Strings and vectors - Interfaces :Multiple Inheritance – Packages : Putting classes together – Multithreaded programming – Thread exceptions – Life cycle of Thread - Thread priority – Synchronization.

UNIT IV

Managing Errors and Exceptions – Types of Errors – Exceptions – Applet Programming – Applet life cycle – Graphics Programming.

UNIT V

Managing Input / Output Files in Java: Concepts of Streams – Stream classes – Byte stream classes – Character stream classes - Using streams – I/O classes – File classes - I/O Exceptions – Creation of files – Reading / Writing characters, Byte - Handling Primitive data types – Random Access Files

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Grady Booch: “Object Oriented Analysis & Design with Applications”, Second Edition, Pearson Education.
2. E.BalaGurusamy: “Programming with Java”, Third edition, Tata McGraw Hill Pvt Ltd.

Reference Books:

1. Patrick Naughton & Hebert Schildt: “The Complete Reference Java 2”, Third edition, Tata McGraw Hill Pvt Ltd.
2. Programming with Java – John R.Hubbard, Second Edition, Tata McGraw

EXTRA CREDIT COURSE

PROGRAMMING IN C

Course Code: 2018ECC020

No. of Credits: 2

Course Objectives: To enable the students

- To know about problem solving techniques and algorithm fundamentals.
- To know about the basics of C Programming and its various computation logics.

UNIT I

Overview of C - Introduction – Structure of C - Character set - C tokens - Keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Operators – Arithmetic Expressions: - Evaluation of expression - Type conversion in expression - operator precedence .

UNIT II

Decision Making and Branching - Decision making with IF statement - simple IF statement - The IF ELSE Statement - Nesting of IF ...ELSE statements - The ELSE IF ladder - The switch statement – The GOTO statement -- Decision Making and Looping - The WHILE statement - The DO statement - The FOR statement – Jumps in Loop.

UNIT III

Arrays - One Dimensional - Two Dimensional - Multidimensional arrays - Character string Handling - Declaring and initializing string variables - String:Introduction- Standard Functions. Functions: User - defined Functions - Need for user Defined functions - Types of Functions :No Arguments and no return values - Arguments with return values - Recursion.

UNIT IV

Structure : Structure definition - Giving values to members – Structure initialization - comparison of structure variables - Structures within structures- size of structures.

UNIT V

Pointers to structures. Pointers – Introduction-Features of Pointers - Declaring and initializing pointers - Accessing a variable through its pointers - pointers and arrays - pointers and character strings

TEXT BOOKS:

Recent editions of the following books only are recommended

1. E. Balagurusamy: “Programming in ANSI C” , Tata Mc. Graw Hill, 5thEdition (reprint), 2011. (Unit II, Unit III, Unit IV, Unit V)
2. R.G.Dromey: ”How to Solve it by Computer”, Prentice Hall of India, Delhi,2000 (Unit-I)

Reference Books:

1. Byron Gottfried: “Programming with C”(Schaum's Outline Series), Tata Mc.Graw Hill,2nd Edition,1998.
2. Ashok. N. Kamathane: “Programming with ANSI and Turbo C”, Pearson Education Asia,4th Edition,2002 .
3. Yeswanth Kanethkar: “Let us C” Tata Mc. Graw Hill, 3rd Edition,1992.

EXTRA CREDIT COURSE

INTERNET OF THINGS

Course Code: 2018ECC021

No. of Credits: 2

Course Objectives:

- To get the vision and introduction to IoT .
- To Understand IoT Market perspective, Data and Knowledge Management and use of devices in IoT Technology.
- To understand state of the art IoT architecture,real world IoT deisgn constraints,industrial automation and commercial building automation in IoT.

UNIT I

Introduction- Concepts behind the Internet of Things- The IoT Paradigm- Smart Objects- Creative Thinking Techniques – Modifications- Combination Scenarios- Breaking Assumptions- Solving Problems.

UNIT II

M2M to IoT – A Market Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies.

UNIT III

M2M and IoT Technology Fundamentals- Devices and gateways, Local and wide area networking, Data management, Business processes in IoT, Everything as a Service(XaaS), M2M and IoT Analytics, Knowledge Management Introduction, Technical Design constraints- hardware is popular again.

UNIT IV

Introduction, State of the art, Architecture Reference Model- Introduction, Reference Model and architecture, IoT reference ModelIoT Reference Architecture- Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views. Real-World Design Constraints.

UNIT V

Service-oriented architecture-based device integration, SOCRADES: realizing the enterprise integrated Web of Things, IMC-AESOP: from the Web of Things to the Cloud of Things, Commercial Building Automation- Introduction, Case study: phase one-commercial building automation today.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle: “From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence”, First Edition, Academic Press, 2014.

REFERENCE BOOKS:

1. Vijay Madiseti and Arshdeep Bahga: “Internet of Things (A Hands-on-Approach)”, First Edition, VPT, 2014.
2. Francis daCosta: “Rethinking the Internet of Things: A Scalable Approach to Connecting Everything”, First Edition, Apress Publications, 2013.
- 3.Hakima chaouchi,”The Internet Of Things Connecting Objects,2010.

EXTRA CREDIT COURSE

WEB TECHNOLOGY AND ITS APPLICATIONS

CourseCode: 2018ECC022

No. of Credits: 2

Course Objectives: To enable the students

- To learn about the basic concepts of various networking model and its layers.
- To learn about the concepts of protocol and its architecture.
- To learn about the Java Scripts and XML.

UNIT I

Networking Protocols and OSI Model: OSI Model, Layer functions. Internetworking concepts, devices, internet basics: why internetworking, problems, virtual network, repeaters, bridges, routers, gateways, history of internet, growth.

UNIT II

TCP/IP Part I: basics, addressing, IP addressing, logical addresses, concept of IP address, ARP, RARP, BOOTP, DHCP, ICMP. TCP / IP Part II: TCP, UDP – basics, features, relationship, ports and sockets, connections, TCP segment format, UDP, differences.

UNIT III

DNS, Email, FTP, TFTP – DNS, Email, FTP, TFTP. TCP / IP Part IV : WWW, HTTP, TELNET – history, basics, HTML, common gateway interface, remote login (TELNET).

UNIT IV

Java Script and AJAX. PHP / MySQL – scripting language, client side vs Server side, Features of PHP, reference, MySQL basics, using MySQL with PHP.ASP.NET: overview of .NET framework, Details, Server controls and web controls, validation controls.

UNIT V

Java Web Technologies – Java servlets and JSP, Creating and testing, servlet, session management, introduction to JSP, JSP and JDBC, EJB, architecture, overview, types of EJB, session beans. Web Security: principles, cryptography, plain text and cipher text, digital certificates, signatures, secure socket layer. XML – what is XML? XML versus HTML, EDI, Terminology, Document-Type Declaration, Element-Type declarations.

TEXT BOOK:

Recent editions of the following books only are recommended

1. Achyut Godbole and Atul Kahate :”Web Technologies – TCP / IP, Web / Java Programming and Cloud Computing”, Third Edition, McGraw Hill Education India Private Limited.

REFERENCE BOOKS:

1. Behrouz A. Forouzan : “TCP / IP – Protocol Suite”, McGraw Higher Education, Sixth Edition.
2. Paul Deitel, Harvey Dietel and Abbey Dietel: “Internet & World Wide Web – How to Program”, Fifth Edition, Tata McGraw Hill.

EXTRA CREDIT COURSE

NETWORK SECURITY

Course Code: 2018ECC023

No. of Credits: 2

Course Objectives: To enable the students

- To know about cryptography and its various functions.
- To understand the concepts of hashes and public key algorithm.
- To have a knowledge on different types of authentication.
- To know about the standards, IP security and their applications.

UNIT I

Cryptography - Introduction – Primer on Networking –Active and Passive Attacks –Layers and Cryptography – authorization Viruses, worms, Trojan Horses – The Multi level Model of Security. Cryptography – Breaking an Encryption Scheme – Types of Cryptographic functions – secret key Cryptography – Public key Cryptography – Hash algorithms.

UNIT II

Secret Key Cryptography - Secret Key Cryptography – Generic Block Encryption – Data Encryption Standard – International Data Encryption Algorithm (IDEA) – Advanced Encryption Standard.

UNIT III

Hashes and Public Key Algorithms - Hashes and Message Digests: Introduction – Things to do with hash – MD2 – MD4 – MD5. Public Key Algorithms: Modular arithmetic – RSA – Diffie-Hellman – Digital Signature Standard – Elliptic Curve Cryptography.

UNIT IV

Authentication - Overview of Authentication Systems: Password-Based Authentication – Address-Based Authentication – Cryptographic Authentication Protocols –Eavesdropping and Server Database Reading – Trusted Intermediaries – Session Key Establishment.

UNIT V

Standards, IP Security and Applications - Standards: Kerberos V4: Introduction – Tickets and Ticket-Granting Tickets – Configuration – Logging into the Network – Replicated KDCs. IP Security: Overview of IPSec – IP and IPv6 – Authentication Header – ESP.

Reference Books:

- 1.Charlie Kaufman, Radia Perlman and MikeSpeciner : “Network Security Private Communication in a Public World”, Pearson Education, New Delhi, 2nd Edition,2008 .
- 2.Stallings William : “Cryptography and Network Security Principles and Practices”, Prentice Hall India, New Delhi, 4th Edition 2007.
- 3.Stallings William : “ Network Security Essentials Applications and Standards “ Prentice Hall India, New Delhi, 2004.
- 4.Atul Kahate : “Cryptography and Network Security “ Tata Mc.Graw Hill , 2nd Edition, 2008.

EXTRA CREDIT COURSE
MOBILE AND WIRELESS TECHNOLOGY

Course Code: 2018ECC024

No. of Credits: 2

Course Objectives:

- To learn the wireless communication on digital mobile communication system and integration of services and applications from fixed networks into networks supporting mobility of end user and wireless access.

UNIT - I

Introduction: Applications – A Simplified Reference Mode. Wireless Transmission: Cellular System. Medium Access Control : Motivation for a Specialized MAC : Hidden and exposed terminals – Near and far terminals – SDMA – FDMA – TDMA : Fixed TDM –Classical Aloha – Slotted Aloha – Carrier Sense Multiple Access – Demand assigned Multiple Access – PRMA Packet Reservation Multiple Access – Reservation TDMA – Multiple Access With Collision Avoidance – Polling – Inhibit Sense Multiple Access. CDMA: Spread Aloha multiple access.

UNIT -II

Telecommunication Systems: GSM: Mobile Services – System Architecture – Radio Interface – Protocols - Localization And Calling – Handover – Security – New Data Services. DECT: System Architecture – Protocol Architecture – TETRA.

UNIT -III

UMTS and IMT 2000: UMTS Releases and Standardization – UMTS System Architecture -UMTS Radio Interface – UTRAN – Core Network – Handover. Satellite System: History – Applications – Basics: GEO – LEO – MEO . Routing – Localization – Handover.Broadcast Systems: Overview – Cyclical Repetition Of Data – Digital Audio Broadcasting –Digital Video Broadcasting – Convergence of Broadcasting and Mobile Communication.

UNIT -IV

Wireless LAN: Infra Red Vs Radio Transmission – Infrastructure and Ad-Hoc Network –IEEE 802.11: System Architecture – Protocol Architecture – Physical Layer – MediumAccess Control Layer – MAC Management – HIPERLAN: HIPERLAN1 -WATM – BRAN– HiperLAN2. Bluetooth: User scenarios – Architecture – Radio layer – Base band layer –Link manager protocol

UNIT -V

Mobile Network Layer: Mobile IP – Dynamic Host Configuration Protocol – Mobile Ad- Hoc Networks. Mobile Transport Layer: Traditional TCP-Classical TCP Improvement-TCP Over 2.5/3G Wireless Networks – Performance Enhancing Proxies.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Asoke K Talukder and Roopa R Yavagal ,Mobile Computing,Tata McGraw-Hill,,Eleventh Reprint 2009.
2. John Schiller , Mobile communication, Pearson Edition ,2 nd Edition.

REFERENCE BOOKS:

1. William C.Y.Lee, Mobile Communication Design Fundamentals ,John Wiley,1993
2. Ivan Stojmenoric , Wireless network & Mobile communication,1st Editio

EXTRA CREDIT COURSE

CLOUD COMPUTING

Course Code: 2018ECC025

No. of Credits: 2

Course Objectives:

- To Understand the Cloud computing architectures, applications and challenges and learn about various cloud storages

UNIT - I

(12 Hours)

INTRODUCTION: Cloud Computing Introduction, From, Collaboration to cloud, Working of cloud computing, pros and cons, benefits, developing cloud computing services, Cloud service development, discovering cloud services.

UNIT -II

(12 Hours)

CLOUD COMPUTING FOR EVERYONE: Centralizing email communications, cloud computing for community, collaborating on schedules, collaborating on group projects and events, cloud computing for corporation, mapping schedules managing projects, presenting on road.

UNIT -III

(12 Hours)

USING CLOUD SERVICES: Collaborating on calendars, Schedules and task management, exploring on line scheduling and planning, collaborating on event management, collaborating on contact management, collaborating on project management, collaborating on word processing, spreadsheets, and databases.

UNIT -IV

(12 Hours)

OUTSIDE THE CLOUD : Evaluating web mail services, Evaluating instant messaging, Evaluating web conference tools, creating groups on social networks, Evaluating on line groupware, collaborating via blogs and wikis

UNIT -V

(12 Hours)

STORING AND SHARING: Understanding cloud storage, evaluating on line file storage, exploring on line book marking services, exploring on line photo editing applications, exploring photo sharing communities, controlling it with web based desktops.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Michael Miller, Cloud Computing, Pearson Education, New Delhi,2009.
2. Anthony T. Velte, Cloud Computing A Practical Approach, Tata Mcgraw Hill Education Private Limited, 1st Edition 2009

REFERENCE BOOKS:

1. Arshdeep Bahga, Cloud Computing: A Hands-On Approach, Paperback-Import,, Dec 2013..

EXTRA CREDIT COURSE
CROSS CULTURE MANAGEMENT

Course Code: 2018ECC026

No. of Credits: 2

Course Objective:

- To provide a thorough understanding
- The impact of an international context on management practices based on culture.
- Frameworks for guiding cultural and managerial practice in international business.

UNIT-I

Basic framework of Cross Cultural Management: Factors influencing Decision Making – Using Culture – Cross Cultural and International Management – Implications for the Manager. Comparing Cultures. Shifts in the Culture – Organizational Culture – Culture and Communication –Needs and Incentives – Dispute Resolution and Negotiation.

UNIT-II

Structure of Cross Cultural Management: Formal Structures – Functions – Bureaucracy – Culture and Bureaucracy – Implications. Informal Systems – Informal Relationships – Patronage, Society and Culture –Government-Business Patronage – Guanxi – Managing Informal Systems –Implications.

UNIT-III

Globalization & Cross Cultural Management: Planning Change: Meaning – Planning for Change – Planning in Different Culture – Planning in an Unstable Environment – Implications. International Strategies –Globalization and Localization – Defining Globalization – Roots – Global-Local Contradictions – Implications.

UNIT-IV

Models of Cross Cultural Management: Family Companies: The Anglo Model: Environment, Culture and Management. The Chinese Model: Environment and Culture. The Chinese Model: Management. Changes in the Chinese model – Implications.

UNIT-V

Strategy of Cross Cultural Management: Designing and Implementing Strategy: Formal Strategy Planning – Analyzing Resources and the Competition – Positioning the Company – Implementation – Emergent Strategy – Implications. Head Quarters and Subsidiary: Risk for the Multinational – Control – Implications.

TEXT BOOK:

Recent editions of the following books only are recommended

Jean-Francois Chanlat, Cross Culture Management, T&F publication, Edition-2013.

REFERENCE BOOKS:

1. Neal Mark, The Culture Factor: Cross-national Management and Foreign Venture, Macmillan, Edition-1998.
2. Prashant Faldu, Cross Culture Management, Presence Institute of Image Consulting Pvt.Ltd., Edition-2015.
3. Dipak Kumar, Cross Culture Management: Text and Case, PHI Publication, Edition-2010.
4. Richard R. Gesteland, Cross-Culture Business Behaviour, Copenhagen Business School Press, Edition-1999.

EXTRA CREDIT COURSE

INDIAN ECONOMY AND TRADE DEPENDENCIES

Course Code: 2018ECC027

No. of Credit :2

Course Objectives: On successful completion of the course, the students should have understood

- The diversity of issues prevalent in the Indian Economy.
- Trade related issues of the Indian Economy.
- The importance of trade in the present globalized era.

UNIT- I

Introduction to Indian Economy : Alternative Development Strategies – Trends in National Income, Growth and Structure since 1991 - New Industrial Policy 1991 – Recent changes in Trade Policy - Competition Policy - Public Sector Reform - Privatization and Disinvestments – Progress of Human Development in India.

UNIT-II

Planning and Economic Development : Redefining the Role of the State –Human Capital Formation in India – Problem of Foreign Aid – Economic Reforms and Reduction of Poverty – Measures to Remove Regional Disparities.

UNIT-III

Indian Industries : Review of Industrial Growth under 10th and 11th Five year plan - Growth and present state of IT industry in India – Outsourcing, Nationalism and Globalization – Small Sector Industrial Policy.

UNIT-IV

Foreign Trade: Trends of Exports and Imports of India – Composition of India's Foreign Trade - Direction of India's Foreign Trade – Growth and Structure of India's Foreign Trade since 1991 – Balance of Payments since the New Economic Reforms of 1991. Foreign Capital : Need for Foreign Capital – Foreign Investment Inflows –Role of Special Economic Zones (SEZ)

UNIT-V

India in the Global Setting : India in Global Trade – Liberalization and Integration with the Global Economy – Globalization Strategies – India's Foreign Exchange Reserves –Convertibility of the Rupee – WTO and India.

TEXT BOOK:

Recent editions of the following books only are recommended

1.Ramesh Singh, Indian Economy, Mcgraw Hill Education, Edition-7, 2015.

REFERENCE BOOKS:

1.P.Arunachalam-Indian Economy and Trade, Serial Publication, Edition-1,2011.

2.Sankarganesh,Indian Economy Key concepts, Kavin Mukhil Publications, Edition-4,2016

3.Gaurav Kumar, Indian Economy, Kd Publication, Edition-1, 2016.

4.Puri Misra, Indian Economy, Himalaya Publication, Edition-26, 2008.

EXTRA CREDIT COURSE

EXPORT MARKETING

Course Code: 2018ECC028

No. of Credits: 2

Course Objectives:

- To gain knowledge on Export distribution channels.
- To enable the students to understand Export and Import Procedures.
- To create awareness regarding the export promotion and export finance.

UNIT I

Export marketing – an overview -export marketing – meaning difference between export marketing and domestic marketing – basic function of export marketing.

UNIT II

Export distribution channels – direct export – indirect export – channel; small manufacturer.

UNIT III

Export promotion – characteristics of foreign buyers – forms of export promotion-importance of Promotional Activities.

UNIT IV

Export and Import Procedure Documents used in Foreign Trade.

UNIT V

Export Finance- Needs- Short terms, Medium and long term Source of Finance types of Credit.

Text Book

1.Rathor. BS-Export Marketing - Himalaya publishing House 2006

EXTRA CREDIT COURSE
INTERNATIONAL TRADE & FOREX

Course Code: 2018ECC029

No. of Credits: 2

Course Objectives:

- To learn the overview of International Trade and Globalisation.
- To make the students to understand the concepts of foreign exchange management.
- To gain the knowledge on the basic regulation of FEMA.

UNIT I

International trade- Meaning- Scope- Challenges- Theories of International Trade- Balance of Payment- Trade Barriers

UNIT II

Competition Law and International Trade- Competition and Consumer Protection- Regulation of anti competition activity

UNIT III

Export Policy and Procedure- features- Export Promotion Schemes- SEZs , EOU- Deemed Export- Export Promotion Council

UNIT IV

Import Policy and Procedure- Import of Gifts- Import on Import basis- Procedure for customer clearance- Warehousing- Canalised import

UNIT V

Introduction to FEMA- Forex Management-Nature- Forex Manager- Foreign Exchange Market- Foreign Exchange Rate- Types- Present status of Foreign exchange Market in India

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Francis cherunilam -International trade-Himalaya publication House 2010

EXTRA CREDIT COURSE

BRAND MANAGEMENT

Course Code: 2018ECC030

No. of Credits: 2

Course Objective:

- To understand the methods of managing brands and strategies for brand management.
- To successfully establish and sustain brands and lead to extensions

UNIT I

Basics Understanding of Brands – Definitions - Branding Concepts – Functions of Brand - Significance of Brands – Different Types of Brands – Co branding – Store brands.

UNIT II

Strategic Brand Management process – Building a strong brand – Brand positioning – Establishing Brand values – Brand vision – Brand Elements – Branding for Global Markets – Competing with foreign brands.

UNIT III

Brand image Building – Brand Loyalty programmes – Brand Promotion Methods – Role of Brand ambassadors, celebrities – On line Brand Promotions.

UNIT IV

Brand Adoption Practices – Different type of brand extension – Factors influencing Decision for extension – Re-branding and re-launching.

UNIT V

Measuring Brand Performance – Brand Equity Management - Global Branding strategies - Brand Audit – Brand Equity Measurement – Brand Leverage -Role of Brand Managers– Branding challenges & opportunities.

TEXT BOOKS:

Recent editions of the following books only are recommended

- 1.Keller/ Parameswaran & Jacob, Strategic Brand Management: Building, Measuring, and
- 2.Managing Brand Equity, Pearson Education India; 4 Edition 2015.

REFERENCE BOOKS:

- 1.Y.L.R. Moorthi, Brand Management, Vikas Publishing House, 1st Edition 2003.
- 2.Sagar Mahim, D. P. Agrawal, Brand Management, ANE Books Edition 2009.
- 3.Kirti Dutta, Brand Management: Principles and Practices, Oxford University Press, Edition 2012.
- 4.Ranjeet Verma, Brand Management, Laxmi Publications, 1st Edition 2009.

EXTRA CREDIT COURSE
STRESS MANAGEMENT

Course Code: 2018ECC031

No. of Credits: 2

Course Objectives:

- To provide a broad physical, social and psychological understanding of stress.
- To understand the management of work related stress
- To develop and implement effective strategies to prevent and manage stress at work.

UNIT I

Meaning – Symptoms – Works Related Stress – Individual Stress – Reducing Stress – Burnout.

UNIT II

Time Management – Techniques – Importance of planning the day – Time management schedule – Developing concentration – Organizing the Work Area – Prioritizing – Beginning at the start – Techniques for conquering procrastination – Sensible delegation – Taking the right breaks – Learning to say ‘No’.

UNIT III

Implications – People issues – Environmental issues –Psychological fall outs – Learning to keep calm – Preventing interruptions – Controlling crisis – Importance of good communication – Taking advantage of crisis – Pushing new ideas – Empowerment.

UNIT IV

Developing a sense of Humour – Learning to laugh – Role of group cohesion and team spirit – Using humour at work – Reducing conflicts with humour.

UNIT V

Improving Personality – Leading with Integrity – Enhancing Creativity – Effective decision Making – Sensible Communication – The Listening Game – Managing Self – Meditation for peace – Yoga for Life.

TEXT BOOK:

Recent editions of the following books only are recommended

1.D M Pestonjee, Stress and Work: “Perspectives on Understanding and Managing Stress”, SAGE Response, First Edition 2013.

REFERENCE BOOKS:

1.Kamlesh Jani, Ratish Kakkad, Stress Management, Pothe Publishers, Edition 2008.

2.Aarti Gurav , Time Management , Buzzing stock Publishing House, First Edition 2014.

3.Sanjay Kumar, Pushp Lata, Communication Skills, Oxford University Press, Second Edition 2015.

Barun Mitra, Personality Development and Soft Skills, Oxford University Press, Second Edition 2017.

EXTRA CREDIT COURSE

RISK AND INSURANCE IN INTERNATIONAL TRADE

Course Code: 2018ECC032

No. of Credit :2

Course Objective: On successful completion of this course, the students should have understood basic principles of insurance and risk management

- Understanding contemporary issues related to insurance

UNIT-I

Nature and History of Insurance Business - Insurance Business in India Europe, UK and USA - insurance Act 1938 -General insurance business -Nationalisation - Insurance as a social security tool – Insurance and economic development - IRDA- Entry of private players into Insurance business -Actuarial profession -Global Trends and developments in Insurance Business

UNIT-II

Principles of Legal aspects of Insurance - Principles of Insurable Interest – Principles of Utmost Good Faith – Principles of Indemnity - Principles of Subrogation -Doctrine of Proximate Cause - Tariff Advisory Committee – Legal Aspects of Life Assurance - Global Insurance Regulatory Frame work.

UNIT-III

Global Non-life Insurance: Principles & Practices Fire insurance – Standard fire policy; Marine - Cargo and Hull insurance – Types; Motor insurance – Liability insurance, Types of policies; Engineering insurance – Electronic equipment insurance, Burglary insurance – Underwriting Practices – Claims settlement in International Perspectives.

UNIT-IV

Risk management process – Risk identifications: perception of risk, Threat analysis, Even analysis, Safety Audit – Risk evaluation – Concept of probability –Statistical methods of risk evaluation – Value at Risk (VaR)

UNIT-V

Risk Management Methods – Contingency Planning – Risk Transfer – Captive Insurance agreements – Reinsurance – Catastrophe covers – Legal Aspects of Reinsurance – Reinsurance Markets – Lloyds Markets – Risk Management techniques for global insurance market players.

TEXT BOOK:

Recent editions of the following books only are recommended

- 1.Mishra, M.N,Insurance principles and practices, S. Chand and Co, Delhi, Edition 4, 2007 .

REFERENCE BOOKS:

- 1.Tripathy N.P,Insurance principles and practices,Prentice Hall India Learning Private Limited Edition 3, 2009
- 2.Ghanashyam Panda & Monika Mahajan,Principles and Practice of Insurance,Kalyani Publishers Edition 4, 2011.
- 3.Insurance Regulatory and Development Authority Act, 1999 ,Universal Law Publishing - An imprint of LexisNexis Edition 1, 2016.
- 4.S K Sarvaria,Commentary on the Insurance Regulatory and Development ,Universal Law Publishing - An Imprint of Lexis Nexis; Edition 1, 2016

EXTRA CREDIT COURSE

RETAIL MARKETING

Course Code: 2018ECC033

No.of Credits: 2

Course Objective:

- To enable the students to understand about Global Retailing.
- To provide knowledge on Visual Merchandise Management.
- To familiarise the students with the Retail shoppers' behaviour.

UNIT I

An overview of Global Retailing – Challenges and opportunities – Retail trends in India – Socio economic and technological Influences on retail management – Government of India policy implications on retails.

UNIT II

Organized and unorganized formats – Different organized retail formats – Characteristics of each format – Emerging trends in retail formats – MNC's role in organized retail formats.

UNIT III

Choice of retail locations - internal and external atmospherics – Positioning of retail shops – Building retail store Image - Retail service quality management – Retail Supply Chain Management – Retail Pricing Decisions. Merchandising and category management – buying.

UNIT IV

Visual Merchandise Management – Space Management – Retail Inventory Management – Retail accounting and audits - Retail store brands – Retail advertising and promotions – Retail Management Information Systems - Online retail – Emerging trends .

UNIT V

Understanding of Retail shopper behavior – Shopper Profile Analysis – Shopping Decision Process - Factors influencing retail shopper behavior – Complaints Management - Retail sales force Management – Challenges in Retailing in India.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. A.Sivakumar, Retail Marketing, Excel Books, Edition-1, 2007.
- 2.David Gilbert, Retail Marketing Management, Pearsons Education, Edition-2006.

REFERENCE BOOKS:

1. Dr.L.Natarajan, Retail Marketing, Margham Publications, Edition-1,2013.
- 2.S.Banumathi, Retail Marketing, Himalaya Publishing House, Edition-2015.
- 3.B.B.Mishra, Retail Marketing, Vrinda Publication, Edition-2010

EXTRA CREDIT COURSE

EXPORT AND IMPORT PROCEDURES

Course Code: 2018ECC034

No.of Credits: 2

Course Objective:

- To enable the students to understand about export and import procedures
- To provide adequate knowledge on export and import documentation.
- To impart knowledge on export and import procedures.

UNIT I

Introduction to Export Management : Meaning – objectives – scope – Need for and importance of export trade – Distinction between internal trade and international trade – Problems faced by exporters.

UNIT II

Features and Functions of export marketing – Sources of market information – Product planning – Quality control – Export pricing – Export marketing channels – Strategy formulation.

UNIT III

Steps involved in export – Confirmation of order – Production of goods – Shipment – Negotiation – Documents used for export – Commercial documents – Regulatory documents – ISO Certificate.

UNIT IV

Import Trade law in India – Preliminaries for starting Import Business – Registration of Importers – arranging finance for Import – Arranging letter of Credit for Imports – Balance of Payments – Liberalization of Imports.

UNIT V

Retirement of Import Documents and RBI's directives for making payment for Imports – Customs clearance of Imported Goods and payments of customs Duty – Imports under special schemes.

TEXT BOOKS:

Recent editions of the following books only are recommended

- 1.Subramanian Balagopal.T.A.S”, Export Marketing”,Himalaya Publication House,Mumbai,Edition 1,2010.
- 2.Francis Cherunilam,”International Trade & Export Management”,Himalaya Publication House,Mumbai,Edition 1,2012.

REFERENCES BOOKS :

- 1.Veera Reddy.P,”Import made Easy”,Commercial Law Publication,New Delhi”,Edition 5,2001.
- 2.Mahajan.M.I,”Export Policy Procedure & Documentation”,Snow White Publication,Mumbai,Edition 24,2011.
- 3.A Nabhi : “How to Import 2005-2006”,A Nabhi Publications, 1st Edition 2006.

EXTRA CREDIT COURSE

LOGISTICS AND SUPPLYCHAIN MANAGEMENT

Course Code : 2018ECC035

No. of Credits: 2

Course Objective: The objective of the subject is to explore

- The interlinking between Logistics and supply chain management.
- The course seeks to provide the key concepts and solution in the design, operation, control and management of supply chain as integrated systems.
- The impact of supply chain in gaining competitive advantage.

UNIT I

Introduction to logistics – Business logistics – marketing logistics – objectives –importance – logistics and customer services – physical supply and distribution –elements and evolution of purchasing and integrated logistics – Integrated logistical activities – strategic integrated logistics management.

UNIT II

Transportation – types – transportation decision making service selection – sea transport, Air, Courier, road and pipe lines – infrastructure – vehicle routing and scheduling – MTO / Intermodal transportation – regulation.

UNIT III

Warehousing – concepts & development – types – operations location analysis –storage – need – functionality and principles – materials handling considerations – packaging – perspectives – purposes – functions – design and costs –Traffic inventory management models – pull and push methods – EOQ – assumptions –policies and control – methods of improved inventory management.

UNIT IV

Logistics information system – system design – Information functionality and principles of information architecture – application of new information technology – EDI standards.

UNIT V

Future management of logistics – logistics and outsourcing – Benefits – third party logistics – value added services – reverse logistics.

TEXT BOOKS:

Recent editions of the following books only are recommended

- 1.Donald J. Bowersox & David J. Closs, Supply Chain Logistics Management, McGraw Hill Education , 3rd Edition 2016.

REFERENCE BOOKS:

- 1.Raghuram, Logistics And Supply Chain Management: Cases and Concepts, Laxmi Publications, Edition 2015.
- 2.Janat Shah, Supply Chain Management, Pearson Education, 1st Edition 2009
- 3.Ballou, Business Logistics/Supply Chain Management, Pearson Education India, 5th Edition 2007
4. Chopra & Kalra, Supply Chain Management, Pearson Education India; 6th Edition 2016.

EXTRA CREDIT COURSE

QUALITY MANAGEMENT

Course Code : 2018ECC036

No. of Credits: 2

Course Objective: On successful completion of the course the students should have understood

- To introduce the fundamental concepts of total quality management, statistical process control, six sigma and the application of these concepts
- To provide a basic understanding of "widely-used" quality analysis tools and techniques.

UNIT I

Definitions – TOM framework, benefits, awareness and obstacles. Quality – vision, mission and policy statements. Customer Focus – customer perception of quality, Translating needs into requirements, customer retention. Dimensions of product and service quality. Cost of quality.

UNIT II

Overview of the contributions of Deming, Juran Crosby, Masaaki Imai, Feigenbaum, Ishikawa, Taguchi techniques – introduction, loss function, parameter and tolerance design, signal to noise ratio. Concepts of Quality circle, Japanese 5S principles and 8D methodology.

UNIT III

Meaning and significance of statistical process control (SPC) – construction of control charts for variables and attributed. Process capability – meaning, significance and measurement – Six sigma concepts of process capability. Reliability concepts – definitions, reliability in series and parallel, product life characteristics curve. Total productive maintenance (TMP) – relevance to TQM, Terotechnology. Business process re-engineering (BPR) – principles, applications, reengineering process, benefits and limitations.

UNIT IV

Quality functions development (QFD) – Benefits, Voice of customer, information organization, House of quality (HOQ), building a HOQ, QFD process. Failure mode effect analysis (FMEA) – requirements of reliability, failure rate, FMEA stages, design, process and documentation. Seven old (statistical) tools. Seven new management tools. Bench marking and POKA YOKE.

UNIT V

Introduction to IS/ISO 9004:2000 – quality management systems – guidelines for performance improvements. Quality Audits. TQM culture, Leadership – quality council, employee involvement, motivation, empowerment, recognition and reward.

TEXT BOOK:

Recent editions of the following books only are recommended

1.R. Janakiraman and R,K Gopal, Total Quality Management, PHI Learning, 1st Edition 2009.

REFERENCE BOOKS:

1. Howard S.Taylor and Francis, Quality Management Systems, New century Publications, Edition 2000
2. L.Suganthi Anand Samuel, Total Quality Management,PHI learning, 1st Edition 2009,
- 3.Joseph M.Juran, Quality Handbook, Mc Grawhill,6th Edition .
- 4.Bell Desmond Heivemann, Managing Quality,Butterworth Publications, Edition 1994.

EXTRA CREDIT COURSE

MANAGEMENT OF SMALL AND NEW ENTERPRISES

Course Code : 2018ECC037

No. of Credits: 2

Course Objective: On successful completion of the course the students should have understood

- Identification, organization and building of new enterprise
- To prepare, analyze and execute business plan
- The logical decision making in business

UNIT I

Entrepreneurship: Small Scale Introduction Institutional- Small scale Enterprises – Infrastructure-Entrepreneurial Competencies for Small Scale Enterprises -Institutional Interface

UNIT II

Establishing small scale enterprises -opportunities scanning—choice of enterprise - market assessment for sse - choice of technology and selection of site

UNIT III

Small scale enterprises — getting organized- financing the new/small enterprise - preparation of the business plan - ownership structure and organization framework

UNIT IV

Operating the small scale enterprise - financial management issues in SSE -operations management issues in SSE- Marketing management issues in SSE - organizational relations in SSE

UNIT V

Performance appraisal and growth strategies - management performance lessons growth and Assessment and control from stabilization - strategies for stabilization and successful strategies Growth entrepreneurs of small - managing family enterprises

TEXT BOOK:

Recent editions of the following books only are recommended

- 1.Prof.Nirali Pandt, Management of new and small Enterprise, Dotcom Publications, 5th Edition,2016.

REFERENCE BOOKS:

- 1.C.S.Prasad, Small and Medium Enterprise in global Perspective, New Century Publications, I Edition, 2009
- 2.Taxmann, Small and Medium Enterprises in India, Tax mann Publication, Edition 2013.
- 3.Karen Patten Ayman, Information Technology for small business, Sprnger publications, Edition 2012.
- 4.Sarika Lohana, Medium, Micro and Small Enterprises, New century Publications, 1st Edition 2014.

EXTRA CREDIT COURSE

TOURISM MANAGEMENT

CourseCode : 2018ECC038

No. of Credits: 2

Course Objective: On successful completion of the course the students should have understood

- The handling of human resource in the context of complex work situations of the tourism industry.
- The complexities of marketing the tourism product
- The challenges and rewards of Tourism industry
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UNIT I

History of Tourism both International and National, Definition, nature, importance, components and typology of tourism.

UNIT II

Concepts of domestic and international tourism, recent trends. Organization of both national and international in world in promotion and development – WTO, IATA, UPTAA, AI, IATO, etc.

UNIT III

Growth and development of tourism in India, National Action Plan 1992.

UNIT IV

Impacts of tourism-economics, social, physical and environmental, Tourism trends world over and its futuristic study.

UNIT V

Emerging trends in tourism—health tourism, adventure tourism, ecotourism .

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Rajan chauhan, Tourism Management, APH Publishing Corporation- Edition-2012.

REFERENCE BOOKS:

1. David Weaver Laura Lawton, Tourism Management, Jhon Wiley & Sons Inc., Edition-2, 2006.
2. Ratandeep Singh, Tourism and Transport Management, Kanishka Publishers, Edition-1, 2008.
3. Atul Shrivastava, Tourism Planning & Management, Anmol Publications Pvt., Ltd., Edition-2010.
4. Vandhana Joshi, Achana Biwal, Tourism Operations & Management, Oxford University Press, Edition-1, 2009.

EXTRA CREDIT COURSE

EVENT MANAGEMENT

Course Code: 2018ECC039

No. of Credits: 2

Course Objective: On successful completion of the course the students should have understood Organization and management of events

- The management of accounting and financial aspects in organizing an event
- Planning the logistics and coordinating the technical aspects

UNIT I

Why Event Management, Requirement of Event Manager, Analyzing the events, Scope of the Event, Decision-makers, Technical Staff, Developing Record-Keeping Systems, Establishing Policies & Procedures

UNIT II

Preparing a Planning Schedule, Organizing Tasks, Assigning Responsibility, and Communicating, Using the Schedule Properly, The Budget, Overall Planning tips, Checklists, Expert Resources, Computer Software Required.

UNIT III

Who are the people on the Event, Locating People, Clarifying Roles, Developing content Guidelines, Participant Tips, Reference Checks, Requirement Forms, Introduction, Fees & Honorariums, Expense Reimbursement, Travel Arrangements, Worksheets.

UNIT IV

Types of Events, Roles & Responsibilities of Event Management in Different Events, Scope of the Work, Approach towards Events

UNIT V

Introduction to PR – Concept, Nature, Importance, Steps, Limitations, Objectives Media – Types of Media, Media relations, Media Management PR strategy and planning – identifying right PR strategy, Brain Storming sessions, Event organization, writing for PR

TEXT BOOKS:

Recent editions of the following books only are recommended

1.Sita Ram Singh , Event Management, Aph Publishing Corporation , Edition 2009.

REFERENCE BOOKS:

1.Wagen, Event Management, Pearson, 1st edition 2005.

2.C.P. Harichandan, Event Management, Global Vision Publishing House, 1st edition 2010.

3.Tony Rogers, A Global Industry (Events Management), S.Chand (G/L) & Company Ltd, 3rd Edition 2013.

4. D. G. Conway, The Event Manager's Bible: The Complete Guide to Planning and Organising a Voluntary or Public Event, Viva Books 1st Edition 2010.

EXTRA CREDIT COURSE
HOSPITALITY MANAGEMENT

CourseCode: 2018ECC040

No. of Credits: 2

Course Objective : On successful completion of the course the students should have understood

- To plan and execute hospitality events in coordination with back-of-the-house managers
- To Design and evaluate a hospitality operations plan, employing control systems and technologies, with guest preferences
- To Supervise and coordinate personnel, demonstrating clear communication and cultural sensitivity
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UNIT I

The World of Hospitality: Introduction to Hotel, Travel and tourism Industry - Nature of Hospitality: Communication, Turnover, Demands and Rewards - Economic and Other Impacts of Hotel, Tourism, and Travel Industry - Early History of Lodging - Globalization of the Lodging Industry - Franchising

UNIT II

The Organization and Structure of Lodging Operations : Size and Scope of the Industry - Classifications of Hotels - Hotel Market Segments - Organization of Hotels - Food Service Industry : Composition and Size of Food Service Industry - Organization of Hotel and Restaurant Food Service - Management and Operation of Food Services

UNIT III

The Rooms Division: The Front Office Department - The Reservation Department - The Telecommunications Department - The Uniformed Service Department

UNIT IV

Functional areas: Engineering and Maintenance Division - Marketing and Sales Division - Accounting Division - Human Resources Division - Security Division

UNIT V

Hospitality Marketing: Distinctive characteristics - Seven Ps of Marketing – Segmentation., Targeting and Positioning - Future trends in Hospitality Industry: Usage of CRS in Hotel Industry, Chain of hotels- Role of Associations in hospitality management

TEXT BOOKS:

Recent editions of the following books only are recommended

- 1.Jhon R.Walker, Introduction to Hospitality Management, Pearson India, Edition-2, 2008.

REFERENCE BOOKS:

- 1.Teason.D, Principles of Management for Hospitality Industry, Routledge, Edition 2009.
2. Dr.Saurabh Dixit, Tourism & Hospitality Management, APH Publishing Corporation, Edition-2013.
3. Gajanan Shirke, Hospitality Management, Shorff Publishers, Edition-2011.
4. Aadesh Sinha, Hospitality Operation Management, Centrum Press, Edition-2012

EXTRA CREDIT COURSE

CONSUMER BEHAVIOUR

Course Code : 2018ECC041

No. of Credits: 2

Course Objective: On successful completion of the course the students should have understood

- Consumer motivation and perception
- Learning and attitude
- Consumer decision making

UNIT-I

Introduction - Consumer Behaviour — definition - scope of consumer behaviour — Discipline of consumer behaviour — Customer Value Satisfaction — Retention — Marketing ethics.

UNIT –II

Consumer research — Paradigms — The process of consumer research - consumer motivation — dynamics — types — measurement of motives — consumer perception

UNIT – III

Consumer Learning — Behavioural learning theories — Measures of consumer learning — Consumer attitude — formation — Strategies for attitude change

UNIT – IV

Social class Consumer Behaviour — Life style Profiles of consumer classes — Cross Cultural Customers Behaviour Strategies.

UNIT-V

Consumer Decision Making — Opinion Leadership — Dynamics — Types of consumer decision making — A Model of Consumer Decision Making

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Leon G. Schiffman, Joseph Wisenblit, Consumer Behaviour, Pearson publication, 11th Edition, 2015.

REFERENCE BOOKS:

1. Sathis K Batra, Shhkazmi, Consumer Behaviour, Excel publication, 2nd Edition, 2008.
2. Suja R.Nair, Consumer Behaviour, Himalaya publication, 1st Edition, 2016.
3. Majumdar, Ramanuj, Consumer Behaviour, Prentice Hall India Learning Pvt Ltd, 7th Edition, 2009.
4. Rajneesh Krishna, Consumer Behaviour, Oxford University Press, 1st Edition, 2014.

EXTRA CREDIT COURSE

HUMAN RESOURCE MANAGEMENT

Course Code : 2018ECC042

No. of Credits: 2

Course Objectives:

- To understand the nature of human resources and its significance to the organization
- To familiarise students with the various techniques in HRM that contribute to the overall effectiveness of an organization.
- To bring the attention of the students on the latest trends in managing human resources in an organization.

UNIT I

Human Resource Management: Definition – Objectives – Functions - Evolution And Growth Of HRM– Qualities Of A Good HR Manager – Changing Roles of a HR Manager– Problems And Challenges of a HR Manager.

UNIT II

Planning The Human Resources :definitions Of Human Resource Planning – Objectives – Steps In Human Resources Planning – Dealing With Surplus And Deficient Man Power - Job Analysis – Job Description – Job Specification.

UNIT III

Recruitment & Selection : Recruitment And Selection – Objectives of Recruitment – sources – Internal And External Recruitment – Application Blank – Testing – Interviews.

UNIT IV

Training & Development : Training and development – Principles of Training – Assessment Of Training Needs – on the Job Training methods - off the Job Training Methods – Evaluation of Effectiveness of Training Programmes.

UNIT V

Performance Appraisal : Performance Appraisal– process – Methods of Performance Appraisal – Appraisal Counseling – Motivation process – Theories of motivation – Managing Grievances and Discipline.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Tripathi: “Personnel Management”, Sultan Chand & Sons, New Delhi, 2000.
2. L M Prasad: “Human Resource Management”, Sultan Chand & Sons, New Delhi, 2005.

REFERENCES BOOKS:

1. Aswathappa: “Human Resource Management”, Tata Mc Graw Hill Publishing Company, New Delhi, 1999.
2. Davis and Werther: “Human Resource Management”, Tata Mc Graw Hill Publishing Company, New Delhi, 2000

EXTRA CREDIT COURSE

PRINCIPLES AND PRACTICE OF MARKETING SERVICES

CourseCode: 2018ECC043

No. of Credits: 2

Course Objectives:

- To enable the students to gain knowledge on marketing of various services.
- To enlighten the students' knowledge on marketing services.
- To make the students understand about practice of marketing services.

UNIT I

Meaning of Services Marketing – Definitions – Its importance – characteristics of services – Growth of Services Marketing – Types of services – Comparative analysis between services and products.

UNIT II

Concept of services marketing – Societal concept – Buyer behaviour concept – Factors influencing buyer behaviour – Decision making process of buyer.

UNIT III

Services Marketing Mix – Product Strategy – Product Life Cycle concept – Strategic during the P.L.C. – Product Planning Strategy – Development of new products – its simplification – Diversification and elimination.

UNIT IV

Services Marketing – I : Bank Marketing – Insurance Marketing – Transport Marketing.

UNIT V

Services Marketing – II: Tourism and Hotel Marketing - Education Marketing – Communication Services Marketing.

REFERENCE BOOKS:

1. S.M.Jha, : “Services Marketing”, Himalaya Publication House, Mumbai, Sixth Edition, 2003.
2. Christopher love lock: “Services Marketing”, Person Education Chennai, Sixth Edition, 2010.
3. Philip Kotler: “Marketing Management”, Person Education Chennai, Sixth Edition, 2013
4. S.Sherlekar: “Marketing Management”, Himalaya Publication House, Mumbai, Sixth Edition, 1997.

EXTRA CREDIT COURSE

CONSUMER MARKETING

Coursecode: 2018ECC044

No. of Credits: 2

Course Objectives:

- To make the students to understand the concepts of consumer marketing and the motivation theories.
- To understand the customer value chain and their demography.
- To understand market segmentation and their uses.

UNIT I

Introduction- Definition of Consumer Marketing- Need and importance- Scope- Consumer Needs- Theories of Motivation and their application- Process Theories-- Content theories- Personality and Self Concept- Theories of Personality – Trait Theory

UNIT II

Building Customer Value and Satisfaction- Delivering Customer Value- Value Chain – Value Delivery Network- Attracting and Retaining Customer Retention- Relationship Marketing- Customer Demand- Demography- Market Segmentation- Benefits- Criteria for Market Segmentation.

UNIT III

Learning Theories and their application- Brand Loyalty- Brand Extension- Conditioning Theories- Cognitive Learning Theory- Attitude and Attribute theory- Cognitive Dissonance- Self Concept- Development of Self- Fashion – Cosmetics- and Conspicuous Consumption

UNIT IV

Perception- Threshold of perception- Subliminal of Perception- Perception- Perceptual Process- Dynamics- Positioning Methods- and Measurement- Perceptual Mapping- Multidimensional Scaling- Consumer Imaginaries

UNIT V

Advertising- Role in Marketing Process- Legal and Ethical Process- Social Aspects- Function and Types of Advertising- Integrated Marketing Communication- Brand Management- Brand Equity- Image in Brand Equity Building- Ethics in Advertisement

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Schiffman L.G and Kanuk L: “Relationship Marketing”, Tata MC Graw Hill, Twelfth Edition 2009.
2. R.S.N Pillai and Bhavathi : “Modern Marketing Principles and Practices”, S.Chand & Co., Ltd., New Delhi, Seventh Edition, 2011.
3. Paul green Berg: “Customer Relationship Management”, Tata MC Graw Hill, Seventh Edition, 2009.

REFERENCE BOOKS:

1. Philip Kotler and Gray Armstrong: “Principles of Marketing”, Pearson Education Pvt Ltd., Seventh Edition, Reprinted 2011.
2. Dr.Rajan Nair: ”Marketing Management”, Sulthan Chand & Sons, Eleventh Edition, NewDelhi

EXTRA CREDIT COURSE
MARKETING OF HEALTH SERVICES

CourseCode: 2018ECC045

No. of Credits: 2

Course Objectives:

- To enable the students understand about health services.
- To make the students aware of different marketing mix in health industry.
- To confer knowledge about online health services .

UNIT – I

Marketing plans for services: process, strategy formulation, resource allocation and monitoring services communications- customer focused services- service quality- SERV QUAL model

UNIT – II

Hospital services- Selecting Health Care Professionals- Emerging trends in Medicare- Marketing Medicare – Thrust areas for Medicare services.

UNIT – III

Marketing Mix for Hospitals- Product Mix- Promotion Mix- Price Mix- Place Mix- Strategic Marketing for Hospitals.

UNIT – IV

Online Health Services- Organization of Online Health Care Business- On-line Marketing and On-line financial & clinical transaction.

UNIT – V

Legal system: Consumer Rights & Protection, medicine safety rules- Food & Nutrition Security in India - Health Promotion Agencies

Note: Question paper shall cover 100% Theory

REFERENCE BOOKS:

1. Richard K. Thomas, Health Services Marketing, A Practitioner's Guide, Edition-2, 2008.
2. Zeithaml, Services Marketing, Mcgraw Hill Education, Edition-6, 2013.
3. Lovelock, Services Marketing, Pearson India, Edition-7, 2011.
4. Er.I.C. N.Berkowitz, Essentials of Health care Marketing , Jones & Bartlett Learning, Edition-3, 2010.

EXTRA CREDIT COURSE

INTERNATIONAL BANKING

Course Code: 2018ECC046

No. of Credits: 2

Course Objectives:

- The course aims to provide the students with a sound grasp of the practices of modern international banking the central themes and issues will be examined in an international and comparative context.

UNIT-I

Global trends and development in international banking – Outline of international banking and finance. Wholesale banking – Retail banking – Private banking – Interbank business – Regulatory framework – BASEL-II.

UNIT-II

International financial centers – Offshore banking units – Special Economic Zones – Foreign exchange management control – International loan agreements – International debt management.

UNIT-III

Asset liability management – Profitability of international banking operations – Investment banking – Correspondent banking – Bank Regulation: Regulation and prudential supervision of banks in the UK and EU. International regulatory and supervisory convergence. Regulating the multifunctional bank.

UNIT-IV

International financial institutions – IMF, IBRD, BIS, IFC, ADB, WTO – international competitiveness – implications and effectiveness and country risk.

UNIT-V

Treasury and risk management – bank risk management – letters of credit mechanism – buyers and sellers credit – bilateral and counter trade.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Indian Institute of Banking and Finance, International Banking, Macmillan, Edition-2011.

REFERENCE BOOKS:

1. Ruonarayan Bose, Fundamentals of International Banking, Laxmi Publications, Edition-2014.

2. Indian Institute of Banking and Finance, International Banking Operations, Macmillan, Edition-2017.

3. Yoon S. Park, International Banking and Financial Centers, Springer Publications, Edition-2011.

4. Emmanuel N Roussakis, International Banking, Greenwood Press, Edition-1983.

EXTRA CREDIT COURSE

E-COMMERCE

Course Code: 2018ECC047

No. of Credits: 2

Course Objectives:

- To provide knowledge about Electronic Commerce.
- To enable the students understand the technology of e-Commerce for Business Application.
- To make the student aware of the Techniques in the Application of e-Commerce.
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UNIT I

E-commerce – framework – classification of electronic commerce – Anatomy of E-Commerce Applications – components of the I way –network access equipment – internet terminology.

UNIT II

Electronic Data Interchange – Benefits – EDI Legal, Security & privacy issues – DEI software implementation – value added networks – internal information systems – work flow atomization and coordination – customization and internal commerce.

UNIT III

Network security and firewalls – client server network security – emerging client server security threats – firewalls and network security – data and message security – encrypted documents and electronic mail – hypertext publishing – technology behind the web – security and the web.

UNIT IV

Consumer oriented electronic commerce: consumer oriented applications – mercantile process models – mercantile models from the consumer’s perspective – mercantile models from the merchant’s perspective.

UNIT V

Electronic payment systems – types – digital token based electronic payment system – smart cards & credit card electronic payment systems – risk designing electronic payment.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Ravi Kalakota and Andrew B. Whinston: “Frontiers of Electronic Commerce”, Pearson Education, First Edition, 2006.
2. Elias M Awand: “Electronic Commerce”, Phi Learning Pvt Ltd, Third Edition, 2007.

REFERENCE BOOKS:

1. Daniel Minoli and Emma Minoli: “Web Commerce Technology Handbook”, Tata McGraw Hill Publishing, New Delhi, First Edition, 2006.
2. Efrain Turban and David King: “Electronic Commerce”, Pearson Education, First Edition 2009.
3. Pete Loshin: “Electronic Commerce”, Firewall Media, Fourth Edition, 2005.

EXTRA CREDIT COURSE
INTERNATIONAL ACCOUNTING

CourseCode: 2018ECC048

No. of Credits: 2

Course Objective: To make the students understand

- the concept and nuances of international accounting standards and practices for international business firms
- the importance of financial reporting in international environment.

UNIT-I

Objective of International Financial Reporting – Concept International Accounting Practices, introduction to inter corporate investments – inter company transaction – Global Joint Venture Accounting, Foreign Currency Translation accounting

UNIT-II

Financial instruments – Presentation and disclosure – Convertible securities – recognition and measurement of financial instruments –comprehensive income – settlement Date Vs Trade Date Accounting.

UNIT-III

Inter corporate investment – Temporary and Portfolio investments –Business combination and reporting methods – consolidation procedures –Financial statements disclosure.

UNIT-IV

Global mergers & acquisitions accounting – consolidating wholly, non wholly owned subsidiary under equity and cost recording – Inter company revenue, expenses & inter company profile profit & expenses.

UNIT-V

Financial reporting in an international environment – Integrated Vs Self Sustaining foreign subsidiary – GAAP for public sector organizations.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. A. K. Das Mohapatra,International Accounting,Prentice Hall India Learning Private Limited , Edition 2, 2012.

REFERENCE BOOKS:

1. Med ,Accounting and Finance for Bankers,Macmillan Education Edition 3, 2012.
2. Timothy Doupnik,International Accounting,McGraw-Hill Higher Education; Edition 3, 2011
3. Frederick D.S. Choi,International Accounting,Pearson Education; Edition 5, 2007
4. Shirin Rathore ,International Accounting,PHI, Edition 2,2011.

EXTRA CREDIT COURSE

CORPORATE SOCIAL RESPONSIBILITY AND GOVERNANCE

Course Code: 2018ECC049

No. of Credits: 2

Course Objectives:

- To make the students to understand the concepts of corporate governance
- To gain knowledge on legislative framework of corporate governance and Corporate Social Responsibility and good corporate citizenship.
- To understand the Business Ethics and Genesis.

UNIT-I:

Evolution -Concept-Principles and development-Management structure for corporate governance-Board structure-Stake holder's relationship committee-Appraisal of Board performance-Transparency and disclosure.

UNIT-II:

Legislative framework of corporate governance:UK,USA,India-Corporate communication-Art and Craft of investors relation-Shareholders activism-Investor protection-changing role of Institutional Investors

UNIT-III:

Corporate social responsibility and good corporate citizenship:Various governance forums-Common Wealth Association for Corporate Governance-Organization for Economic Cooperation Development (OECD)-International Corporate Governance Network (ICGN)-National Foundation for Corporate Governance(NFCG)

UNIT-IV:

Business Ethics-Business dilemma versus decision-Dilemma resolution process-Business ethics as a strategic management tool-stakeholders protection-corporate leadership

UNIT-V:

Genesis-Meaning-Nature-Objectives-Scope of Corporate Sustainability.Legal framework -conventions and treaties on environmental- Health and safety-Social security issues.

TEXT BOOKS:

1. Corporate Governance in India : An Evaluation by Das,Subash Chandra.
2. Baxi CV-Corporate Social Responsibility And Governance – Excel books 2006.

EXTRA CREDIT COURSE
ENTERPRISE RESOURCE PLANNING

Course Code: 2018ECC050

No.of Credits: 2

Course Objectives:

- To enable the students understand about the different organizational processes and work flows in ERP.
- To bestow knowledge on ERP services and Business Process Re-engineering .
- To give knowledge on ERP project and its implementation.

UNIT 1

ERP: Introduction : Define – Functional Module in ERP System – Evolution of ERP Systems - Characteristics of ERP – Process Intergration With ERP Systems. Benefits of ERP Applications – Technology Behind ERP Systems. **ERP Market and Vendors:** ERP Market – ERP Vendors – Service Oriented Architecture - ERP Package features.

UNIT II

Extended ERP Services: Defining Extended ERP – SCM and ERP – ERP and BI – ERP and E-Commerce. **Business Process Re-engineering And ERP:** Defining Business Process Reengineering- Enterprise redesign principles – Business process reengineering - BPR and Change Management – Different Approaches BPR Implementation – Methodology for BPR Implementation – Role of IT in BPR – BPR and ERP Systems – BPR success / failure factors.

UNIT III

Planning for ERP – Planning for ERP Implementation – Understanding Organizational Requirements. - Understanding Economic and Strategies Justification – Analysing Project Scope – Determining Resources – Creating Budget for ERP Implementation – Selecting the Right ERP Package- Preparing Organizations for ERP Implementation. **Implementation of ERP:** Designing for ERP systems – ERP implementation approaches – ERP implementation Life cycle.

UNIT IV

Managing ERP Projects: Risk Failure factors in ERP Implementation – Examples of ERP Failure- Mitigating implementation risks – Management and complexity of Large scale ERP Projects- Training users to use ERP Systems. - Evaluating ERP Projects.

UNIT V

ERP Going live and post implementation: Preparing to go live – Strategies for migration – to new ERP systems – Go live performance surprises – Managing ERP after go live – Maintenance of ERP Systems. **Expanding ERP Boundaries:** Service oriented architecture – Enterprises application integration – Application Services provider – Model for ERP implementation.

TEXT BOOKS:

Recent editions of the following books only are recommended

1. Ashim raj singla – Enterprise Resource Planning – Cengage Learning india Pvt . Ltd 2008