



BCA(Hons)

Curriculum and Syllabus

Regulation 2022

Based on Choice Based Credit System (CBCS)

and

Learning Outcomes based Curriculum Framework (LOCF)

Effective from the Academic Year

2022-2023

Department of Computer Applications

School of Computing Sciences

Table of Contents

Learning Outcomes- based Curriculum Framework (LOCF)

1. Introduction
2. Learning outcomes based approach to curriculum
3. Graduate attributes
4. Programme Learning Outcomes
5. Degree of Bachelor of Computer Applications (Hons)
6. Course Structure
7. Teaching Learning Processes
8. Assessment Methods
9. Key words

Learning Outcomes-Based Curriculum Framework for Under Graduate Education in

B.C.A. (HONS)

1. INTRODUCTION

The learning outcomes-based curriculum framework (LOCF) for the under graduate programs in Computer Applications like BCA-HONS is intended to provide a broad framework to create an academic base that responds to the need of the students to understand the basics of Computing Sciences and its ever evolving nature of applications in explaining all the observed natural phenomenon as well as predicting the future applications to the new phenomenon with a global perspective. The curriculum framework is designed and formulated in order to acquire and maintain standards of achievement in terms of knowledge, understanding and skills in Computing Sciences. The multicultural fabric of our nation requires that the institutions involved in implementing this curriculum framework also work hard towards providing an environment to create, develop and inculcate rational, ethical and moral attitudes and values to help the creation of knowledge society needed for scientific advancement of our nation. The learning outcome based curriculum framework in BCA-HONS should also allow for the flexibility and innovation in the program design of the UG education, and its syllabi development, teaching learning process and the assessment procedures of the learning outcomes. The process of learning is defined by the following steps which should form the basis of final assessment of the achievement at the end of the program.

2. LEARNING OUTCOMES BASED APPROACH TO CURRICULUM PLANNING

Nature and extent of UG program in BCA-HONS:

The UG programs in BCA-HONS builds on the basic Computers taught at the UG level in all the Colleges/Universities in the country. Ideally, the UG education should aim and achieve a sound grounding in understanding the basic Computing Sciences with sufficient content of topics related with the areas of computer science and its applications. The curriculum and syllabus should be framed in such way to ignite the young minds of the students to have the urge to innovate and create new approaches for succeeding in corporate field.

Aims of UG program in BCA-HONS

The mission is to emerge as a pioneer of Academic institution for Computer Applications, each taking pride in having nurtured knowledge and to provide students need based quality training in the field of Information Technology to become productive, participating global citizens and life-long learners that will lead to fulfill the aspirations of Software Industry and the Individual. Commit our-self to a mission to excel in Research and to create an atmosphere of effective learning in computing sciences, generate a spirit of questioning, enquiry, induce healthy challenges and competitiveness, feel of complete accomplishment and instinct self-confidence.

3. GRADUATE ATTRIBUTES IN BCA-HONS

Some of the characteristic attributes of a graduate in BCA-HONS

- ❖ Disciplinary knowledge and skills
- ❖ Skilled communicator
- ❖ Critical thinker and problem solver.
- ❖ Sense of inquiry
- ❖ Team player/worker
- ❖ Skilled project manager
- ❖ Digitally Efficient.
- ❖ Strong Analytical Aptitude
- ❖ Hands-down Technical Knowledge
- ❖ Great Mathematical Skills
- ❖ National and international perspective
- ❖ Lifelong learners

4. PROGRAMME LEARNING OUTCOMES RELATING TO BCA-HONS

Programme Outcome

PO1: Computational Knowledge: Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

PO2: Problem Analysis: Identify, formulate, research literature, and solve complex computing problems reaching Substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

PO3: Design /Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex Computing Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern Tool Usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

PO6: Professional Ethics: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice.

PO7: Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual Development as a computing professional.

PO8: Project management and finance: Demonstrate knowledge and understanding of the computing and management Principles and apply these to one's own work, as a member and leader in a team, to Manage projects and in multidisciplinary environments.

PO9: Communication Efficacy: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

PO10: Societal and Environmental Concern: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.

Programme Specific Outcome

PSO1: Be well versed in the various software and logical skills like Java Programming, Python Programming, Database concepts etc.

PSO2: Be competent in the fundamentals of software and hardware concepts and the emerging technologies in networks, recent trends in computer science field.

MINUTES OF MEETING OF THE BOARD OF STUDIES IN COMPUTER APPLICATIONS

Members Present:

S. No	Name & Designation	Address	Role
1	Dr. S.PERUMAL	Associate Professor & Head Department of Comp.Science	Internal Member
2	Dr. S. PRASANNA	Professor and Head, Department of Computer Applications	Internal Member
3	Dr. T. KAMALAKANNAN	Professor and Head, Department of IT.	Internal Member
4	Dr. T. VELMURUGAN,	Associate Professor & HEAD, Department of Computer Science, DG Vaishnav College, Chennai.	Academic Expert (External Member)
5	Dr. P. MAGESH KUMAR	Calibsoft Technologies Pvt Ltd., Chennai.	Industry Expert (External Member)
6	Mr. R. BALAMURUGAN,	SCOPUS Ltd., Chennai	Alumni Member (External Member)

5. DEGREE OF BACHELOR OF COMPUTER APPLICATIONS (HONS)

5.1. Duration of the Programme

- ❖ Four Years (Eight Semesters)
- ❖ Each academic year shall be divided into two semesters. The odd semesters shall consist of the period from July to November of each year and the even semesters from January to May of each year.
- ❖ In the fourth/final year VII semester is designed for Capstone project & VIII semester is exclusively designed for internship program and will be assessed at the end of eighth

semester.

- ❖ There shall be not less than 90 working days for each semester.

5.2. Eligibility for Admission

Students should have passed the Higher Secondary Examinations of (10+2) with above 50% and stream with **Computer Science** or **Mathematics/Business Maths** as one of the subjects or any examination of any other authority accepted by the Board of Management of VISTAS.

5.3. Credit Requirements and Eligibility for Award of Degree

A Candidate shall be eligible for the award of the Degree only if he/she has undergone the prescribed course of study in the University for a period of not less than four (3+1) academic years and passed the examinations of all the eight Semesters prescribed earning a minimum of 155 credits as per the distribution given in for Core & Elective subjects and also fulfilled such other conditions as have been prescribed thereof.

5.4. Course of Study, Credits and Scheme of Examination

The Course Components and Credit Distribution shall consists Core & Elective Subjects

(Minimum number of Credits to be obtained)

Credit Assignment Each course is assigned certain number of credits based on the following: Contact period per week CREDITS

1 Lecture Period - 1 Credit

1 Tutorial Period - 1 Credit

2 Practical Periods - 1 Credit

(Laboratory / Seminar / Project Work / etc.)

5.5. Requirements for Proceeding to Subsequent Semester

- ❖ **Eligibility:** Students shall be eligible to go to subsequent semester only if they earn sufficient attendance as prescribed therefore by the Board of Management from time to time.

- ❖ **Attendance:** All Students must earn 75% and above of attendance for appearing for the University Examination. (Theory/Practical)

- ❖ **Condonation of shortage of attendance:** If a Student fails to earn the minimum attendance (Percentage stipulated), the HODs shall condone the shortage of attendance up

to a maximum limit of 10% (i.e. between 65% and above and less than 75%) after collecting the prescribed fee towards the condonation of shortage of attendance. Such fees collected and should be remitted to the University.

❖ **Non-eligibility for condonation of shortage of attendance:** Students who have secured less than 65 % but more than 50 % of attendance are NOT ELIGIBLE for condonation of shortage of attendance and such Students will not be permitted to appear for the regular examination, but will be allowed to proceed to the next year/next semester of the program

❖ **Detained students for want of attendance:** Students who have earned less than 50% of attendance shall be permitted to proceed to the next semester and to complete the Program of study. Such Students shall have to repeat the semester, which they have missed by rejoining after completion of final semester of the course, by paying the fee for the break of study as prescribed by the University from time to time.

❖ **Condonation of shortage of attendance for married women students:** In respect of married women students undergoing UG programs, the minimum attendance for condonation (Theory/Practical) shall be relaxed and prescribed as 55% instead of 65% if they conceive during their academic career. Medical certificate from the Doctor together with the attendance details shall be forwarded to the university to consider the condonation of attendance mentioning the category.

❖ **Zero Percent (0%) Attendance:** The Students, who have earned 0% of attendance, have to repeat the program (by rejoining) without proceeding to succeeding semester and they have to obtain prior permission from the University immediately to rejoin the program.

❖ **Transfer of Students and Credits:** The strength of the credits system is that it permits inter Institutional transfer of students. By providing mobility, it enables individual students to develop their capabilities fully by permitting them to move from one Institution to another in accordance with their aptitude and abilities.

❖ Transfer of Students is permitted from one Institution to another Institution for the same program with same nomenclature. Provided, there is a vacancy in the respective program of Study in the Institution where the transfer is requested. Provided the Student should have passed all the courses in the Institution from where the transfer is requested.

❖ The marks obtained in the courses will be converted and grades will be assigned as per the University norms.

❖ The transfer students are not eligible for classification.

❖ The transfer students are not eligible for Ranking, Prizes and Medals.

❖ Students who want to go to foreign Universities upto two semesters or Project Work with the prior approval of the Departmental/College Committee are allowed to get transfer of credits and marks which will be converted into Grades as per the University norms and are eligible to get CGPA and Classification; they are not eligible for Ranking, Prizes and Medals.

5.6. Examination and Evaluation

❖ Register for all subjects: Students shall be permitted to proceed from the First Semester up to Final Semester irrespective of their failure in any of the Semester Examination. For this purpose, Students shall register for all the arrear subjects of earlier semesters along with the current (subsequent) Semester Subjects.

❖ Marks for Internal and End Semester Examinations for Core and Elective subjects

❖ There shall be no passing minimum for Internal.

❖ For external examination, passing minimum shall be 40% [Forty Percentage] of the maximum marks prescribed for the paper for each Paper/Practical/Project and Viva-Voce.

❖ In the aggregate [External/Internal] the passing minimum shall be of 40%.

❖ He/She shall be declared to have passed the whole examination, if he/she passes in all the papers and practical wherever prescribed as per the scheme of the examinations by earning 155 CREDITS in Core & Elective Subjects.

❖ Students completing all the prescribed courses successfully within the stipulated period of 3 years and one year industrial internship with project will be awarded B.C.A (Hons) degree and those completing all the theory courses successfully after the prescribed period will be awarded B.C.A degree.

5.7. Maximum Period for Completion of the Programs to Qualify for a Degree

❖ A Student who for whatever reasons is not able to complete the programs within the normal period (4 Years) or the Minimum duration prescribed for the programme, may be allowed two years period beyond the normal period to clear the backlog to be qualified for the degree. (Time Span = 4 years + 3 years for the completion of programme)

5.8. REVISION OF REGULATIONS, CURRICULUM AND SYLLABI

- ❖ The University may from time to time revise, amend or change the Regulations, Curriculum, Syllabus and Scheme of examinations through the Academic Council with the approval of the Board of Management.

6. COURSE STRUCTURE

VELS INSTITUTE OF SCIENCE, TECHNOLOGY AND ADVANCED STUDIES (VISTAS)

BCA HONS DEGREE COURSE

COURSES OF STUDY AND SCHEME OF ASSESSMENT

TOTAL NO OF CREDITS: 155

SEMESTER 1

Code No.	Sub Code	Course	Hours/Week			Credits	Maximum Marks		
			Lecture	Tutorial	Practical		CA	SEE	Total
LANG	22LTAM21 22LHIN21 22LFRE21	Tamil I/ Hindi / French	3	0	0	3	40	60	100
ENG	22LEN001	English I	3	0	0	3	40	60	100
CORE1	22CBCH11	Problem Solving Techniques	4	0	0	4	40	60	100
CORE2	22CBCH12	Programming in C++	4	1	0	5	40	60	100
CORE3	22BMA001	Mathematics I	5	0	0	5	40	60	100
CORE PRAC	22PBCH11	Programming in C ++ Lab	0	0	4	2	40	60	100
AECC	22AE CC---	Communication Skills	1	0	2	2	40	60	100
SEC		Orientation/Induction programme / Life skills	-	-	-	-	-	-	-
			21	1	6	24			

SEMESTER 2

Code No.	Sub Code	Course	Hours/Week				Maximum Marks		
			Lecture	Tutorial	Practical	Credits	CA	SEE	Total
LANG	22LTA002 22LHN002 22LFR002	Tamil II / Hindi / French	3	0	0	3	40	60	100
ENG	22LEN002	English II	3	0	0	3	40	60	100
CORE 4	22CBCH21	HTML Programming	4	1	0	5	40	60	100
CORE 5	22CBCH22	Relational Database Systems	4	1	0	5	40	60	100
CORE 6	22BMA002	Mathematics – II	4	0	0	4	40	60	100
CORE PRAC	22PBCH21	HTML Lab	0	0	4	2	40	60	100
CORE PRAC	22PBCH22	Relational Database Systems Lab	0	0	4	2	40	60	100
SEC	22----	Soft Skills – I/ Sector Skill Council Course	2	0	0	2	40	60	100
SEC	22---	NSS / NCC / Swachh Bharat / Inplant Training	-	-	-	-	-	-	-
			20	2	8	26			

VELS INSTITUTE OF SCIENCE, TECHNOLOGY AND ADVANCED STUDIES

BCA HONS DEGREE COURSE

SEMESTER 3

Code No.	Sub Code	Course	Hours/Week			Credits.	Maximum Marks		
			Lecture	Tutorial	Practical		CA	SEE	Total
CORE 7	22CBCH31	Advanced Java Programming	4	1	0	5	40	60	100
CORE 8	22CBCH32	Open Source Technologies	4	0	0	4	40	60	100
CORE 9	22CBCH33	Software Engineering	4	0	0	4	40	60	100
CORE 10	22CBCH34	Financial Accounting	5	0	0	5	40	60	100
AECC	22EVSC31	Environmental Studies	2	0	0	2	40	60	100
CORE PRAC	22PBCH31	Advance Java Programming Lab	0	0	4	2	40	60	100
CORE PRAC	22PBCH32	Open Source Technologies Lab	0	0	4	2	40	60	100
SEC	22-----	Soft Skills - II / Sector Skill Council Course	2	0	0	2	40	60	100
SEC	22-----	Swayam / NPTEL / Value Added Course	-	-	-	-	-	-	-
			21	1	8	26			

SEMESTER 4

Code No.	Sub Code	Course	Hours/Week			Credits.	Maximum Marks		
			Lecture	Tutorial	Practical		CA	SEE	Total
CORE 11	22CBCH41	Data Analysis using Python	5	0	0	5	40	60	100
CORE 12	22CBCH42	Advanced Operating System	5	0	0	5	40	60	100

CORE 13	22CBCH43	Statistical & Numerical Methods	5	0	0	5	40	60	100
CORE PRAC	22PBCH41	Python Programming lab	0	0	4	2	40	60	100
CORE PRAC	22PBCH42	Linux Lab	0	0	4	2	40	60	100
SEC	22-----	Soft Skills III / Sector Skill Council Course	2	0	0	2	40	60	100
SEC		Capability Enhancement Programme	0	0	2	1	-	-	-
			17	0	10	22			

SEMESTER 5

Code No.	Sub Code	Course	Hours/Week			Credits.	Maximum Marks		
			Lecture	Tutorial	Practical		CA	SEE	Total
CORE 14	22CBCH51	Computer Networks	4	0	0	4	40	60	100
CORE 15	22CBCH52	Data Mining	4	0	0	4	40	60	100
DSE 1	22-----	Discipline Specific Elective – I	3	0	0	3	40	60	100
DSE 2	22-----	Discipline Specific Elective – II	3	0	0	3	40	60	100
DSE 3	22-----	Discipline Specific Elective – III	3	0	0	3	40	60	100
DSE 4	22-----	Discipline Specific Elective – IV	3	0	0	3	40	60	100
DSE LAB	22-----	DSE Lab	0	0	4	2	40	60	100
DSE LAB	22-----	DSE Lab	0	0	4	2	40	60	100

SEC	22-----	Skill Enhancement Training / Student ClubActivities	-	-	-	-	-	-	-	
			20	0	8	24				

SEMESTER 6

Code No.	Sub Code	Course	Course	Hours/Week			Maximum Marks			
				Lecture	Tutorial	Credits	CA	SEE	Total	
DSE 5	22----	Discipline Specific Elective – V	3	0	0	3	40	60	100	
DSE 6	22----	Discipline Specific Elective – VI	3	0	0	3	40	60	100	
DSE 7	22----	Discipline Specific Elective – VII	3	0	0	3	40	60	100	
DSE/ GE	22-----	Generic Elective - I	3	0	0	3	40	60	100	
SEC	22--	Entrepreneurship Development	2	0	0	2	40	60	100	
DSE	22-----	DSE Lab	0	0	6	2	40	60	100	
SEC	22-----	Technical Seminar / Innovation Council / Start up Initiative	0	0	2	1	40	60	100	
			14	1	14	17				

VELS INSTITUTE OF SCIENCE, TECHNOLOGY AND ADVANCED STUDIES

BCA HONS DEGREE COURSE

SEMESTER 7

Capstone Project	0	0	0	8	40	60	100
------------------	---	---	---	---	----	----	-----

SEMESTER 8

Internship Project	0	0	0	8	40	60	100
--------------------	---	---	---	---	----	----	-----

CA - Continuous Assessment

SE - Semester EndExamination

Vels Institute of Science and Technology and Advanced studies (VISTAS)

BCA (Hons) DEGREE

Courses of Study and Scheme of Assessment

Total No of Credits: 140

BCA (Hons) Course Components

Component	I Sem	II Sem	III Sem	IV Sem	V Sem	VI Sem	VII Sem	VIII Sem	Total Credits
Core Courses & Languages	22	24	22	19	8	-	-	-	95
Ability Enhancement Courses (AEC)	2	-	2	-	-	-			4
Discipline Specific Elective (DSE) & Generic Elective(GEC)	-	-	-	-	16	14			30
Skill enhancement Course(SEC)	-	2	2	3	-	3			10
Internship / Project							8	8	16
Total Credits	24	26	26	22	24	17	8	8	155

Discipline Specific Electives (DSE)

List of Discipline Specific Elective Courses (DSE)

DSE 001	Responsive Web Design Using HTML5 & jQuery
DSE002	Data Structure And Algorithm
DSE003	Digital Logic Fundamentals
DSE004	Introduction to Information technology
DSE005	Introduction to Data Science
DSE006	Mobile app Development
DSE007	Operations Research
DSE008	Compile Design
DSE009	Machine Learning
DSE010	Block Chain Technology
DSE011	Software Testing
DSE012	Full Stack Development
DSE013	Datawarehousing and Data Mining Techniques
DSE014	Multimedia technologies
DSE015	UNIX Programming
DSE016	Software project management
DSE017	Software Quality Assurance
DSE018	IoT Based Smart Systems
DSE019	Object oriented analysis and design
DSE020	Artificial Intellingence
DSE021	Cloud Computing
DSE022	Big data with R

SKILL ENHANCEMENT COURSES

CODE	COURSE
22SSKU11	SOFTSKILL I
22SSKU12	SOFTSKILL II
22SSKU13	SOFTSKILL III
22SNS51 / SEC III	NATIONAL SERVICE SCHEME
SEC-III	NPTEL / SWAYAM

ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)

CODE	COURSE
22LTAM21 22LHIN21 22LFRE21	TAMIL I /HINDI I /FRENCH I
22LEN001	Foundation Course English – I
22LTA002 22LHN002 22LFR002	TAMIL – II HINDI – II /FRENCH – II
22LEN002	Foundation Course English – II
22EVSC31	Environmental Studies

GENERIC ELECTIVE

CODE	COURSE
22UGE504	QUANTITATIVE APTITUDE
22UGE514	DISASTERS MANAGEMENT
	NPTEL / SWAYAM

7. TEACHING LEARNING PROCESSES

- ❖ The teaching learning processes play the most important role in achieving the desired aims and objectives of the postgraduate programs in BCA-HONS-HONS as elaborated in detail in the Learning Based Curriculum Framework (LOCF). We should therefore have an excellent teaching-learning procedural protocol for all the colleges, universities and other Higher Education Institutions (HEI). To be specific, it is desirable to have:
- ❖ Necessary and sufficient infrastructural facilities for the class rooms, and libraries equipped with adequate modern and modular furniture's and other requirements.
- ❖ Sufficient infrastructure for ICT and other facilities needed for technology-enabled learning like computer facilities, PCs, laptops, Wi-Fi and internet facilities with all the necessary software's.
- ❖ Sufficient number of teachers in permanent position to do all the class room teaching and perform and supervise the work to be done by the students.
- ❖ All the teachers are qualified as per the UGC norms and should have good communication skills.
- ❖ Sufficient number of technical and other support staff to run the libraries, equipment and maintain the infrastructural facilities like buildings, electricity, sanitation, cleanliness etc.
- ❖ Teachers should make use of all the approaches for an efficient teaching-learning process i.e. Class room teachings with lectures using traditional as well as electronic boards.
- ❖ Use of Smart class rooms for simulation and demonstration for conveying the difficult concepts of computing sciences in class room teaching and online teaching.

- ❖ Tutorials are an integral part of all the theory and Accountancy courses should have 1 to 2 tutorials every week depending upon the nature of the course.
- ❖ Teaching will be complimented with students' seminar to be organized very frequently.
- ❖ Guest lectures and seminars will be arranged by eminent teachers to be invited by the concerned college/university/HEI.
- ❖ Open-ended project work will be given to all students individually or in group to 2-3 students depending upon the nature of the course.
- ❖ Special attempts will be made by the institution to develop problem-solving skills at the UG level. For this purpose a mentor system may be evolved where 3-4 students may be assigned to each faculty member.
- ❖ Teaching load will be managed such that the teacher has enough time to interact with the students to encourage an interactive/participative learning.

8. ASSESSMENT METHODS

Since the Learning Objectives are defined clearly for each course in detail, it is easier to design methods to monitor the progress in achieving the learning Objectives during the course and test the level of achievement at the end of the course.

The priority should be given to Formative Assessment for monitoring the progress towards achieving the Learning Objectives while keeping its weightages lower than Summative Assessments.

This is to assure that the students know their strengths and weaknesses periodically through the results of Formative Assessments and make amends for the gaps in their knowledge without affecting their final grades in any significant way.

- ❖ Some of the methods suggested for Theory Component with regard to Formative Assessment are:
 - a. Regular Tutorial assignments
 - b. Seminar Presentations
 - c. Performance in group discussions
 - d. Problem based longer assignments (other than tutorials)
 - e. True/False Tests
 - f. Multiple Choice Tests
 - g. Short Answer Tests
 - h. Viva-Voce tests
 - i. Any other innovative tests in the context of the course.

- ❖ In the case of substantive Summative Assessment for the theory papers, can be a combination of the following:
 - a. Mid -Semester test
 - b. Seminar Report

- c. Individual /Team Project report
- d. Oral Presentations of Seminar/Projects
- e. Viva -Voce Examination on the above reports
- f. End Semester closed book examination in the pattern of a) Multiple Choice
b) Short Answer c) Long Answer vii) End Semester

Here, effectiveness implies gaining knowledge and skill which can be applied to solve practical problems as well as attaining capability of logical thinking and imagination which are conducive to new knowledge and new discoveries. Once the student learns, ‘why is it worth learning?’ and ‘how does it connect to the real world?’ The student shall embrace the curriculum in a way which would incite imagination and imbibe a spirit of enquiry in them, so that in future they will opt for further investigations or research.

Needless to say, there should be a continuous evaluation system for the students. This will enable the teachers not only to ascertain the overall progress of learning by the students, but also to identify the students who are slow learner and for whom special care should be taken. An appropriate grading system is the ‘relative grading system’ can also be envisaged for certain papers, introducing a competitive element among the students. All in all, the teacher should act as a facilitator and guide and not as a guardian of curriculum

- ❖ HEI can design their own ways and methods to quantify the assessment and evaluation based on the above methods It would then be converted to the letter grades by the procedure described by the template given by the UGC.
- ❖ Once the letter grade for a course is obtained for a course, it should be done for all the courses offered by the student. Once the letter grades for all the grades are accumulated then a CGPA should be calculated by quantifying the letter grades as described by the template provided by the UGC.

9. KEY WORDS

- Course Learning Outcomes (CLO)
- Discipline Specific Electives (DSE)
- Formative Assessment (FA)
- Learning Outcome based on Curriculum Frame work (LOCF)
- Learning Outcomes, Program Learning Outcomes (PLO)
- Skill Enhancement Courses (SEC)
- Student Centric, Teacher Centric
- Teaching Learning Methodology

இக்காலக்கவிதைகள் – உதறததை – பண்பாடு –

மடாழித்திறன் அலகு 1:

புண்புக்கவிதத

9

புணரிநறணம்

1. பாத்தையாரர்-

பாத்தறதசம்என்னும்ததலப்பில்ஆறுபாலைல்
கள். (பாலைல்எண்கள் 1, 6, 7, 9, 12, 13)

2. பாத்திதாசன்-

தபிழுக்கும்தமமதன்றுநபர்என்னும்ததலப்பிலானகவிதத.

3. நதசிகவிநாயகம்பிள்ததை -

உலைநலம்நபணல்என்னும்ததலப்பிலானகவிதத

4. முடியசைசன்-காவியப்பாதவ – “புண்பபுடா” என்னும்கவிதத.

அலகு 2: புதுக்கவிதத

9 புணரிநறணம்

1. நா.காபுலாசன்-

கறுப்பபுலர்கள்மதாகுப்பில்காகிதப்பலுக்கள்என்னும்ததலப்பிலான
கவிதத.

2. அப்துல்குடான-

ஆலாபதனமதாகுப்பில்நபாட்டிஎன்னும்ததலப்பிலானகவிதத

3. ஈநலாடுதபிழன்பன் -

ஒருவண்டிமசன்ாயுமதாகுப்பில்நதர்நமதடுக்கப்பட்டமைசன்ாயுகவிதத
கள்

4. ஆண்லாள்பரியதர்ஷினி-

மூத்தங்கள்தீர்ந்துவிடனைமதாகுப்பில் ‘இங்கவருமநபாது’
என்னும்ததலப்பிலானகவிதத

அலகு 3: உதறததை

9 புணரிநறணம்

1. டாணாக்கரும்தாய்மடாழியும் - திரு.வி.க.,

2. டனவலிதபநவண்டும்- ம.வதைலாசனார்

3. மசம்மடாழித்தபிழின்சிறப்புகள்

4. பண்ததைத்தபிழாின்சாததனச்சுவடுகள்

அலகு 4: தரிழர்வாழ்வும்பண்பாடும்

9 டணிநநம்

பண்பாடு-வாழ்வியல்முதற அகம், புறம் - உணவுமுதற - விருந்நதாம்பல் -
-

நம்பித்தககள்-விழாவும்வழிபாடும் - கதலகள் - கட்஁஁ம் - சிற்பம் - ஓவியம் - இதச-கூத்து-
மதாழிலும்வணிகமும் - அறிவியல்நநாக்கு.

அலகு 5: மொழித்திறன், இலக்கியவலைாறு, இலக்கணம் 9 டணிநநம்

1. எழுத்துப்பிதழ், மதார்ப்பிதழ்கள்
2. நவற்றுதலக்கணம்
3. மசயுள்நலம்பாண்டல்
4. பாமைத்தழுவியஇலக்கியவலைாறு (டபுக்கவிதத, புதுக்கவிதத, உதநதத)

மொத்தம்: 45 டணிநநம்

பார்தவநூல்கள்

1. தமிழர்நாகரிகமும்பண்பாடும், ஸாக்ரைர் அ.தட்சிணாமூர்த்தி, ஐந்திதணப்பதிப்பகம்
2. தவறின்றித்தமிழ்எழுதுநவாம், டா. நன்னன், ஏகம்பதிப்பகம்
3. தவறின்றித்தமிழ்எழுத-டருதாரைஅங்கஸான, ஐந்திதணப்பதிப்பகம்
4. தமிழ்இலக்கியவலைாறு, வதைஸான, ம., புதுதிலல்லி : சாகித்தியஅக்காமதரி ,
5. புதியதமிழ்இலக்கியவலைாறு, நீல. பத்தநாபன், சிற்பிபாலசுப்டணியம், சாகித்தியஅகாமைரி
6. மசம்மொழித்தமிழின்சிறப்பியல்புகள் - முதனவர்தததலஇலக்குவனார்; <https://www.youtube.com/watch?v=HHZnmJb4jSY>
7. பாநூல்நதைலுக்கானஇதணயம் - <https://archive.org/>

COURSE OBJECTIVE:

- To enable the students to develop communication skills
- To train students in official language
- To enrich their knowledge in Hindi literature

Unit I	- ‘Ek atuut kadi’, letter writing, Technical words.	9
Unit II	‘Devi singh’ , letter writing, Technical words.	9
Unit III	‘kabiraa ki kaashi ’, letter writing, Technical words.	9
Unit IV	‘kabiraa ki kaashi ‘, letter writing, Technical words.	9
Unit V	‘bharathiya vigyan ki kahaani’ - ‘hamne diyaa, hamne liyaa’, letter writing	9

Total No of Hours :45

COURSE OUTCOME

At the end of this course

- CO 1 Students will be familiar with official letter writing
- CO 2 Will be trained in writing various letters.
- CO 3 Students will be moulded with good character understand human values
- CO 4 Students will gain knowledge about ancient India
- CO 5 Will know the equivalent hindi words for scientific terms

TEXT BOOK

Gadya Khosh, Prashasanik shabdavali, Patra lekhan

COURSE OBJECTIVE:

To introduce French language.

To enable the students to understand and to acquire the basic knowledge of French language with elementary grammar.

UNIT:I INTRODUCTION**09**

Introduction-Alphabet-comment prononcer, écrire et lire les mots-base: les prénoms personnel de 1er , 2eme et 3eme personnes-conjugaisons les verbes être et avoir en forme affirmative, negative Et interrogative.

UNIT II- LECON 1-3**09**

Leçon 1 :Premiers mots en français- 2.Les hommes sont difficiles 3.Vive la liberté-Réponses aux questions tires de la leçon-Grammaire: Les adjectives masculines ou féminines-Les article définies et indéfinis-Singuliers et pluriels.

UNIT III-LECON 4-6**09**

Leçons 4. L'heure c'est l'heure 5.Elle va revoir sa Normandie 6.Mettez-vous d'accord groupe de nom-Réponses aux questions tires de la leçon-Grammaire :A placer et accorder l'adjectif en groupe de nom-Préposition de lieu-A écrire les nombres et l'heure en français

UNIT :IV-LECON 7-9**09**

Leçon 7.Trois visage de l'aventure , 8. A moi Auvergne 9.Recit de voyage-Réponses aux questions tires de la leçon- Grammaire : Adjectif processif- Les phrases au présent de l'indicatif-Les phrases avec les verbes pronominaux au présent.

UNIT :V- COMPOSITION :**09**

A écrire une lettre a un ami l'invitant a une célébration différente ex :mariage-A faire le dialogue- A lire le passage et répondre aux questions.

Total : 45 HOURS

TEXTBOOK :

Jack GIRARDER & Jean Marie GRIDLIG,<<Méthode de François PANORAMA>>, Clé Internationale, Goyal Publication, New Delhi Edition 2014.

REFERENCE BOOKS:

DONDO Mathurin, “Modern French Course”, Oxford University Press, New Delhi Edition 2014.

Nithya Vijayakumar get ready French grammar-Elementary Goyal publications, New Delhi Edition 2014.

COURSE OBJECTIVE:

- To enable students to develop their communication skills effectively. To make students familiar with usage skills in English Language.
- To enrich their vocabulary in English
- To develop communicative competency.

Credit Hours

UNIT I	09
1. Dangers of Drug Abuse - Hardin B Jones	
2. Tight Corners - E. V. Lucas	
UNIT II	09
3. Futurology - Aldous Huxley	
4. If You are Wrong, Admit it - Dale Breckenridge Carnegie	
UNIT III	09
5. Industry - Dr.M.Narayana Rao & Dr.B.G.Barki	
6. Turning Point of My Life - A.J Cronin	
UNIT IV	09
7. Excitement - Mack R. Douglas	
8. The Kanda Man Eater - Jim Corbett	
UNIT V	09
9. Vocabulary and Exercises under the Lessons	

Total No of Hours :45 Hours

COURSE OUTCOME

At the end of this course students will be able to,

- CO1 Examine the language of prose.
- CO2 Utilize instructions on fundamentals of grammar

CO3 Develop their own style of writing after studying diverse prose essays.

CO4 Classify different essays on the basis of their types.

CO5 Critically comment on the textual content of prose.

TEXT BOOKS

- English for Communication Enrichment: by Jeya Santhi June 2015.
- Dr. M. Narayana Rao and Dr. B. G. Barki – Anu’s Current English for Communication (AnuChitra). June 2012.
- Dr. Ananthan , R. Effective Communication. Ed. Chennai : Anu Chithra Pub.2010.

WEB SOURCES:

- <https://www.gradesaver.com/>
- <https://www.enotes.com/>
- <https://www.jstor.org/>
- <https://www.sparknotes.com/>
- <https://www.cliffsnotes.com/>

Course Objective:

To study and understand the concepts of identify input and output requirements of a computer problem , define programs and programming language, solve problems using flowchart ,use dry run ,solve the problems using pseudocode, use of operators, repetitive process ,work with arrays, Manipulate arrays using loops.It used to enhance the employability

UNIT I: 12

Delivery Methodology, Session Overview, Introduction Presentation, Input, Process, and Output, Programs and Programming Languages, Tools Used in Problem Solving, Problem Solving Using Flowcharts, Cloud Components and E-learning.

UNIT II: 12

Representing Decision and Repetitive Processes in a Flowchart, Cloud Components and E-learning. Problem Solving Using pseudocode, Cloud Components and E-learning. Variables and Constants, Data Types, Using Operators, Scratch, Using Operators, ConditionalExecution.

UNIT III: 12

Conditional Execution, Implementing Iterative Processes.

UNIT IV: 12

Implementing Iterative Processes, The repeat...until Loop, Dividing Program into Modules Types of Modules.

UNIT V: 12

Modular Approach to Programming, Working with Arrays, Manipulating Arrays Using Loops.

Total: 60 Hours**Text Books:**

1. Problem solving and programming techniques by Maureen Sprankle, Jim Hubbard, 2018
2. The art of problem solving and decision making by Micheal Sloan, 2009

REFERENCE BOOKS:

1. V. Anton, “Think like a programmer”, 4th edition, McGraw Hill Edu, 2017
2. Paul Zeitz, “ Art and craft of Problem Solving”, 2nd edition, TMH.

Course Outcome: (Employability)

After completing this course, the students will be able to:

CO1: Write efficient program logic using pseudo code.

CO2: Create flowcharts to solve problems

CO3: Design and develop pseudo code for various applications.

CO4: Interpret the various concepts of modular programming

CO5: Implement problem solving in real life problems.

COURSE OBJECTIVES:

- This course introduces the basic concepts of programming in C++
- To improve the problem solving skills using OOPS concept
- On successful completion the students should have programming ability on C++

UNIT I PRINCIPLES OF OOP & BASICS OF C++**15**

Procedure oriented programming – OOP paradigm - Basic concepts of OOP - Benefits of OOP -Applications of OOP - Basics of C++ - Tokens – Keywords – Identifiers and Constants – Data types – Variables - Operators – Expressions - Control Structures- Functions.

UNIT II CLASSES & OBJECTS**15**

General structure of Class & object – Defining member function – private member function – public member function – Function Overloading – Inline Function – Default Arguments – Static data members – Static member functions– Friend Function – Friend Class.

UNIT III CONSTRUCTOR& OVERLOADING**15**

Constructors – Types of Constructors – Overloading Constructors - Copy Constructors – Destructors - Arrays – Pointers – Operator Overloading – Overloading Unary Operator – Overloading Binary Operator – Rules For Overloading Operators – Type Conversions – Command Line Arguments

UNIT IV INHERITANCES&RUN TIME POLYMORHSIM**15**

Inheritance- Access specifiers – public derivation – private Derivation - Types of Inheritances -Virtual Base Class – virtual functions – pure virtual function

UNIT V STREAMS & FILES**15**

C++ Streams – Stream Classes – Unformatted I/O operations – Formatted I/O operations – Manipulators – Exception Handling.

Total No of Hours : 75

COURSE OUTCOMES:

On Completion of this course, the students can able to

CO1: Develop bottom up Programming using classes & objects.

CO2: Develop the file handling and error handling operations

CO3: Analyze the role of inheritance in building reusable code and I/O operations.

CO4: Apply the Concepts of Inline Function & Friend Function

CO5: Identify the basic concepts of Object Oriented Programming

TEXT BOOKS:

1. E.BalaGurusamy “Object Oriented Programming with C++”, Tata MC Graw Hill Edu.
2. YashwantKanetkar-“Let Us C++”, 2ndedition,McGraw HillEducation,2000.

REFERENCE BOOKS:

3. Herbert Schildt “The Complete Reference C++”, 4th edition,McGraw Hill Edu,2017
4. D.Ravichandran-“Oriented Programming with C++”, 2nd edition, TMH.

WEBSITES

- 1.www.w3schools.com
- 2.www.tutorialspoint.com
- 3.www.javapoint.com
4. www.geeksforgeeks.org

WEB SOURCES

1. https://www.tutorialspoint.com/cplusplus/cpp_tutorial.pdf
2. <https://www.cplusplus.com/files/tutorial.pdf>
3. <https://www.slideshare.net/aloknie/oop-cclassfinalppt>
4. <https://www.slideshare.net/adishesha12/basic-concept-of-oops>
5. <https://www.slideserve.com/joan-craft/object-oriented-programming-with-c>

Course objective: To develop the skills of the students in the areas of Algebra, Numerical methods Trigonometry and Calculus. The course will also serve as a prerequisite for post graduate and specialized studies and research.

UNIT – I ALGEBRA AND NUMERICAL METHODS 12

Algebra: Summation of series simple problems. Numerical Methods: Operators E, Δ, ∇ , difference tables -Newton's forward and backward interpolation formulae for equal intervals, Lagrange's interpolation formula.

UNIT- II MATRICES 12

Introduction-Basic operations-Symmetric-skew symmetric-Hermitian-Skew Hermitian –Unitary- orthogonal-Inverse of a matrix -Solution of linear system(Cramer's rule)- Finding the Eigen roots and Eigen vectors of a matrix-Cayley Hamilton theorem(without proof)

UNIT- III THEORY OF EQUATIONS 12

Polynomial equations with real coefficients, irrational roots, complex roots, symmetric functions of roots, transformation of equation by increasing or decreasing roots by a constant, reciprocal equation. Newton's method to find a root approximately - simple problems.

UNIT IV TRIGONOMETRY 12

Introduction- Expansions of $\sin n\theta$ and $\cos n\theta$ in a series of powers of $\sin\theta$ and $\cos\theta$ - Expansions of $\sin n\theta$, $\cos n\theta$, $\tan n\theta$ in a series of sines, cosines and tangents of multiples of " θ " - Expansions of $\sin\theta$, $\cos\theta$ and $\tan\theta$ in a series of powers of " θ " – Hyperbolic and inverse hyperbolic functions - Logarithms of complex numbers.

UNIT V DIFFERENTIAL CALCULUS 12

Differentiation-Successive differentiation, n^{th} derivatives, Leibnitz theorem (without proof) and applications, Jacobians, Curvature and radius of curvature in Cartesian co-ordinates, maxima and minima of functions of two variables. **Total No of Hours :60Hrs**

COURSE OUTCOME:

On completion of this course, the students will be able to:

CO1. Evaluate the underlying assumptions of analysis tools and relations of Set Theory

CO2. Understand and discuss the applications of matrices and utilizes.

CO3. Discuss the uses and limitations of Theory of equations

CO4. Understand the key terminology, concept tools and techniques used in trigonometry

CO5. Apply the maxima and minima in detailed ways and the applications of partial differential equations.

TEXT BOOKS

1. P. Kandaswamy and K.Thilagavathy, Allied Mathematics paper I, 1st Semester, S.Chand Publishing Pvt. Ltd. 1st Edition,2003.
2. S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.

REFERENCE BOOKS

1. P.R. Vittal, Allied Mathematics, Margham Publications, 4th Edition 2009.
2. A. Singaravelu, Allied Mathematics, Meenakshi Agency, 2007.
3. P. Duraipandian and S.UdayaBaskaran, Allied Mathematics, Vol. I & II Muhil Publications, Chennai.

WEB SOURCES

2. https://books.google.co.in/books?id=4C4rDAAAQBAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false
3. <https://ncert.nic.in/ncerts/l/keep203.pdf>
4. <http://www.universityofcalicut.info/SDE/VI%20Sem.%20B.Sc%20Maths%20-%20Additional%20Course%20in%20lie%20of%20Project%20-Theory%20of%20equations%20&%20fuzzy%20set.pdf>

5. <https://www.math.ust.hk/~machas/numerical-methods.pdf>
6. https://www.researchgate.net/publication/321825504_Differential_Calculus

COURSE OBJECTIVES:

- This course introduces the basic concepts of C++ programming.
- This course practices the student to write object oriented programs using C++.
- This course improves the logical thinking in C++ programming.

LIST OF EXPERIMENTS:

1. Write a C++ program to demonstrate Control Structures
2. Write a C++ program to calculate Simple interest using class and Object
3. Write a C++ program to sort given numbers in Ascending Order using Bubble sort
4. Write a C++ program to manipulate a given string
5. Write a C++ program to demonstrate function overloading
6. Write a C++ program to demonstrate Inline function
7. Write a C++ program to demonstrate Friend function
8. Write a C++ program to demonstrate Default Arguments
9. Write a C++ program to demonstrate Constructor
10. Write a C++ program to demonstrate Operator Overloading
11. Write a C++ program to demonstrate Single Inheritance
12. Write a C++ program to demonstrate Multi level Inheritance
13. Write a C++ program to demonstrate Multiple Inheritance
14. Write a C++ program to demonstrate virtual function
15. Write a C++ program to demonstrate pure virtual function

Total No of Hours : 30 Hrs

COURSE OUTCOMES:

On Completion of this course, the students can able to

CO1: Develop the Virtual Functions and File handling operations

CO2: Write C++ Programs using Classes & objects.

CO3: Build programs on Constructors, Destructors and Overloading concepts using programs.

CO4: Manipulate the role of inheritance in building reusable code and I/O operations.

CO5: State the OOP's concepts in writing simple C++ Programs.

TEXT BOOKS:

3. E.BalaGurusamy "Object Oriented Programming with C++", Tata MC Graw Hill Education.
4. YashwantKanetkar-"Let Us C++", 2ndedition,McGraw HillEducation,2000.

REFERENCE BOOKS:

1. Herbert Schildt "The Complete Reference C++", 4th edition,McGraw Hill Education,2017
2. D.Ravichandran-"Oriented Programming with C++", 2nd edition, TMH.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com
4. www.geeksforgeeks.org

WEB SOURCES

1. https://www.tutorialspoint.com/cplusplus/cpp_tutorial.pdf
2. <https://www.cplusplus.com/files/tutorial.pdf>
3. <https://www.slideshare.net/aloknie/oop-cclassfinalppt>
4. <https://www.slideshare.net/adishesha12/basic-concept-of-oops>
5. <https://www.slideserve.com/joan-craft/object-oriented-programming-with-c>

பருவம்-2, தடீழீம்மடாழீபீப்பாமை-2, பகுதி-1, தகூதிபீப்புள்ளீ: 3,
வாபீப்பாநீநமை: 3.

தாள்-2

அறஇலக்கியம் – சீற்றீலக்கியம் – சீறூகதத – பயன்பாட்டூத்தடீழீ

அலகு 1: அறஇலக்கியங்கள்

10 டணீநநமை

1. திருக்குறள்- வான்சிறப்பு(அறம்), ஊக்கமுதைதட(மபாருள்),
குறீபீப்பறீதல(இன்பம்) –
மூன்றூ அதீகாளைங்கள்முழூதடயூம்.
2. நாலடியார் – மூன்றுபாலை்கள். (2, 3, 5)
3. பழமடாழீநானூறு – மூன்றுபாலை்கள் (74, 75, 78)
4. திரீகடுகம் – மூன்றுபாலை்கள் (10, 12, 22)
5. இனீயதவநாற்பது – மூன்றுபாலை்கள் (1, 12, 16)

அலகு 2: சீற்றீலக்கியம்

10 டணீநநமை

1. முத்மதாள்ளீயீமை - நசைன் – வீமை 14, 15 பாலை்கள்
நசாழீன்- காதல் 23, 24 பாலை்கள்
பாண்டீயன்-நாடு87, 88 பாலை்கள்
2. தடீழீவிடுதூது – முதல் 20 கண்ணீகள்
3. திருக்குற்றாலக்குறவஞ்சீ – டதலவைம்கூறுதல் – முதல்5 பாலை்கள்
4. முக்கூறைப்பள்ளீ –
மூத்தபள்ளீநாட்டூவமைம்கூறூதல் 3
பாலை்கள், இதையபள்ளீநாட்டுவைம்கூறுதல் 3
பாலை்கள்.
5. கலீங்கததூப்பணீ – பாதலபாடியது – முதல் 5 பாலை்கள்

அலகு 3: சீறூகதத

9 டணீநநமை

1. அறீஞர்அண்ணா - மசவ்வாதழ
2. பூதூதடப்பீத்தன் - கைவூளூம்கந்தசாடீப்பீளீத்தயூம்
3. மெயகாந்தன் - யுகசந்தீ
4. கு.அழகீரீசாடீ - காற்று

5. அம்தப

- காட்டில்ஓருான்

அலகு 4: நபச்சுத் தடீழ்

8 டணரி நந஠ம்

நபச்சுத்திறன் – வரிக்கம் – நபச்சுத்திறனின் அடிப்பதகைகள் – வதககள்

நடதைப்நபச்சு – உதையால் - பயிற்சிகள்

அலகு5: எழுத்துத்தடீழ், இலக்கியவலைாறு, இலக்கணம் 8 டணரிநந஠ம்

1. கதலச்சமசால்லாக்கம் – நததவகள் – கதலச்சமாற்ககைளின் பண்புகள்

அறிவியல்கதலச் மசாற்கள் – கடிதம் – வதககள் – அலுவலகக்கடிதங்கள் –
உறவுமுதறக்கடிதங்கள்.

2. பாமைத்தழுவியஇலக்கியவலைாறு (அறஇலக்கியம், சிற்றிலக்கியம், சிறுகதத)

3. அணிஇலக்கணம்

4. விண்ணப்பக்கடிதம்எழுதுதல்

மடாத்தம்: 45 டணரிநந஠ம்

பார்தவநூல்கள்

1. நபசும்கதல,முதனவர்கு.ஞானசம்பந்தன்வியொபதிப்பகம்

2. தடீழ்இலக்கியவலைாறு, வதைாசன், ம., சாகித்தியஅக்காமதடரி, புதுதலில்லி

3. தடீழ்நதகைத்தகநயட, மடாழிஅறக்கடதை

4. பயன்பாட்டுத்தடீழ்,

முதனவர்அங்கஇடாலிங்கம்,முதனவர்ஒப்பிலாடதிவாணன்,
மசன்தனபல்கதலக்கழகம், 2007

5. மடாழிமபயர்ப்பியல்அடிப்பதகைகள், கா.பட்ாபிாடன்,
யமுதனப்பதிப்பகம், திருவண்ணாடதல

6 பாைநூல்நதைலக்கானஇதணயம்

• <http://www.tamilvu.org/library>

• <https://archive.org/>

COURSE OBJECTIVE:

- To train students in translation
- To develop reading & writing skills
- To create interest towards reading different types of literature

Unit I	- ‘zaruurath’ (<u>kahani</u>), Translation- Definition,Types	9
Unit II	‘Pandit kouun ‘ (kahani), Translation - Anuvadak ke gun	9
Unit III	- ‘Pandit kouun (kahani) , Translation Practice	9
Unit IV	- ‘Rajani (<u>naatak</u>), Translation Practice	9
Unit V	- ‘Rajani (<u>naatak</u>), Translation Practice	9

Total No Of Hours :45

COURSE OUTCOME

At the end of this course

- CO 1 Students will know the importance & process of translation
- CO 2 They can develop the skill of translation
- CO 3 will know the different writing skills of authors
- CO 4 gain knowledge in hiindi literature
- CO 5 will acquire knowledge in hindi sahithya

TEXT BOOK : Gadya khosh

COURSE OBJECTIVE:

- To fortify the grammar and vocabulary skills of the students.
- To enable the students have an idea of the French culture and civilization

UNIT:I LECON 10-11**09**

Leçons :10 Les affaires marchent,11 un repas midi a problèmes- Réponses aux questions tires de la leçon-grammaire ;présent progressif passe récent ou future proche-complément d'Object directe-complément d'objet

UNIT II- LECON 12-13**09**

Leçons 12 :tout est bien qui fini bien,-13 aux armes citoyens-réponses aux questions tires de la leçon-grammaire :les pronoms<<en ou y>> rapporter des paroles-Les pronoms relatifs que, qui ou ou.

UNIT III-LECON 14-15**09**

Leçons 14.Qui ne risque rien n'a rien-15.la fortune sourit aux audacieux-réponses aux questions tires de la leçon-grammaire : comparaison-les phrases au passe compose.

UNIT :IV-LECON 16-18**09**

Leçons 16 la publicité et nos rêves 17 la France la monde 18 campagne publicitaire réponses aux questions tires de la leçon-grammaire :les phrases a l'imparfait-les phrases au future

UNIT :V- COMPOSITION :**09**

A écrire une lettre de regret//refus a un ami concernant l'invitation d'une célébration reçue-a écrire un essaie sur un sujet générale-a lire le passage et répondre aux questions.

Total : 45 HOURS

TEXTBOOK :

Jack GIRARDER & Jean Marie GRIDLIG, <<Méthode de Français PANORAMA>>, Clé

Internationale, Goyal Publication ,New Delhi Edition 2014.

REFERENCE BOOKS:

DONDO Mathurin, “Modern French Course”, Oxford University Press, New Delhi Edition

2014.Nithya Vijayakumar get ready French grammar-Elementary Goyal publications ,New Delhi, Edition 2014.

COURSE OBJECTIVE

To enable students to develop their communication skills effectively.

To enrich their vocabulary in English

To develop communicative competency.

	Credit Hours
UNIT I	09
1. Growing Old - Winston Farewell	
2. Ecology - A. K. Ramanujan	
UNIT II	09
3. Stopping by Woods on a Snowy Evening - Robert Frost	
4. Our Casuarina Tree - Toru Dutt	
UNIT III	09
5. Goodbye Party for Miss Pushpa T.S. - Nissim Ezekiel	
6. The Bull - Ralph Hodgson	
UNIT IV	09
7. If - Rudyard Kipling	
8. The Drowned Children - Louise Glück	
UNIT V	09
9. Australia - A.D.Hope	
10. A Far Cry from Africa - Derek Walcott	

Total : 45 HOURS Hours

COURSE OUTCOME

At the end of this course students will be able to,

CO1: Learn to employ Poetic expressions in the course of daily speech.

CO2: Prove their better communicative ability.

CO3: Prove their skill in writing sentences with poetic impact.

CO4: Develop different sensibilities in approaching life.

CO5: Solve life's problems as highlighted in the selections.

TEXT BOOKS

- Selections from Caribbean Literature. Mahaam Publishers, Chennai.
- Our Casuarina Tree - Vasan Publication By Dr.A Shanmugakani

WEB SOURCES

- <https://www.gradesaver.com/>
- <https://www.enotes.com/>
- <https://www.jstor.org/>
- <https://www.sparknotes.com/>
- <https://www.cliffsnotes.com/>

Course Objective:

To study and understand the concepts of introduce HTML, create an HTML page, work with styles, Apply transitions, animations and transformations, create tables, Accessing multiple web pages by using frames, understanding scripting, Implement java script in web pages ,Implementing canvas, audio and video effects, Work with gallery Implement geo location and offline support. It is used to enhance the Employability.

COURSE OUTCOME: (Employability)

After completing this course, the students will be able to:

CO1: Create and design Web Pages using HTML

CO2: Design a webpage using javascript.

CO3: Develop web applications using form objects.

CO4: Design and develop web applications using graphics

CO5: Develop and implement real life web applications.

Unit 1: Introducing HTML**12**

Text Editor, Graphic Editor, Identifying the Basic Structure of an HTML Page, Exploring the <HEAD>Tag, Exploring the <BODY>Tag, Identifying the Syntax of CSS, Identifying the Types of Style Sheets, Applying Multiple Style Sheets, Identifying CSS Selectors, Styling HTML Elements, Grouping and Nesting Styles, Controlling the Visibility of Elements, Positioning HTML Elements, Applying Transitions, Applying Animations, Applying Transformations, Identifying the Basic Structure of a Table, Enhancing Tables.

Unit 2: Creating Web Pages.**12**

Creating Web Pages Using Frames, Styling Frames, Types of Scripting, Identifying the Benefits of JavaScript, Embedding a Script into a Web Page, Creating and Using an External File, Identifying Rules and Conventions Used in JavaScript, Defining Variables, Using Operators, Using Conditional Constructs, Using Loop Constructs, Break and Continue Statements,

Unit3:Functions**12**

Introducing Functions, Creating Functions, Accessing Functions. Designing an HTML Form, Creating Forms, Exploring Form Elements, Working with Browser Objects, Working with Form Objects.

Unit 4: Working with Graphics**12**

Creating a Canvas, Working with Color, Shapes, and Styles, Working with Path, Text, and Images, Transforming Canvas Elements, Animating Canvas Elements. Manipulating HTML Elements by Using jQuery, Handling jQuery Events, Implementing Hide Effect, Implementing Show Effect, Implementing Toggle Effect, Implementing Slide Effect, Implementing Fade Effect, Implementing Animate Effect, Creating Image Rollover, Creating Backward Compatible Rollover, Preloading Images, Using Color box Plugin, Using galleria Plugin.

Unit 5: Introducing Geolocation and Offline SupportforData.**12**

Implementing the Geolocation API, Handling Errors, Implementing Client-side Storage, Implementing Application Cache.

TOTAL: 60 HOURS**TEXT BOOKS:**

1. Robin Nixon, "Learning PHP, MySQL, JavaScript, CSS & HTML5" Third Edition, O'REILLY, 2014.
2. JamesF.Kurose,—ComputerNetworking:ATop-DownApproachl, SixthEdition, Pearson,2012.

REFERENCES:

1. Gottapu Sasibhushana Rao, "Mobile Cellular Communication", Pearson,2012.
2. R. Kelly Rainer , Casey G. Cegielski , Brad Prince, Introduction to Information Systems, Fifth Edition, Wiley Publication,2014.

COURSE OBJECTIVE:

- To work on data, managing data between front end and back end and to create reports.
- Provide for mass storage of relevant data.
- Make access to the data easy for the user.
- Provide the prompt response to user requests from Relational Database.

UNIT I INTRODUCTION 12

Introduction to DBMS– Data and Information - Database – Database Management System – Objectives - Advantages – Components - Architecture. ER Model: Building blocks of ER Diagram –Relationship Degree – Classification – ER diagram to Tables – ISA relationship – Constraints – Aggregation and Composition – Advantages.

UNIT - II RELATIONAL MODEL 12

Relational Model: CODD’s Rule- Relational Data Model - Key - Integrity – Relational Algebra Operations – Advantages and limitations – Relational Calculus – Domain Relational Calculus - QBE.

UNIT - III RELATIONAL DATABASE STRUCTURE 12

Structure of Relational Database. Introduction to Relational Database Design - Objectives – Tools – Redundancy and Data Anomaly – Functional Dependency - Normalization – 1NF – 2NF – 3NF – BCNF. Transaction Processing – Database Security.

UNIT - IV QUERY BASICS 12

SQL: Commands – Data types – DDL - Selection, Projection, Join and Set Operations – Aggregate Functions – DML – Modification - Truncation - Constraints – Subquery.

UNIT - V PL/SQL 12

PL/SQL: Structure - Elements – Operators Precedence – Control Structure – Iterative Control - Cursors – Procedure - Function - Packages – Exceptional Handling - Triggers.

Total No of Hours: 60 Hrs

COURSE OUTCOME

On Completion of this course, the students can able to

CO1: Develop the terminology, features, classifications, and characteristics embodied in Relational database systems

CO2: Develop the normalization theory and apply such knowledge to the normalization of Relational database.

CO3: Analyze relational algebra, solutions to a broad range of query problems

CO4: Apply create, populate, maintain, and query statements in the Relational database

CO5: Apply relational algebra, solutions to a broad range of query problems

TEXT BOOKS

1. G. V. Post - Database Management Systems Designing and Building Business Application - McGraw Hill International edition - 1999.
2. S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Database Management System", Springer International Edition 2007.

REFERENCE BOOKS

1. ArunMajumdar & Pritimoy, "Database Management Systems" Bhattacharya, 2007, TMH.
2. Gerald V. Post, "Database Management Systems" 3rd edition, TMH.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com
4. www.geeksforgeeks.org

WEB SOURCES

1. <http://www.rispm.com/PDF/BCA-428%20Oracle.pdf>
2. https://www.vssut.ac.in/lecture_notes/lecture1423726199.pdf
3. <https://www.slideshare.net/WebStackAcademy/sql-rdbms-concepts>
4. <https://www.slideshare.net/MuhammadAdeel26/rdbms-59310206>
5. <https://slideplayer.com/slide/5770747/>

Course Objective: To impart the knowledge of Integral calculus, Differential Equations, Fourier Series and Laplace transform. The course will also serve as a prerequisite for post graduate and specialized studies and research.

UNIT-I INTEGRAL CALCULUS**12**

Integral calculus: Integration – Definite integrals – Bernoulli's formula -Reduction formula for $\int \sin^n x dx, \int \cos^n x dx, \int \tan^n x dx, \int x^n e^{ax} dx$.

UNIT-II DIFFERENTIAL EQUATIONS**12**

Ordinary Differential Equations: First order of higher degree equations – Second order and non-homogenous linear differential equations with constant coefficient. Partial Differential Equations: Formation of partial differential equations by eliminating arbitrary constants and arbitrary function- Solutions of four standard types of first order equation-Lagrange method of solving linear partial differential equation $Pp + Qq = R$

UNIT-III FOURIER SERIES**12**

Fourier series of periodic functions on the interval $[c, c+2\pi]$ –Even and Odd functions- Half range sine and cosine series.

UNIT-IV LAPLACE TRANSFORM**12**

Laplace transformation: Definition, Laplace transform of basic trigonometric, exponential and algebraic functions - Inverse Laplace transform- Solving differential equation of second order with constant coefficients using Laplace transform

UNIT – V VECTOR DIFFERENTIATION

12

Introduction-Scalar point functions-Vector point functions-Vector differential operator ∇ , Gradient-Divergence-Curl-Solenoidal-irrotational-identities- Simple problems

Total No of Hours : 60 Hrs

COURSE OUTCOMES:

On completion of this course, the students will be able to:

CO1. Understand the key terminology, concept tools and techniques used in Integral calculus

CO2. Discuss the applications of differential equations.

CO3. Analyze the uses, limitations and applications of Fourier series

CO4. Evaluate Laplace transform and its applications

CO5. Understand the key terminology, concept tools and techniques used in Vector Differentiation.

TEXT BOOKS

1. P. Kandaswamy and K.Thilagavathy, Allied Mathematics paper II, 2nd Semester, S.Chand Publishing Pvt. Ltd. 1st Edition, 2004
2. S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.

REFERENCE BOOKS:

4. P.R. Vittal, Allied Mathematics, Margham Publications, 4th Edition 2009.
5. A. Singaravelu, Allied Mathematics, Meenakshi Agency, 2007.
6. P. Durairandian and S.UdayaBaskaran, Allied Mathematics, Vol. I & II Muhil Publications, Chennai

WEB SOURCES

1. http://mdudde.net/pdf/study_material_DDE/M.Sc.MAthematics/DIFFERENTIAL%20EQUATIONS.pdf
2. <https://ncert.nic.in/ncerts/l/lemh201.pdf>
3. http://www.universityofcalicut.info/SDE/Vector_calculus_BSc_Maths.pdf

COURSE OBJECTIVE:

To study and understand the concept of HTML tags, images, audio and video tags, inline style, internal style, external style sheet, positioning of HTML elements, font, Link, List and background properties. It is used to enhance the skill development.

Course Outcome: (Skill Development)

After completion of this practical course, the student will be able to:

CO1: Implement the concept of Style sheet

CO2: Implement the concept of Navigation tags

CO3: Implement the concept of grouping styles

CO4: Implement the concept of nesting styles

CO5: Implement the concept of Frames

1. Write a Html program of formatting tags.
2. Write a HTML program using image, audio, navigation and videotag.
3. Create web site for our university with external stylesheet.
4. Write a HTML program using positioning HTML elements.
5. Write a HTML program using Font, Link, List and Background properties.
6. Write a HTML program using controlling the visibility of elements.
7. Write a HTML program using grouping and nesting styles.
8. Write a HTML program applying transitions, animations and transformations.
9. Write a HTML program for Class timetable.
10. Write a HTML program using Iframes.
11. Write a HTML program for Reverse a number using Javascript.
12. Write a HTML program for web page Login and Register
13. Create a web page for linear gradient

COURSE OBJECTIVE

- This course gives training in design and implementation of data bases for the selected problems.
- To familiarize the participant with the nuances of database environments towards an information
- oriented data-processing oriented framework
- To give a good formal foundation on the relational model of data

LIST OF PROGRAMS

1. Table creation using constraints and perform insert, update,delete, select commands.
2. Exercise using drop, truncate, commit and rollback.
3. Exercise to implement sub queries.
4. Joins.
5. Logical Operator.
6. Aggregate functions.
7. String, Math and Date functions.
8. Examples for triggers.
9. Indexing.
10. Simple PL/SQL programs.
11. Cursor examples.
12. Nested queries.

Total No of Hours: 30 Hrs

COURSE OUTCOME

On Completion of this course, the students can able to

CO1: Build & Create Data manipulation, transaction control and data control using SQL COMMANDS.

CO2: Develop the procedures for backup & recovery and for the role of DBA

CO3: Analyze the efficiency of storing data using data clustering and partitioning .

CO4: Execute various DDL commands for creating data base design

CO5: Execute the basic SQL queries using ORACLE database

TEXT BOOKS

1. G. V. Post - Database Management Systems Designing and Building Business Application - McGraw Hill International edition - 1999.
2. S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Database Management System", Springer International Edition 2007.

REFERENCE BOOKS

1. Arun Majumdar & Pritimoy, "Database Management Systems" Bhattacharya, 2007, TMH.
2. Gerald V. Post, "Database Management Systems" 3rd edition, TMH.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com
4. www.geeksforgeeks.org

WEB SOURCES

1. <http://www.rjspm.com/PDF/BCA-428%20Oracle.pdf>
2. https://www.vssut.ac.in/lecture_notes/lecture1423726199.pdf
3. <https://www.slideshare.net/WebStackAcademy/sql-rdbms-concepts>
4. <https://www.slideshare.net/MuhammadAdeel26/rdbms-59310206>
5. <https://slideplayer.com/slide/5770747/>

COURSE OBJECTIVE:

This course gives an insight into advanced features of Java viz., RMI and JSP. To develop network programs in Java. To understand Concepts needed for distributed and multi-tier applications. To learn the concepts of Java Servlets and Database connectivity.

UNIT I – ABSTRACT WINDOW TOOLKIT (AWT) AND SWINGS 12

Applets- Architecture, Basics, skeleton, simple applets, Requesting and Repainting HTML applet tag, passing parameters to applets- Graphics- Font,-Colorclasses Swing-JApplet, JFrame, JComponent Differences between Component and Container,Icons, JLabel, JTextField, JButton, JCheckBox, JRadioButton,JComboBox

UNIT II REMOTE METHOD INVOCATION 12

RMI- Overview – RMI Architecture - Developing Application with RMI Declaring and implementing remote interfaces –Stub and Skelton –registering Remote objects – writing RMI server –client- EJB Introduction Entity bean –session bean –EJB Transaction.

UNIT III JAVA SERVER PAGES 12

JSP Introduction to JSP - JSP life cycle - Attributes in JSP - JSP elements - Directives - Declarations - Expressions - Script let - Action Elements - using session Object and Cookies- Working with Java Mail - usage of use Bean Tag.

UNIT IV JAVA DATABASE CONNECTIVITY 12

Presentation to JDBC CONNECTION settings – The Concept of JDBC – JDBC Driver Types – JDBC Packages – A Brief Overview of the JDBC Process – Database Connection – Associating the JDBC/ODBC Bridge with the Database – Statement Objects – Result Set.

Background, The Life Cycle of a Servlet & the JSDK-A Simple Servlet – The Servlet API – Role Play-Servlet Concept – The javax. servlet Package – Reading Servlet Parameters, The javax.servlet.http Package – Handling HTTP Request and Responses – Using Cookies – Session Tracking.

Total : 60 hrs.

COURSE OUTCOME(S):

After completing this course, the student will be able to

CO1: Demonstrate the principles of Java Web Server

CO2: Understandability in java messaging services transactions

CO3: Understand the concept of Remote Method Invocation Implementation.

CO4: Demonstrate the usage of ORB protocol and servlets concepts.

CO5: Gain knowledge about Enterprise Java Bean design and implementation along with tips and tricks to develop EJB .

Text books :

1. Naughton and H.Schildt, (2007), “Java 2-The complete reference”, Fifth Edition McGraw Hill.
2. K. SOMASUNDARAM, “Advanced Programming in Java 2: Updated to J2SE6 with Swing, Servlet and RMI: 1
3. Jim Keogh, (2002), “The Complete Reference J2EE”, Tata McGraw Hill Edition, New Delhi.
4. Marty Hall, Larry Brown, (2004), “Core Servlets and Java Server Pages”, 2nd Edition, Pearson Education.

Books for References:

1. J2EE 1.4 Bible, J. McGovern, R. Adatia, Y. Fain, Wiley-dreamtech India Pvt. Ltd, New Delhi, 2003.
2. Inside Servlets, D. R. Callaway, Addison Wesley, Boston, 1999.
3. Java Beans from the Ground Up, Joseph O'Neil, Tata McGraw Hill, New Delhi.
4. Enterprise JavaBeans, Tom Valesky, Addison Wesley, 1998.
5. Core Java Vol II Advanced Features, Cay S Horstmann & Gary Cornell, Addison Wesley.

COURSE OBJECTIVES

1. Understand the difference between open source software and commercial software.
2. Familiarity with Linux operating system.
3. Understanding and development of web applications using open source web technologies like Apache, MySql and PHP (LAMP/XAMP).

UNIT I 12

OPEN SOURCE: Introduction to Open Source – Open Source vs. Commercial Software – What is Linux? - Free Software – Where I can use Linux? Linux Kernel – Linux Distributions

UNIT II 12

LINUX: Introduction to Linux Essential Commands – File system Concept - Standard Files 1. The Linux Security Model - Vi Editor - Partitions creation - Shell Introduction 2. String Processing - Investigating and Managing Processes - Network Clients - Installing Application.

UNIT III 12

APACHE: Apache - Starting, Stopping, and Restarting Apache - Modifying the Default Configuration - Securing Apache - Set User and Group - Consider Allowing Access to Local Documentation - Don't Allow public html Web sites - Apache control.

UNIT IV 12

PHP: Introduction- General Syntactic Characteristics - PHP Scripting - Commenting your code - Primitives, Operations and Expressions - PHP Variables - Operations and Expressions Control Statement - Array - Functions - Basic Form Processing - File and Folder Access - Cookies - Sessions - Database Access with PHP - MySQL - MySQL Functions - Inserting Records - Selecting Records - Deleting Records - Update Records.

UNIT V 12

MYSQL: Introduction to MYSQL - The Show Databases and Table - The USE command - Create Database and Tables - Describe Table - Select, Insert, Update, and Delete statement - Some Administrative detail - Table Joins - Loading and Dumping a Database.

Total No of Hours : 60

COURSE OUTCOMES:

On completion of this course, the students can be able to:

CO1: Write session control PHP code for a website

CO2: Develop web applications using LAMP.

CO3: Identify, install and run open source technologies like PHP MySql ,Apache

CO4: Understand the difference between open source software and commercial software

CO5: State some basic concepts of open Source Technologies

TEXT BOOKS

1. James Lee and Brent Ware , "Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP" , , Dorling Kindersley(India) Pvt. Ltd, 2008.

REFERENCE BOOK:

1. Eric Rosebrock, Eric Filson , "Setting Up LAMP: Getting Linux, Apache, MySQL, and PHP and working Together", Published by John Wiley and Sons, 2004

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com
4. www.geeksforgeeks.org

WE SOURCES

1. https://tavaana.org/sites/default/files/introduction_to_opensource.pdf
2. http://www.gov.pe.ca/photos/original/IPEI_ebiz_oss.pdf
3. https://www.tutorialspoint.com/php/php_tutorial.pdf
4. https://www.tutorialspoint.com/mysql/mysql_tutorial.pdf

COURSE OBJECTIVE:

- This course introduces the concepts of Life Cycle of Software.
- To Understand the Software Engineering Practice& Process Models.
- To Understand Design Engineering, Web applications and Software Project Management.

UNIT I INTRODUCTION**9**

Introduction to Software Engineering: Definitions – Size Factors- Quality and Productivity Factors – Managerial Issues- Planning a software Project: Defining the Problem – Developing a Solution – Strategy – Planning the Development Process –Planning an Organization Structure – Other Planning Activities.

UNIT II SOFTWARE COST ESTIMATION**9**

Software cost factors – Software Cost Estimation Techniques – Staffing – Level Estimation – Estimating Software Maintenance Costs – The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT III SOFTWARE DESIGN**9**

Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections.

UNIT IV IMPLEMENTATION ISSUES**9**

Structured Coding Techniques – Coding Style – Standards and Guidelines –Documentation guidelines – Type checking – Scoping Rules – Concurrency Mechanism.

UNIT V QUALITY ASSURANCE

9

Quality Assurance – Walkthroughs and Inspections – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification: Enhancing Maintainability during Development – Managerial aspects of Software Maintenance – Source Code Metrics – Other Maintenance Tools and Techniques.

Total No of Hours :45

COURSE OUTCOME

At the end of this course, students will be able to:

- CO1: Plan for good software engineering practices such as incremental development, data integrity checking and adherence to style guidelines.
- CO2: Analyze the problem of implementation issues, and to understand the standards and guidelines.
- CO3: Recommend knowledge about the software design concepts and able to judge the real time and distributed system.
- CO4: Use the cost estimation of software concept and differentiate software requirement specification techniques.
- CO5: Understand the software engineering factors and able to recognize a solution strategy for planning the development process.

TEXT BOOKS

1. R.S.Pressman, Software Engineering , Fourth Ed , McGraw Hill, 2007 1997 Edition

REFERENCE BOOKS:

1. R.E Fairly , “Software Engineering Concepts”, Tata McGraw Hill Publication 2001.
2. Richard Fairley, “Software Engineering Concepts”, TATA Mc GRAW Hill Edition.

WEB SITES

1. [Www.w3schools.com](http://www.w3schools.com)
2. [Www.tutorialspoint.com](http://www.tutorialspoint.com)
3. <https://en.wikipedia.org>
4. [Www.geeksforgeeks.org](http://www.geeksforgeeks.org)
5. www.investopedia.com
6. www.guru99.com

WEB SOURCES

1. https://www.vssut.ac.in/lecture_notes/lecture1428551142.pdf
2. https://www.darshan.ac.in/Upload/DIET/Documents/CE/2160701_Software%20Engineering%20Study%20Material%20GTU_23042016_032444AM.pdf
3. <https://examstime.in/software-engineering-study-materials/>

COURSE OBJECTIVE

To give an insight into the basics of Accounting Concepts and Principles to Prepare to Students to have the foot hold in Accounts.

UNIT I INTRODUCTION TO ACCOUNTING 12

Meaning and definition of accounting- functions of accounting – limitations of accounting – accounting concepts and conventions, systems of accounting – single entry system – double entry system – subsidiary books including cash book – trial balance – rectification of errors.

UNIT II PREPARATION OF FINAL ACCOUNTS 12

Final accounts with adjustments – closing stock, outstanding expenses, unexpired or prepaid expense, accrued income, income received in advance, depreciation, additional bad debts, provision for doubtful debts, provision for discount on debtors, interest on capital, interest on drawing, discount on creditors and creation of various reserves.

UNIT III BANK RECONCILIATION STATEMENT AND ACCOUNTS 12

Bank reconciliation statement – Importance of Bank Reconciliation Statement – Scope of Bank Reconciliation Statement - Insurance Claim Account – loss of property and stock – average clause.

UNIT IV CALCULATION OF DEPRECIATION UNDER DIFFERENT 12

Depreciation accounts – definition and causes of depreciation – need for depreciation – methods of calculating the amount of depreciation – straight line method – diminishing balance method.

UNIT V SINGLE ENTRY SYSTEM OF ACCOUNTING 12

Single entry system – salient features – limitations of single entry system – distinction between single entry system and double entry system – ascertainment of profit – net worth method – conversion method (simple problems only)

Total No of Hours : 60 Hrs

COURSE OUTCOME

At the end of this course the students can able to,

CO1: Develop accounts using adjustment. Combinational circuits

CO2: Build Journal, ledger and Balance Sheet.

CO3: Analyze the depreciation under different methods

CO4: Understand the basic concepts of accounting

CO5: Explain single entry and double entry system.

TEXT BOOKS:

1.T.S.Reddy&A.Murthy, “Financial Accounting”, Margham Publications, Sixth Revision Edition, 2011.

2.P.C. Tulsian, “Financial Accounting”, Tata MC Graw Hill Ltd, 2003.

REFERENCES:

1.Assish K. Bhattacharyya, “Financial Accounting”, Prentice of hall of India, 2002.

2.N. Vinayagam and B. Charumaki, “Financial Accounting”, S.Chand& Company Ltd., 2002, Reprint – 2008.

WEBSITES

1. www.accountigcoach.com
2. www.topaccountingdegrees.org

WEB SOURCES

1. <https://www.csus.edu/indiv/c/clarkct/course1/chap001.pdf>
2. <https://www.slideshare.net/ashu1983/financial-accounting>

Course Objective: This course gives practical training in HTML to Servlet Communication, JSP Beans used to create JSP program, RMI to create Web Services, Email creation and manipulation, Web applications and Session management is done by students.

List of Experiments:

1. HTML to Servlet Communications
2. Servlet to HTML Communication
3. Applet to Servlet Communication
4. Servlet to Applet Communication
5. Designing online applications with JSP
6. Creating JSP program using JavaBeans
7. Working with Enterprise JavaBeans
8. Performing Java Database Connectivity and storing the students Marks.
9. Creating Web services with RMI.
10. Creating and Sending Email with Java
11. Building web applications for any Departmental Store.
12. Finding Compound Interest and Simple Interest using Session Management.

Course Outcome (CO): At the end of this course, the students will be able to

CO 1: Designing HTML pages to demonstrate Java Servlets, JSP, Bean and EJB programs.

CO 2: Implementing Dynamic HTML using Servlet and demonstration of service methods, auto web page refresh, Session tracking using cookie and Http Session in Servlet.

CO 3: Learn the fundamental of connecting to the database.

CO 4: Demonstrate JSP (page attributes, action tags and all basic tags) and types of EJB application.

CO 5: Learn to design and code web applications.

COURSE OBJECTIVES:

1. Understand the difference between open source software and commercial software.
2. Familiarity with Linux operating system.
3. Understanding and development of web applications using open source web technologies like Apache, MySql and PHP

LIST OF PROGRAMS

1. Write a Shell script that accepts a filename, starting and ending line numbers as arguments and displays all the lines between the given line numbers?
2. Write a Shell script to list all of the directory files in a directory.
3. Write a Shell script to find factorial of a given integer?
4. Write a awk script to find the number of characters, words and lines in a file?
5. Installation Apache
6. Creating TABLE using My SQL.
7. Data Manipulation Commands
8. Joining Database Tables
9. Palindrome or Not in PHP
10. Connect PHP with My SQL
11. Create Login page with help of PHP and My SQL

Total No of Hours: 30

COURSE OUTCOMES:

On completion of this course, the students can be able to:

CO1: Write session control PHP code for a website

CO2: Develop web applications using LAMP.

CO3: Identify, install and run open source technologies like PHP MySql , Apache

CO4: Develop a database connectivity among PHP to MySql .

CO5: Develop simple applications using PHP.

TEXT BOOKS

1. James Lee and Brent Ware , "Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP" , , Dorling Kindersley(India) Pvt. Ltd, 2008.

REFERENCE BOOK:

1. Eric Rosebrock, Eric Filson , "Setting Up LAMP: Getting Linux, Apache, MySQL, and PHP and working Together", Published by John Wiley and Sons, 2004

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com
4. www.geeksforgeeks.org

WEB SOURCES

1. https://tavaana.org/sites/default/files/introduction_to_opensource.pdf
2. http://www.gov.pe.ca/photos/original/IPEI_ebiz_oss.pdf
3. https://www.tutorialspoint.com/php/php_tutorial.pdf
4. https://www.tutorialspoint.com/mysql/mysql_tutorial.pdf

Course Objectives:-

This course is designed to teach students how to analyze different types of data using Python. Students will learn how to prepare data for analysis, perform simple statistical analysis, create meaningful data visualizations and predict future trends from data.

Course Outcomes:- On successful completion of the course, students will be able to:

1. Understanding basics of python for performing data analysis
2. Understanding the data, performing preprocessing, processing and data visualization to get insights from data.
3. Use different python packages for mathematical, scientific applications and for web data analysis.
4. Develop the model for data analysis and evaluate the model performance.

UNIT I: PYTHON FUNDAMENTALS **9**

Data Analysis Python data structures, Control statements, Functions, Object Oriented programming concepts using classes, objects and methods, Exception handling, Implementation of user-defined Modules and Package, File handling in python.

UNIT II: DATA ANALYSIS **9**

Introduction to Data Understanding and Preprocessing Knowledge domains of DataAnalysis, Understanding structured and unstructured data, Data Analysis process, Dataset generation, Importing Dataset: Importing and Exporting Data, Basic Insights from Datasets, Cleaning and Preparing the Data: Identify and Handle Missing Values.

UNIT III: DATA VISUALIZATION **9**

Data Processing and Visualization Data Formatting, Exploratory Data Analysis, Filtering and hierarchical indexing using Pandas. Data Visualization: Basic Visualization Tools, Specialized Visualization Tools, Seaborn Creating and Plotting Maps.

UNIT IV: PYTHON LIBRARIES **9**

Mathematical and Scientific applications for Data Analysis Numpy and Scipy Package, Understanding and creating N-dimensional arrays, Basic indexing and slicing, Boolean indexing, Fancy indexing, Universal functions, Data processing using arrays, File input and

output with arrays.

UNIT V: WEB APPLICATIONS

9

Analysing Web Data Data wrangling, Web scrapping, Combing and merging data sets, Reshaping and pivoting, Data transformation, String Manipulation, case study for web scrapping.

Total: 45 Hours

Text Books

1. David Ascher and Mark Lutz, Learning Python, Publisher O'Reilly Media.
2. Reema Thareja, "Python Programming using Problem Solving approach", Oxford University press
3. Wes Mckinney "Python for Data Analysis", First edition, Publisher O'Reilly Media.

Reference Books

1. Allen Downey ,Jeffrey Elkner ,Chris Meyers,: Learning with Python, Dreamtech Press
2. David Taieb , "Data Analysis with Python: A Modern Approach " 1st Edition, Packt Publishing

COURSE OBJECTIVES:

- To get a comprehensive knowledge of the architecture of distributed systems.
- To understand the deadlock and shared memory issues and their solutions in distributed environments.
- To know the security issues and protection mechanisms for distributed environments.
- To get a knowledge of multiprocessor operating system and database operating systems.

UNIT I**9**

Architectures of Distributed Systems - System Architecture types - issues in distributed operating systems - communication networks – communication primitives. Theoretical Foundations - inherent limitations of a distributed system – lamp ports logical clocks – vector clocks – casual ordering of messages – global state – cuts of a distributed computation – termination detection. Distributed Mutual Exclusion – introduction – the classification of mutual exclusion and associated algorithms – a comparative performance analysis.

UNIT II**9**

Distributed Deadlock Detection -Introduction - deadlock handling strategies in distributed systems – issues in deadlock detection and resolution – control organizations for distributed deadlock detection – centralized and distributed deadlock detection algorithms –hierarchical deadlock detection algorithms. Agreement protocols – introduction-the system model, a classification of agreement problems, solutions to the Byzantine agreement problem, applications of agreement algorithms. Distributed resource management: introduction-architecture – mechanism for building distributed file systems – design issues – log structured file systems.

UNIT III**9**

Distributed shared memory-Architecture– algorithms for implementing DSM – memory coherence and protocols – design issues. Distributed Scheduling – introduction – issues in load

distributing – components of a load distributing algorithm – stability – load distributing algorithm – performance comparison – selecting a suitable load sharing algorithm – requirements for load distributing -task migration and associated issues. Failure Recovery and Fault tolerance: introduction– basic concepts – classification of failures – backward and forward error recovery, backward error recovery- recovery in concurrent systems – consistent set of check points – synchronous and asynchronous check pointing and recovery – check pointing for distributed database systems- recovery in replicated distributed databases.

UNIT IV

9

Protection and security -preliminaries, the access matrix model and its implementations.-safety in matrix model- advanced models of protection. Data security – cryptography: Model of cryptography, conventional cryptography- modern cryptography, private key cryptography, data encryption standard- public key cryptography – multiple encryption – authentication in distributed systems.

UNIT-V

9

Multiprocessor operating systems - basic multiprocessor system architectures – inter connection networks for multiprocessor systems – caching – hypercube architecture. Multiprocessor Operating System - structures of multiprocessor operating system, operating system design issues- threads- process synchronization and scheduling.

Total Hours 45

TEXT BOOK

1. Mukesh Singhal, Niranjan G.Shivaratri, "Advanced concepts in operating systems: Distributed, Database and multiprocessor operating systems", TMH, 2001

REFERENCES

1. Andrew S.Tanenbaum, "Modern operating system", PHI, 2003
2. Pradeep K.Sinha, "Distributed operating system-Concepts and design", PHI, 2003.
3. Andrew S.Tanenbaum, "Distributed operating system", Pearson education, 2003.

COURSE OBJECTIVE:

To develop the skills of the students in the concepts of Statistics and Numerical Methods. The course will also serve as a prerequisite for post graduate and specialized studies and research.

UNIT- I INTRODUCTION TO STATISTICS**15**

Introduction to statistics -Measures of Central Tendency: Mean, Median, Mode-Measures of Dispersion: Range, Quartile Deviation, Mean Deviation, Standard Deviation and Coefficient of Variation.

UNIT-II CORRELATION AND REGRESSION ANALYSIS**15**

Correlation: Types of Correlation-Methods of studying correlation- Scatter diagram method, Karl Pearson's Coefficient of correlation, Spearman's Rank Correlation Coefficient. Regression: Regression Lines and Regression equations - simple problems.

UNIT-III TESTING OF HYPOTHESIS**15**

Introduction- Concept of Sampling and Sampling Distribution –Parameter and Statistics- Standard error – Tests of Significance for small samples : t-test for Single mean - difference of means , F-test(variance –Ratio test) , Chi-Square tests for Goodness of Fit and test for independence of attributes in contingency table.

UNIT-IV ALGEBRAIC AND TRANSCENDENTAL EQUATIONS**15**

Roots of equations: Graphical Method- Bisection Method- False position Method – Newton – Raphson's Method- Secant Method- Algebraic Equations: Gauss Elimination Method- Gauss-Jordan Method- Matrix Inverse Method- Gauss-Seidel Method.

UNIT V NUMERICAL DIFFERENTIATION AND INTEGRATION**15**

Numerical Differentiation- Errors in Numerical Differentiation-Cubic Spline Method- Numerical Integration- Trapezoidal Rule-Simpson's 1/3 and 3/8 Rules- Romberg Integration- Ordinary Differential Equations- Taylor's Series Method- Euler's Method- RungeKutta 2nd and 4th Order Methods.

Total No of Hours : 75

COURSE OUTCOMES:

On completion of this course, the students will be able to:

CO1. Understand the key terminology, concepts tools and techniques used in statistical analysis

CO2. Evaluate the underlying assumptions of analysis tools of correlation and regression

CO3. Understand the issues surrounding techniques and significance of testing of hypothesis

CO4. Analyze the uses and limitations and applications of algebraic and transcendental equations

CO5 Analyze the utilization of differentiation and integration

TEXT BOOKS

1.S.P.Gupta, Statistical Methods, Sultan Chand & Sons, 35th Revised Edition,2007.

(Unit I,II,III)

2. S. Arumugam, A. Thangapandi Isaac and A. Somsundaram, Numerical Methods, Scitech Publications India Pvt. Ltd.2001.(Unit IV,V)

REFERENCE BOOKS:

1. P.R. Vital and V. Malini, Statistical and Numerical Methods, Margham Publications, 1st Edition,2007.

2. A. Singaravelu, Numerical Methods, Meenakshi Agency, 2008

WEB SOURCES

1. <https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/IntroductoryBusinessStatistics-OP.pdf>
2. <http://www.ddegjust.ac.in/studymaterial/mcom/mc-106.pdf>

COURSE OBJECTIVES:

- To implement the python programming features in practical applications.
- To write, test, and debug simple Python programs.
- To implement Python programs with conditionals and loops.
- Use functions for structuring Python programs.
- Represent compound data using Python lists, tuples, dictionaries , Files and modules.

LIST OF PROGRAMS:

1. Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the five subjects are to be input by user. Assign grades according to the following criteria: Grade A: Percentage ≥ 80 Grade B: Percentage ≥ 70 and < 80
Grade C: Percentage ≥ 60 and < 70 Grade D: Percentage ≥ 40 and < 60
Grade E: Percentage < 40
2. Program, to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
3. Program to display the first n terms of Fibonacci series.
4. Program to find factorial of the given number using recursive function.
5. Write a Python program to count the number of even and odd numbers from array of N Nos.
6. Python program to reverse a given string and check whether the give string is palindrome or not.
7. Write a program to find sum of all items in a dictionary.
8. Write a program for finding largest number in a list.
9. Write a program for adding Tuple to List and vice – versa.
10. Write a program to illustrate packages.
11. Write a program for selection sort.
12. Write a program to read character by character and word by word from a file .

Total No of Hours :30

COURSE OUTCOMES:

On Completion of this course, the students can able to,

CO1: Develop the numeric or real life application problems and solve them.

CO2: Write simple Python programs using control statements.

CO3: Write Programs using packages, sets , dictionaries & tuples.

CO4: Apply a solution clearly and accurately in a program using Python.

CO5: Apply the best features available in Python to solve the situational problems.

TEXT BOOKS:

1. Charles Dierbach, “Introduction to Computer Science using Python - A computational Problem solving Focus”, Wiley India Edition, 2015.

REFERENCE BOOKS:

1. Timothy A. Budd, “Exploring Python”, Tata MCGraw Hill Education Private Limited 2011, 1st Edition.

2 . Ch Satyanarayana M Radhika Mani, B N Jagadesh, “Python programming”, Universities Press 2018.

WEBSITE

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com
4. www.geeksforgeeks.org

WEB SOURCE

1. <http://interactivepython.org/courselib/static/pythonds>
2. <http://docs.python.org/3/tutorial/index.html>
3. <https://www.w3schools.com/python/default.asp>
4. https://www.tutorialspoint.com/python3/python_tutorial.pdf

COURSE OBJECTIVES:

- This course introduces the basic concepts of Linux programming.
- This course practices the student to write program in Linux.
- This course helps the programmers to code various CPU scheduling algorithms
- This course helps the students to create a productive UNIX environment

LIST OF EXPERIMENTS:

1. Write a script that ask for users age. If its equal to or higher than 18 , print a message saying this user is allowed to drive any vehicle. If the user age is below 16 print a message telling the user how many years he/she as to wait before legally being allowed to drive.
2. Use an if/then /else construct that determines Leap year or not
3. Check whether the given number is Armstrong.
4. Write a shell script for factorial.
5. Generate a shell script of Fibonacci series and its summation.
6. Check whether the given number is prime or not.
7. Accept any number of arguments and prints them in the reverse order.
8. Process Scheduling Round Robin
9. Process scheduling FCFS
10. Process Scheduling Least Frequency used.

Total No of Hours : 30 Hrs

COURSE OUTCOMES:

On Completion of this course, the students can able to

CO1: Develop the concept of Linux.

CO2: Write Linux Programs using Control structures.

CO3: Build programs with Linux

CO4: Build program for various CPU scheduling process.

CO5: ability to understand the Scheduling process.

TEXT BOOKS:

1. Linux: The Complete Reference, Sixth Edition Paperback – 1 July 2017, by Richard Petersen (Author)

REFERENCE BOOKS:

2. Linux With Operating System Concepts 2014 Edition by Richard Fox , Apple Academic Press Inc.

WEBSITE

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com
4. www.geeksforgeeks.org

WEB SOURCE

1. <https://www.tutorialspoint.com/unix/index.htm>

COURSE OVERVIEW:

The course introduces main concepts of networking; application areas; classification; reference models; transmission environment; technologies; routing algorithms; IP, UDP and TCP protocols; reliable data transferring methods; application protocols; network security; management systems; perspectives of communication networks. The course structure consists of lectures, tutorials, laboratory works in computer classroom and individual work.

UNIT - I INTRODUCTION:**9**

Network applications, network hardware, network software, reference models: OSI, TCP/IP, Internet, Connection oriented network - X.25, frame relay. **THE PHYSICAL LAYER:** Theoretical basis for communication, guided transmission media, wireless transmission, the public switched telephone networks, mobile telephone system.

UNIT - II THE DATA LINK LAYER:**9**

Design issues, error detection and correction, elementary data link protocols, sliding window protocols, example data link protocols - HDLC, the data link layer in the internet. **THE MEDIUM ACCESS SUBLAYER:** Channel allocations problem, multiple access protocols, Ethernet, Data Link Layer switching, Wireless LAN, Broadband Wireless, Bluetooth

UNIT - III THE NETWORK LAYER:**9**

Network layer design issues, routing algorithms, Congestion control algorithms, Internetworking, the network layer in the internet (IPv4 and IPv6), Quality of Service.

UNIT – IV THE TRANSPORT LAYER:**9**

Transport service, elements of transport protocol, Simple Transport Protocol, Internet transport layer protocols: UDP and TCP.

UNIT - V THE APPLICATION LAYER:**9**

Domain name system, electronic mail, World Wide Web: architectural overview, dynamic web document and http. **APPLICATION LAYER PROTOCOLS:** Simple Network Management Protocol, File Transfer Protocol, Simple Mail Transfer Protocol, Telnet.

TEXT BOOKS:

1. A. S. Tanenbaum (2003), Computer Networks, 4th edition, Pearson Education/ PHI, New Delhi, India.

REFERENCE BOOKS:

1. Behrouz A. Forouzan (2006), Data communication and Networking, 4th Edition, Mc Graw-Hill, India.

2. Kurose, Ross (2010), Computer Networking: A top down approach, Pearson Education, India

COURSE OBJECTIVES:

To identify the scope and essentiality of Data Mining. To analyze data, choose relevant models and algorithms for respective applications. To study the spatial and web data mining. To develop a research interest towards advances in data mining.

UNIT I INTRODUCTION 09

Data mining – Functionalities – Classification – Introduction to Data Warehousing – Data Preprocessing : Preprocessing the Data – Data cleaning – Data Integration and Transformation – Data Reduction

UNIT II DATA MINING, PRIMITIVES, LANGUAGES AND SYSTEM ARCHITECTURE 09

Data Mining – Primitives – Data Mining Query Language,. Architectures of Data mining Systems. Concept Description, Characterization and Comparison: Concept Description, Data Generalization and Summarization, Analytical Characterization, Mining Class Comparison – Statistical Measures

UNIT III MINING ASSOCIATION RULES 09

Basics Concepts – Single Dimensional Boolean Association Rules From Transaction Databases, Multilevel Association Rules from transaction databases – Multi dimension Association Rules from Relational Database and Data Warehouses.

UNIT IV CLASSIFICATION AND PREDICTION 09

Introduction – Issues – Decision Tree Induction – Bayesian Classification – Classification of Back Propagation. Classification based on Concepts from Association Rule Mining – Other Methods. Prediction – Introduction – Classifier Accuracy

UNIT V CLUSTER ANALYSIS 09

Introduction – Types of Data in Cluster Analysis, Partitioning Methods – Hierarchical Methods Density Based Methods – GRID Based Method – Model based Clustering Method

Total No of Hours : 60

COURSE OUTCOMES:

On completion of this course, the students will be able to:

- CO1: Apply data mining techniques to solve problems in other disciplines in a mathematical way.
- CO2: Understand data mining strengths and weaknesses
- CO3: Understand the basic principles in data mining.
- CO4: Define data warehousing and knowledge discovery process
- CO5: Identify the key processes of data mining,

TEXT BOOK:

1. J.Han and M. Kamber,2001,Data Mining Concepts and Techniques,Harcourt India Pvt. Ltd - New Delhi.

REFERENCE BOOK

1. K.P. Soman , ShyamDiwakar, V.Ajay ,2006, Insight into Data Mining Theory and Practice, Prentice Hall of India Pvt. Ltd - New Delhi.

WEB SITES

1. www.academicpress.com
2. www.mkp.com
3. Www.w3schools.com
4. Www.tutorialspoint.com
5. <https://en.wikipedia.org>
6. Www.geeksforgeeks.org
7. www.investopedia.com
8. www.guru99.com

WEB SOURCES

1. https://vssut.ac.in/lecture_notes/lecture1428550844.pdf
2. <https://netflixsub.com/data-mining-and-warehousing-mcq-questions-bank/>
3. https://www-users.cs.umn.edu/~kumar001/dmbook/dmslides/chap1_intro.pdf

**DISCIPLINE SPECIFIC
ELECTIVES
(DSE)**

COURSE OBJECTIVE:

To study and understand the concepts of identify web designing techniques, understand blocks and architecture of RWD, Identify the develop environment, Create media queries and set viewport settings, Add fluidity to a website, Identify the different types of Java script Libraries, Manipulate and traverse HTML DOM using JQuery, Implement AJAX functionality, create websites using twitter bootstrap, create web workers. It is used to **enhance the Employability.**

COURSE OUTCOME:

After completing this course, the students will be able to:

CO1: Develop responsive web site that adopt their structure according to the device on which they are accessed

CO2: Develop responsive websites in a shorter period of time using **twitter bootstrap**

CO3: Develop cross-platform web applications using JQuery Mobile

CO4: Implementing **Ajax** Functionality using JQuery

CO5: Develop new project using **JQuery mobile** application.

UNIT I HTML UNDERSTANDING**12**

Identify the web designing techniques-understanding building blocks and the architecture of RWD- Identify the Development Environment-**Applying styles** to selective Elements-Applying effects to Html Elements- Using Custom Fonts-Introducing to media query-Introducing to view port

UNIT II ADDING FLUIDITY TO A WEBSITE, JAVASCRIPT AND JQUERY**12**

Understanding Fluid Grids-Using angular-**Using Knockout**-Manipulating Html Elements-Traversing DOM

UNIT III EVENT DRIVEN PROGRAMMING WITH JQUERY AND AJAX USING TWITTER BOOTSTRAP AND WORKING WITH JQUERY**12**

Implementing JQuery Elements- Implementing **Ajax Functionality** using JQuery-Introducing Bootstrap- Creating JQuery mobile application-Enhancing a JQuery Mobile Application

UNIT IV: CREATING ADVANCE JQUERY MOBILE PAGES**12**

Working with List Views –Implementing touch and **scroll Events**

UNIT V INTRODUCING WEB WORKERS**12**

Using **web workers** in a web page

Total: 60 hours

Reference Books:

1. Ethan Marcotte, "Responsive web design", ISBN: 978-1-9375571-8-8 Published: First Ed. Jun 7, 2011; Second Ed. Dec 2, 2014.
2. Ben Frain, " Responsive Web Design with HTML5 and CSS3" – Illustrated Edition

COURSE OBJECTIVE:

To study and understand the concepts of the role data structure and algorithms in problem solving through computers, identify the techniques to design algorithms and measure their efficiency, sort data by using bubble sort, insertion sort and quick sort, search data by using linear search and binary search techniques, store and search data by using hashing, solve programming problems by using linked list, solve problems by using stacks and queues, solve programming problems by using trees. It is used to **enhance the Employability.**

COURSE OUTCOME:

After completing this course, the students will be able to:

CO1: Develop skills for effective data representation to **build efficient programs**

CO2: Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are
Represented in memory and used by algorithms

CO3: Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs.

CO4: Write programs that use arrays, records, linked structures, **stacks, queues**, trees, and graphs and
Demonstrate different methods for traversing trees

CO5: Compare and contrast the benefits of dynamic and static data structures implementations

UNIT I INTRODUCING ALGORITHMS AND DATA STRUCTURES 12

Exploring the role of algorithms and **data structures** – Designing algorithms and measuring their Efficiency

UNIT II IMPLEMENTING SORTING ALGORITHMS 12

Sorting Data- Sorting Data by using **Bubble sort**- sorting data by using insertion sort- sorting data by using quick sort

UNIT III IMPLEMENTING SEARCHING ALGORITHMS 12

Performing Linear Search- Performing **Binary search**- Implementing Hashing

UNIT IV SOLVING PROGRAMMING PROBLEMS USING LINKED LISTS 12

Introduction to linked list – Implementing to **singly linked list** – Implementing to Doubly Linked List

UNIT V SOLVING PROGRAMMING PROBLEMS USING STACKS AND QUEUES 12

Solving programming problems by using stacks – Solving Programming problems by using **Queues**-
Storing data in a tree implementing a binary tree- Implementing the binary search tree.

Total: 60 hours

Reference Books

1. An Introduction to Data Structures with Applications. by Jean-Paul Tremblay & Paul G. Sorenson Publisher-Tata McGraw Hill.
2. Data Structures using C & C++ -By Ten Baum Publisher – Prentice-Hall International.
3. Fundamentals of Computer Algorithms by Horowitz, Sahni,Galgotia Pub. 2001 ed.
4. Fundamentals of Data Structures in C++-By Sartaj Sahani.
5. Data Structures: A Pseudo-code approach with C -By Gilberg & Forouzan Publisher-Thomson Learning

COURSE OBJECTIVE:

- This course introduces the fundamental concepts of digital logic.
- This subject deals various number system, code conversions and Boolean algebra.
- To learn the universal gates, flip flops and registers.

UNIT I NUMBER SYSTEM AND CODES**09**

Number System : Binary to decimal, Binary to Octal, Binary to Hexadecimal, Decimal to Binary, Decimal to Octal, Decimal to Hexadecimal, Octal to Binary-Octal to Decimal, Octal to Hexadecimal, Hexadecimal to Binary , Hexadecimal to Decimal , Hexadecimal to Octal - Binary Codes – Complements: r 's Complement , $(r-1)$'s Complement ,Subtraction using Complements -Code Conversion - Digital Logic: Logic Gates – Truth Tables – Universal Gates.

UNIT II BOOLEAN ALGEBRA**09**

Boolean algebra: Boolean Laws , Theorems & Postulates – Simplification of Boolean Functions – Minterms - Maxterms – SOP – POS – Duality and Complements – Canonical Form of Expression- Karnaugh-Map (up to 5 variables) – Binary Addition – Binary Subtraction.

UNIT III COMBINATIONAL CIRCUITS**09**

Combinational Circuits : Introduction -Adders , Half-Adder , Full-Adder – Subtractor ,Half-Subtractor -Full-Subtractor – Decoder – De-Multiplexer – Encoder - Multiplexer – Code Binary Parallel Adder – Code Converter – Parity bit Generators & Checker.

UNIT IV SEQUENTIAL CIRCUITS**09**

Sequential Circuits: Introduction – Flip-Flops - Basic RS Flip-Flop, Clocked RS Flip-Flop, JK Flip-Flop, D Flip Flop, T Flip-Flop & Master – Slave Flip Flop.

Counters, Design of Counters -Asynchronous Counters: Ripple Counter – Synchronous Counters – Registers - Shift Registers – RAM – ROM - Types of ROMs – Types of RAMs.

Total: 45 Hours

COURSE OUTCOMES

On completion of this course, the students will be able to:

CO1: Demonstrate logic design of computer and digital system design.

CO2: Understand Sequential Logic Circuits.

CO3: Understand Combinational Logic Circuits.

CO4: Define the concepts of digital Number Systems.

CO5: Describe digital logic design and apply it to solve real problems.

TEXT BOOK

1. M.Moris Mano, Digital Logic and Computer Design, PHI, 2001.

REFERENCE BOOKS

1. D.P.Leach & A.P. Malvino, Digital Principles and Applications – TMH – Fifth Edition.
2. T.C.Bartee, Digital Computer Fundamentals, 6th Edition, Tata McGraw Hill, 2001.

WEB SITES

1. www.academicpress.com
2. www.mkp.com
3. Www.w3schools.com
4. Www.tutorialspoint.com
5. <https://en.wikipedia.org>
6. Www.geeksforgeeks.org
7. www.guru99.com

WEB SOURCES :

1. file:///C:/Users/jvip/OneDrive/Desktop/NET%202021/91573-00_DigitalLogic Fundamentals SW_ED4_PR2_web.pdf
2. <https://www.uou.ac.in/old-papers/june-2019/BCA-01.pdf>
3. [https://mrcet.com/downloads/digital_notes/IT/DIGITAL%20LOGIC%20DESIGN%200\(R17A0461\).pdf](https://mrcet.com/downloads/digital_notes/IT/DIGITAL%20LOGIC%20DESIGN%200(R17A0461).pdf)

COURSE OBJECTIVE

- The main objective is to introduce IT in a simple language to all undergraduate students, regardless of their specialization.
- It will help them to pursue specialized programs leading to technical and professional careers and certifications in the IT industry.
- The focus of the subject is on introducing skills relating to IT basics, computer applications, programming, interactive medias, Internet basics etc.
- After completing the course the incumbent is able to the use the computer for basic purposes of preparing his personnel/business letters, viewing information on Internet (the web), sending mails, using internet banking services etc.

UNIT I: INTRODUCTION TO COMPUTERS

09

Introduction, Definition, Characteristics of computer, Evolution of Computer, Block Diagram Of a computer, Generations of Computer, Classification of Computers, Applications of Computer, Capabilities and limitations of computer.

UNIT II: BASIC COMPUTER ORGANIZATION

09

Role of I/O devices in a computer system. Input Units: Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, Output Units: Monitors and its types. Printers: Impact Printers and its types. Non- Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.

UNIT III: STORAGE FUNDAMENTALS

09

Primary Vs Secondary Storage, Data storage & retrieval methods. Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives.

UNIT IV: SOFTWARE

09

Software and its needs, Types of S/W. System Software: Operating System, Utility Programs. Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. Application S/W and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w

UNIT V: INTRODUCTION TO INTERNET AND COMPUTER SECURITY 09

Basic of Computer Networks; LAN, WAN; Concept of Internet; Applications of Internet; Connecting to Internet, ISP, World Wide Web; Web Browsing Software, Search Engines, Understanding URL, Domain name; IP Address; Basics of E-Mail. Introduction to Computer Security: Security Threat and Security Attack, Malicious Software, Security Mechanisms (Cryptography, Digital Signature, Firewall, Users Identification and Authentication, Intrusion Detection Systems);

Total No Of Hours: 45

COURSE OUTCOME

At the end of this course, student should be able to

- CO1: Sketch the software and storage requirements.
- CO2: Interpret the issues related to information security.
- CO3: Understand the basis of computer networks.
- CO4: Understanding of personal computers and their operations.
- CO5: Define basic concepts and terminology of information technology.

TEXT BOOKS:

1. "Introduction to Computers ", Peter Norton ,Sixth Edition
2. New Perspectives on the Internet, Comprehensive, Sixth Edition, Schneider and Evans, 2007, ISBN: 1-4188-6071-9

REFERENCE BOOK:

1. Introduction to Information Technology by V. Rajaraman,Third Edition
2. Computer Fundamentals : Concepts, Systems & Applications- 8th Edition by PritiSinha,Pradeepp.K.Sinha

3. The Internet Book: Everything You Need to Know About Computer Networking and How the Internet Works by Douglas.E.Cornier

WEB SITES

1. www.academicpress.com
2. www.mkp.com
3. Www.w3schools.com
4. Www.tutorialspoint.com
5. <https://en.wikipedia.org>
6. Www.geeksforgeeks.org
7. www.investopedia.com
8. www.guru99.com

WEB SOURCES

1. <http://teamslive.com/DOWNLOADS/Bharathiar%20University%20Study%20Materials/UG/B.Com%20Computer%20Application/First%20Year/Introduction%20to%20Information%20Technology.pdf>
2. <https://www.slideshare.net/adpafit/introduction-to-information-technology-lecture-1>
3. <https://www.nagarjunauniversity.ac.in/ugsyllabus/bcasyll.pdf>
4. <https://slideplayer.com/slide/12430457>

DSE005 INTRODUCTION TO DATA SCIENCE 3 0 0 3

COURSE OBJECTIVES:

Building the fundamentals of data science. Imparting design thinking capability to build big-data. Developing design skills of models for big data problems. Gaining experience in programming tools for data sciences. Empowering students with tools and techniques used in data science. Understand the basic concepts of data analytics & familiar with the data analytics life cycle developing skills for data preprocessing, model creations and visualizing the results.

UNIT I : INTRODUCTION 09

Data science – Terminology Related with Data Science – Methods of Data Repository – Methods of Data Repository – Personnel Involved with Data Science – Types of Data – The Data Science Process (DSP)

UNIT II DATA ANALYSIS AND EXPLORATION 09

AI, Machine Learning and Data Science – Data Science Classification – Data Science Algorithms – Data Preparation – Data Modelling - Data Preparation – Data Modelling - Data Exploration – Exploratory Data Analysis – Principal Component Analysis – Datasets

UNIT – III DATA VISUALIZATION 09

Descriptive Statistics: Estimation – Classification of Visualization Methods – Composition – Comparison - Statistical Inference: Introduction – Statistical Inference – Measuring the Variability in Estimates – Hypothesis Testing.

UNIT – IV REGRESSION CLASSIFICATION 09

Regression Analysis: Linear Regression – Logistic Regression - Decision Tree - Rule Induction – k-Nearest Neighbors- Random Forest – Support Vector Machine

UNIT – V ASSOCIATION ANALYSIS & CLUSTERING 09

Mining Association Rules – Apriori algorithm - k-Means Clustering – DBSCAN.

Total No of Hours: 45

On completion of this course, the students will be able to:

CO1: Explain clustering and association analysis.

CO2: Explain Regression and classification algorithm.

CO3: Understand the classification and various methods to visualize the data.

CO4: Describe the difference between small data and big data.

CO5: Define the characteristics of data set & Analyze the data.

TEXT BOOKS:

1. [V.K. Jain](#), Data Science and Analytics (with Python, R and SPSS Programming), [KHANNA PUBLISHING HOUSE](#), 2018, Reprint 2019.
2. [David Paper](#), Data Science Fundamentals for Python and MongoDB, [Apress](#), 2018
3. [Vijay Kotu](#), [Bala Deshpande](#), Data Science Concepts and Practice, [Elsevier Science](#) 2018

REFERENCE BOOKS

1. V.K. Jain, Big Data and Hadoop, Khanna Book Publishing, Delhi
2. [Laura Igual](#), [Santi Seguí](#), [Eloi Puertas](#), [Petia Radeva](#), [Oriol Pujol](#), [Sergio Escalera](#), [Francesc Dantí](#), [Lluís Garrido](#) Introduction to Data Science - A Python Approach to Concepts, Techniques and Applications, [Springer International Publishing](#), 2017
3. [Ivo D. Dinov](#), Biomedical and Health Applications Using R, [Springer International Publishing](#), 2018

WEB SITES

1. [Www.w3schools.com](http://www.w3schools.com)
2. [Www.tutorialspoint.com](http://www.tutorialspoint.com)
3. <https://en.wikipedia.org>
4. [Www.geeksforgeeks.org](http://www.geeksforgeeks.org)
5. www.investopedia.com
6. www.guru99.com

WEB SOURCES

1. <https://nathancarter.github.io/MA346-course-notes/build/html/chapter-1-intro-to-data-science.html>
2. <http://bedford-computing.co.uk/learning/wp-content/uploads/2016/09/introducing-data-science-machine-learning-python.pdf>
3. <https://www.objectivequiz.com/objective-questions/computer-science/data-science>

COURSE OBJECTIVES

To facilitate students to understand android SDK. To help students to gain a basic understanding of Android application development. To inculcate working knowledge of Android Studio development tool

UNIT – I INTRODUCTION 09

Introduction to Android: The Android Platform-Android SDK-Eclipse Installation- Android Installation-Building First Android application- Understanding Anatomy of Android Application.

UNIT –II ANDROID APPLICATION DESIGN 09

Android Application Design Essentials: Anatomy of an Android applications- Android terminologies-Application Context- Activities- Services- Intents- Receiving and Broadcasting Intents-Using Intent Filter-Permissions.

UNIT –III USER INTERFACE DESIGN 09

Android User Interface Design Essentials: User Interface Screen elements- Designing User Interfaces with Layouts- Drawing and Working with Animation.

UNIT – IV TESTING 09

Testing Android applications- Publishing Android application- Using Android preferences- ManagingApplication resources in a hierarchy- working with different types of resources.

UNIT – V API 09

Using Common Android APIs: Using Android Data and Storage APIs- Managing data using SQLite-Sharing Data between Applications with Content Providers-Deploying Android Application to the World.

Total No of Hours :45

COURSE OUTCOMES

At the end of this course, students will be able to:

CO1: Understand applications to the Android marketplace for distribution.

CO2: Explain the primary purpose of mobile applications for the Android operating system that use basic and advanced phone features,

CO3: Understand rapid prototyping techniques to design and develop sophisticated mobile interfaces,

CO4: Describe mobile applications on their design pros and cons,

CO5: Define various concepts of mobile programming that make it unique from programming for other platforms,

TEXT BOOKS:

1. T1. Lauren Darcey and Shane Conder, “Android Wireless Application Development”, Pearson Education, 2nd ed. (2011)

REFERENCE BOOKS:

1. Reto Meier, “Professional Android 2 Application Development”, Wiley India Pvt Ltd
2. Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd
3. Android Application Development All in one for Dummies by Barry Burd, Edition: I

WEB SITES

1. [Www.w3schools.com](http://www.w3schools.com)
2. [Www.tutorialspoint.com](http://www.tutorialspoint.com)
3. <https://en.wikipedia.org>
4. [Www.geeksforgeeks.org](http://www.geeksforgeeks.org)
5. www.investopedia.com
6. www.guru99.com

WEB SOURCES

1. <https://www.cs.cmu.edu/~bam/uicourse/830spring09/BFeiginMobileApplicationDevelopment.pdf>
2. <https://mrcet.com/pdf/Lab%20Manuals/IT/R15A0563%20MAD.pdf>
3. <https://www.mediapiac.com/uploads/conference/presenters/documents/17/8.pdf>
4. <https://lecturenotes.in/subject/465/mobile-application-development>

COURSE OBJECTIVE:

To impart knowledge in concepts and tools of Operations Research; To understand mathematical models used in Operations Research; To apply these techniques constructively to make effective business decisions.

UNIT I INTRODUCTION TO OPERATION RESEARCH**9**

Introduction: Definition- Scope of OR in Business - Linear Programming Problems – Formulation – Graphical method of solution- Standard form of LPP- Canonical form of LPP- Simplex method.

UNIT II TRANSPORTATION AND ASSIGNMENT PROBLEMS**9**

Transportation Problems: Introduction-Balanced and Unbalanced Transportation Problems- IBFS for finding North West Corner Rule-Least Cost Method- Vogel's Approximation Method- MODI Method. Assignment Problems: Introduction-Balanced and Unbalanced Assignment Problems-Maximization case in Assignment Problems.

UNIT III SEQUENCING PROBLEMS**9**

Sequencing: Introduction- Processing 'n' jobs on 2 machines-Processing 'n' jobs on 3 machines-Processing 'n' jobs on 'm' machines- 2 jobs with 'm' machines

UNIT IV GAME THEORY**9**

Game Theory: Introduction – Two Person Zero Sum Games –Game with Saddle Point-Game without Saddle Point-Solution of 2x2 games without Saddle Point- Dominance Property-Matrix Oddment Method- Graphical Method for 2xn or mx2 games.

UNIT V NETWORK ANALYSIS**9**

Network Analysis: Introduction – Basic Terminologies –Construction of Network- Critical Path method (CPM)- PERT- Float Analysis-Total Float-Free Float-Independent Float-Difference Between CPM and PERT.

Total : 45 HOURS

COURSE OUTCOME:

At the end of the course the students will be able to

CO1: Identify and develop operational research models from the verbal description of the real system.

CO2: Create technique to solve the transportation and assignment problems.

CO3: Develop a report that describes the network model and the solving technique, analyze the results

CO4: Apply the decision-making processes in sequencing problems.

CO5: Apply the decision-making processes in game theory

TEXT BOOKS:

1. P. K. Gupta, Man Mohan, KantiSwarup: "Operations Research", Sultan Chand, 2008.
2. V. K. Kapoor: "Operations Research", Sultan Chand & Sons, 2006
3. J. K. Sharma: Operations Research Theory & Applications, Macmillan India Limited, fifth edition.2013

REFERENCE BOOKS:

1. HamdyTaha, Operations Research, 8th Edition, Pearson Education, 2009.
2. Sharma J.K, Operations Research, 3rd Edition, Macmillan Business Books, 2009.
3. Sundaresan V, Ganapathy K.S, Ganesan K, Resource Management Technique- Lakshmi Publications, 2003.
4. Kantiswaroop, Gupta P. K, Man Mohan, Operations Research, 14th Edition, Sultan Chand & Sons, 2008.
5. Kalavathy S, Operations Research, 2nd Edition, Vikas Publications, 2009.

WEBSITES

1. Www.w3schools.com
2. Www.tutorialspoint.com
3. <https://en.wikipedia.org>
4. Www.geeksforgeeks.org
5. www.investopedia.com
6. www.guru99.com

WEB SOURCES

1. <https://www.bbau.ac.in/dept/UIET/EME-601%20Operation%20Research.pdf>
2. <https://thalis.math.upatras.gr/~tsantas/DownloadFiles/Taha%20-%20Operation%20Research%208Ed.pdf>

COURSE OBJECTIVE:

To introduce the major concept areas of language translation and compiler design. To enrich the knowledge in various phases of compiler and its use. To provide essential skills necessary for constructing a compiler.

UNIT – I INTRODUCTION 9

Introduction to Compiling- Compilers – Analysis of the source program – Phases of a compiler – Cousins of the Compiler – Grouping of Phases – Compiler construction tools – Lexical Analysis – Role of Lexical Analyzer – Input Buffering – Specification of Tokens.

UNIT – II SYNTAX ANALYSIS 9

Syntax Analysis- Role of the parser – Writing Grammars – Context-Free Grammars – Top Down parsing – Recursive Descent Parsing – Predictive Parsing – Bottom-up parsing – Shift Reduce Parsing – Operator Precedent Parsing – LR Parsers – SLR Parser – Canonical LR Parser – LALR Parser.

UNIT – III INTERMEDIATE CODE GENERATION 9

Intermediate Code Generation- Intermediate languages – Declarations – Assignment Statements – Boolean Expressions – Case Statements – Back patching – Procedure calls.

UNIT – IV RUN TIME STORAGE 9

Code Generation- Issues in the design of code generator – The target machine – Runtime Storage management – Basic Blocks and Flow Graphs – Next-use Information – A simple Code generator – Peephole Optimization.

UNIT – V CODE OPTIMIZATION 9

Code Optimization and Run Time Environments- Introduction– Principal Sources of Optimization – Optimization of basic Blocks – DAG representation of Basic Blocks - Introduction to Global Data Flow Analysis – Runtime Environments – Source Language issues

– Storage Organization – Storage Allocation strategies – Access to non-local names – Parameter Passing, Error detection and recovery.

Total : 45 HOURS

COURSE OUTCOMES

On completion of this course, the students will be able to:

CO1: Understand the optimization process and various runtime environments.

CO2: Understand the role of the parser, writing grammars, context-free grammars and parsing techniques.

CO3: Define about on compilers, phases of compiler, lexical analysis and token specification.

CO4: Describe about code generations, declarations and Boolean expressions.

CO5: Discuss the issues in the design of code generators and the ability to develop a simple code generator.

TEXT BOOKS:

Alfred V. Aho, Jeffrey D Ullman, “Compilers: Principles, Techniques and Tools”, Pearson Education Asia, 2008

REFERENCE BOOKS:

1. Allen I. Holub “Compiler Design in C”, Prentice Hall of India, 2003.
2. J.P. Bennet, “Introduction to Compiler Techniques”, Second Edition, Tata McGraw-Hill, 2003.

WEBSITES

1. [Www.w3schools.com](http://www.w3schools.com)
2. [Www.tutorialspoint.com](http://www.tutorialspoint.com)
3. <https://en.wikipedia.org>
4. [Www.geeksforgeeks.org](http://www.geeksforgeeks.org)
5. www.investopedia.com
6. www.guru99.com

WEB SOURCES

1. <https://www3.nd.edu/~dthain/compilerbook/>
2. <https://nptel.ac.in/courses/106/104/106104123/>

COURSE OBJECTIVES:

To introduce students to the basic concepts and techniques of Machine Learning. To have a thorough understanding of the Supervised and Unsupervised learning techniques To study the various probability based learning techniques To understand graphical models of machine learning algorithms

UNIT I INTRODUCTION 9

Designing a learning system - Perspectives and Issues in machine learning - Concept learning task - Concept learning as search - Version spaces - Candidate Elimination learning algorithm - Inductive Bias

UNIT II DECISION TREE LEARNING 9

Decision Tree representation - Appropriate Problems for Decision Tree Learning - Basic Decision tree learning algorithm - Hypothesis space search and Inductive Bias in Decision tree learning - Issues in Decision Tree Learning. ANN: Perceptron's - Back propagation Algorithms.

UNIT III BAYESIAN LEARNING 9

Bayes Theorem and Concept learning - Maximum Likelihood and Least Squared error hypothesis - Maximum Likelihood hypotheses for predicting probabilities - Minimum description Length principle - Bayes optimal classifier - Gibbs algorithm - Naïve Bayes classifier - Bayesian Belief networks -EM algorithm.

UNIT IV ANALYTICAL AND INDUCTIVE LEARNING 9

Analytical learning - Explanation based learning - Inductive Analytical approaches to learning - Using prior knowledge to initialize the hypothesis, to alter the search objective and to augment search operators.

UNIT V REINFORCEMENT LEARNING 9

K - nearest neighbor learning - Locally weighted regression - Radial Basis functions - Case based reasoning - Reinforcement learning: Learning task-Q Learning; Q function - Algorithm for learning Q-convergence - Updating sequence - Temporal difference learning.

Total: 45 Hours

COURSE OUTCOME

Students will be able to:

CO1: Classify existing machine learning algorithms.

CO2: Use systems that use the appropriate graph models of machine learning.

CO3: Apply the appropriate machine learning strategy for any given problem.

CO4: Explain supervised, unsupervised or semi-supervised learning algorithms for any given problem.

CO5: Define supervised, unsupervised and semi-supervised learning.

TEXT BOOK:

1. Tom M Mitchell, "Machine Learning", McGraw Hill, 1st Edition, 2003.

REFERENCE BOOKS:

1. Ethem Alpaydin, "Introduction to Machine Learning", MIT Press, 2nd Edition, 2010.
2. Stephan Marsland, "Machine Learning - An Algorithmic Perspective", Chapman and Hall, 1st Edition, 2009.
3. Nils Nilsson, "Introduction to Machine Learning", MIT Press, 1997.
4. Jude Shavil, Thomas G Dietterich, "Readings in Machine Learning", Morgan Kaufmann Publishers, 1990.8. Peter Harrington, "Machine Learning in Action", DreamTech

WEB SITES

1. [Www.w3schools.com](http://www.w3schools.com)
2. [Www.tutorialspoint.com](http://www.tutorialspoint.com)
3. <https://en.wikipedia.org>
4. [Www.geeksforgeeks.org](http://www.geeksforgeeks.org)
5. www.investopedia.com
6. www.guru99.com

WEB SOURCES

1. <https://ai.stanford.edu/~nilsson/MLBOOK.pdf>
2. <https://alex.smola.org/drafts/thebook.pdf>
3. <https://nptel.ac.in/courses/106/105/106105152/>
4. <http://www.cs.cmu.edu/~tom/mlbook.html>

COURSE OBJECTIVE

To impart the knowledge of by the end of the course, students will be able to Understand how blockchain systems (mainly Bitcoin and Ethereum) work,

- To securely interact with them,
- Design, build, and deploy smart contracts and distributed applications,
- Integrate ideas from blockchain technology into their own projects. •

UNIT I: BASICS CONCEPTS 9

Distributed Database, Two General Problem, Byzantine General problem and Fault Tolerance, Hadoop Distributed File System, Distributed Hash Table, ASIC resistance, Turing Complete. • Cryptography: Hash function, Digital Signature - ECDSA, Memory Hard Algorithm, Zero Knowledge Proof.

UNIT II: INTRODUCTION TO BLOCKCHAIN 9

Introduction, Advantage over conventional distributed database, Blockchain Network, Mining Mechanism, Distributed Consensus, Merkle Patricia Tree, Gas Limit, Transactions and Fee, Anonymity, Reward, Chain Policy, Life of Blockchain application, Soft & Hard Fork, Private and Public blockchain.

UNIT III: DISTRIBUTED CONSENSUS 9

Nakamoto consensus, Proof of Work, Proof of Stake, Proof of Burn, Difficulty Level, Sybil Attack, Energy utilization and alternate.

UNIT IV: CRYPTOCURRENCY 9

History, Distributed Ledger, Bitcoin protocols - Mining strategy and rewards, Ethereum - Construction, DAO, Smart Contract, GHOST, Vulnerability, Attacks, Sidechain, Namecoin

Cryptocurrency Regulation: Stakeholders, Roots of Bit coin, Legal Aspects-Crypto currency Exchange, Black Market and Global Economy.

UNIT V: BLOCKCHAIN APPLICATIONS

9

Internet of Things-Medical Record Management System-Blockchain in Government and Blockchain Security-Blockchain Use Cases –Finance Tutorial & Practical: Naive Blockchain construction, Memory Hard algorithm - Hashcash implementation, Direct Acyclic Graph, Play with Go-ethereum, Smart Contract Construction, Toy application using Blockchain, Mining puzzles .

Total : 45 HOURS

COURSE OUTCOMES

CO1: Design, build, and deploy a distributed application.

CO2: Explain design principles of Bitcoin and Ethereum.

CO3: Explain Nakamoto consensus.

CO4: Explain the Simplified Payment Verification protocol.

CO5: List and describe differences between proof-of-work and proof-of-stake consensus.

TEXT BOOK:

1. Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, and Steven Goldfeder. Bitcoin and cryptocurrency technologies: a comprehensive introduction. Princeton University Press, 2016. (Free download available)

REFERENCE BOOKS:

1. Antonopoulos, Mastering Bitcoin: Unlocking Digital Cryptocurrencies

2. Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System

3. DR. Gavin Wood, “ETHEREUM: A Secure Decentralized Transaction Ledger,”Yellow paper.2014.

4. Nicola Atzei, Massimo Bartoletti, and Tiziana Cimoli, A survey of attacks on Ethereum smart contracts

WEBSITES

1. Www.w3schools.com
2. Www.tutorialspoint.com
3. <https://en.wikipedia.org>
4. Www.geeksforgeeks.org
5. www.investopedia.com
6. www.guru99.com

WEBSOURCES

1. <https://www.slideshare.net/asrithak/blockchain-technology-ppt>
2. <https://www.slideshare.net/Mithilevsh/blockchain-technology-181440314>
3. <https://scet.berkeley.edu/wp-content/uploads/BlockchainPaper.pdf>

DSE011

SOFTWARE TESTING

3 0 0 3

COURSE OBJECTIVE

- To describe the principles of system and component testing
- To describe strategies for generating system test cases
- To understand the essential characteristics of tool used for test automation

UNIT I SOFTWARE TESTING TOOLS

9

Building a Software Testing Strategy – Software Testing Design Techniques – Software Testing Tools and Selection of Test Automation Products – Software Testing Lifecycle and Software Testing Process

UNIT II TEST PLANS

9

Testing Effort Estimation and Test Planning – Software Test Effort Estimation Technique – Predevelopment Testing Requirements and Design Phase – Best Practices in Program Phase Unit, System and Integration Testing

UNIT III ISSUES IN TESTING

9

A Case Study on Acceptance Testing – Implementation an Effective Test Management Process –Building an Effective Test Organization – Performance Issues and optimization Techniques

UNIT IV TESTING STRATEGIES

9

Choosing a Load Testing Strategy – Dodging the Bullets – Validating Mission Critical Server Software for Reliability – Probing the Blind Spot –Testing in today’s Business and Usability

Testing of Web based Applications – Testing of Embedded Software System used in Aerospace Applications – Testing Application for Security – Testing Metrics, Best Practices and Benchmarks

Total No of Hours: 45

COURSE OUTCOME

On successful completion of this course, the student should able to:

- CO1: Use testing tools to test software in order to improve test efficiency and Assess software quality and assurance based on standards.
- CO2: Choose of software testing techniques in commercial environments and Test software to meet requirements of quality.
- CO3: Identify the inputs and deliverables of the testing process and work together as a team in preparing a report.
- CO4: Match attributes and assess the quality, reliability and security of software.
- CO5: Describe software testing techniques in commercial environments and assess the adequacy of test suites using control flow, data flow, and program mutation.

TEXT BOOK

1. Software Testing Effective Methods, Tools and Techniques by Renu Rajani and Pradeep Oak Tata McGrawHill

WEB SITES

1. [Www.w3schools.com](http://www.w3schools.com)
2. [Www.tutorialspoint.com](http://www.tutorialspoint.com)
3. <https://en.wikipedia.org>
4. [Www.geeksforgeeks.org](http://www.geeksforgeeks.org)
5. www.investopedia.com
6. www.guru99.com

WEB SOURCES

1. <https://www.softwaretestingclass.com/wp-content/uploads/2016/06/Beginner-Guide-To-Software-Testing.pdf>
2. <https://home.cs.colorado.edu/~kena/classes/5828/s12/lectures/05-introtesting.pdf>
3. <https://digitalpoint.tech/admin/uploads/4346d933bcfa1d59b368d121f6747980.p>

DSE012

FULL STACK DEVELOPMENT

3 0 0 3

COURSE OBJECTIVES:

To get an overview of the full stack software and web development, To understand the object oriented structure and user interface programming through Python and to gain knowledge of web development using Flask Framework and learn the web application deployment in real time scenarios.

UNIT I OBJECT ORIENTED APPROACH IN PYTHON 9

Classes – Class Coding Basics: Instances – Behavior Methods – Operator Overloading – Customizing Behavior Methods – Constructors – Polymorphism – Inheritance.

UNIT II USER INTERFACE APPLICATIONS IN PYTHON AND VERSION CONTROL SYSTEM 9

Wxpython Installation – Menus and Toolbars – Layout Management – Wxpython Events – Wxpython Dialogs – Widgets – Graphics – Collaborative Version Control Systems – Git Commands – Real Time Usage of Git Commands.

UNIT III FLASK FRAMEWORK FOR WEB DEVELOPMENT 9

Flask Basics – Routes – Templates – Control Flow – Inheritance – Forms – Modules – Connection with Databases – Relational Database versus NoSQL – Modeling – Mapping Classes to MongoDB – Building Data Layer with Mongo Engine.

UNIT IV REAL TIME DEPLOYMENT OF WEB APPLICATION 9

Deploy Web Applications with Flask and MongoDB – Example Applications – Blogs – Forums – Auto Evaluation of Student Assignments – Deployment Using AWS or Google Cloud or Heroku.

UNIT V DEPLOYMENT OF SOFTWARE IN LINUX AND WINDOWS PLATFORM 9

Deployment in Ubuntu Distribution – Creation of .Deb Executable File – Deployment in Windows – Creation of Standalone Executable – Test Cases.

Total : 45 HOURS.

Course Outcomes: On completion of the course, the student will be able to:

CO1. Understand the object oriented approach in Python.

CO2. Develop GUI applications with Python.

CO3. Use the collaborative version control system, git.

CO4. Package the developed code in Linux and Windows environment.

CO5. Deploy the developed web application using Flask in real time scenarios such as AWS.

REFERENCES:

1. Mark Lutz, “Learning Python”, Fifth Edition, O’ Reilly 2013.
2. <http://zetcode.com/wxpython/>
3. Scott Chacon and Ben Straub, “Pro Git”, Free e-book under Creative commons, Second Edition, Apress, 2016.
4. Miguel Grinberg, “Flask Web Development Developing Web Applications with Python”, OReilly, 2014.
5. Karl Seguin, “The Little Mongo DB Book”, <https://github.com/karlseguin/the-littlemongodb-book>.
6. Gareth Dwyer, “Flask by Example”, Packt Publishers, 2016.
7. <https://aws.amazon.com/education/awsseduate/>
8. <http://packaging.ubuntu.com/html/packaging-new-software.html>
9. <http://www.pyinstaller.org/> 10. <https://pypi.org/project/py2exe/0.9.2.0/>

DSE013 DATA WAREHOUSING AND DATA MINING TECHNIQUES 3 0 0 3

COURSE OBJECTIVE

To get exposed to the concepts of data warehousing architecture and implementation. To conceptualize data mining and the need for pre-processing and to analyze the mining techniques for realistic data. To implement classification and clustering techniques on large datasets and to identify business applications and trends of data mining.

UNIT I DATA WAREHOUSE 9

Data Warehousing – Operational Database Systems versus Data Warehouses – Multidimensional Data Model – Schemas for Multidimensional Databases – OLAP operations – Data Warehouse Architecture – Indexing – OLAP queries & Tools

UNIT II DATA MINING & DATA PREPROCESSING 9

Introduction to KDD Process – Knowledge Discovery from Databases – Need for Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation.

UNIT III ASSOCIATION RULE MINING 9

Introduction – Data Mining Functionalities – Association Rule Mining – Mining Frequent Item sets with and without Candidate Generation – Mining Various Kinds of Association Rules – Constraint – Based Association Mining.

UNIT IV CLASSIFICATION & PREDICTION 9

Classification versus Prediction – Data Preparation for Classification and Prediction – Classification by Decision Tree – Bayesian Classification – Rule Based Classification – Classification by Back Propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Section.

UNIT V CLUSTERING 9

Cluster Analysis – Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical Methods – Density Based Methods – Grid Based Methods – Model Based Clustering Methods – Clustering High-Dimensional Data – Constraint Based Cluster Analysis – Outlier Analysis.

TOTAL: 45 HOURS

COURSE OUTCOME

CO1: Design, create and maintain data warehouses.

CO2: Apply data mining techniques and methods to large data sets.

CO3: Evaluate various mining techniques on complex data objects.

CO4: Evolve multidimensional intelligent model from typical system.

CO5: Discover the knowledge imbibed in the high dimensional system.

CO6: Understand various tools of data mining and their techniques to solve the real time problems.

REFERENCES:

1. Jiawei Han, Micheline Kamber, "Data Mining Concepts and Techniques", Third Edition, Elsevier, 2012.

2. K. P. Soman, Shyam Diwakar, V. Ajay, "Insight into Data mining Theory and Practice", Eastern Economy Edition, Prentice Hall of India, 2006.

3. G. K. Gupta, "Introduction to Data Mining with Case Studies", Eastern Economy Edition, Prentice Hall of India, Third Edition, 2014.

4. Colleen Mccue, "Data Mining and Predictive Analysis: Intelligence Gathering and Crime Analysis", Second Edition, Elsevier, 2015.

5. Anand Rajaraman, Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press, 2014.

6. Ian H. Witten, Eibe Frank, Mark A. Hall, "Data Mining: Practical Machine Learning Tools and Techniques", Third Edition, Morgan Kaufmann, 2011.

7. George M. Marakas, "Modern Data Warehousing, Mining and Visualization: Core Concepts", Prentice Hall, 2002.

8. Bruce Ratner, "Statistical and Machine Learning Data Mining: Techniques for Better Predictive Modeling and Analysis of Big Data", Second Edition, CRC Press, 2012.

Course objective:

To understand the concepts of multimedia, Learn the processes, mechanics and issues in multimedia platform, Game Design, be exposed to various tools of multimedia, Know about multimedia audio, video & image formats, Learn to shoot ,edit video and delivering to www.

Unit I Introduction to Multimedia**9**

Definitions - CD-ROM and the Multimedia Highway - where to use Multimedia - introduction to Making Multimedia: The stages of a Project - What you need - Macintosh and Windows Production Platforms: The Macintosh Platform - The Windows Multimedia PC platform - Hardware Peripherals Connection - Memory and Storage Devices - Input Devices - Output Hardware - Communication Devices.

Unit II Basic Tools**9**

Text Editing and Word Processing Tools - OCR Software - Painting and Drawing Tools - 3- D Modeling and Animation Tools - Image - Editing Tools - Helpful Accessories - Making Instant Multimedia: Linking Multimedia Objects - Office Suites - Word Processors - Spread sheets - Databases - Presentation Tools. Multimedia Authoring Tools.

Unit III Text**9**

The Power of Meaning - About Fonts and Faces - Using Text in Multimedia - Computers and Text - Font Editing and Design Tools - Hypermedia and Hypertext - Multimedia System Sounds - Digital Audio - Making MIDI Audio - Audio File Formats

Unit IV Images**9**

Making Still Images - Color - Image File Formats. Animation: The Power of Motion - Principles of Animation - Making Animations That Work - Video: Using video - How video works - Broadcast Video Standards - Integrating Computers and Television - Shooting and Editing Video - Video Tips - Recording Formats - Digital Video.

Disc Technology - Wrapping It Up - Delivering on the World Wide Web. Project planning - Estimating - RFPs and Bid proposals - Designing and producing: Designing - Producing - Content and Talent: Acquiring Content - Using content created by others Testing - Preparing for Delivery – Compact.

TOTAL: 45 Hours

COURSE OUTCOME

Upon completion of the course, students will be able to

CO1 Discuss the concepts of multimedia.

CO2 Design the processes, and use mechanics for multimedia platforms.

CO3 Explain the tools of multimedia.

CO4 Know about usage of multimedia audio, video & image formats.

CO5 Know to shoot, edit video and delivering to www.

TEXT BOOKS:

1. Tay Vaughan - Multimedia : Making it work - Fourth Edition - Tata McGraw-Hill Edition - 1999.
2. Walterworth John A - Multimedia Technologies and Application - Ellis Horwood Ltd. - London- 1991.
3. John F Koegel Buford - Multimedia Systems - Addison Wesley - First Indian Reprint - 2000.

REFERENCE BOOK:

1. John F Koegel Buford - Multimedia Systems - Addison Wesley - First Indian Reprint - 2000.
2. Multimedia Systems by Ralf Steinmetz and Klara Nahrstedt.
3. Multimedia Systems, Standards, and Networks” by A Puri and T Chen.

Course Objective:

To study and understand the UNIX architecture, file systems, basic commands. To understand Shell programming and analyze various system calls and processes.

UNIT I: Introduction to UNIX**9**

Architecture of UNIX, Features of UNIX , UNIX Commands – man, echo, printf, script, passwd, uname, who, date, stty, pwd, cd, mkdir, ls, cp, mv, rm, cat, more, wc, lp, od, tar, gzip, env . Environment Variables: PATH, LOGNAME, SHELL, USER.

UNIT II: UNIX Utilities**9**

Introduction to UNIX file system, vi editor, file handling utilities, security by file permissions, process utilities, disk utilities ,Networking commands, unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp, telnet, rlogin Text processing utilities and backup utilities , tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, cpio.

UNIT III: Introduction to Shell**9**

UNIX Session, Standard Streams, Redirection, Pipes, Tee Command, Command Execution, Command Line Editing, Quotes, Command Substitution, Job Control, Aliases, Variables, Predefined Variables, Shell/Environment Customization, Filters, grep, sed, awk, Functions, String Functions, Mathematical Functions, User – Defined Functions, Using System commands in awk, Applications, awk and grep, sed and awk .

UNIT IV: File Management**9**

File Structures, System Calls for File Management – create, open, close, read, write, lseek, link, symlink, unlink, stat, fstat, lstat, chmod, chown, Directory API – opendir, readdir, closedir, mkdir, rmdir, umask

UNIT V: Process Management**9**

Categories of process, Parent & Child process, Zombie and Orphan process, mechanism of init(), termination of a process, process control mechanism

12

Text Books:

1. UNIX and Shell Programming; Behrouz A. Forouzan, Richard F. Gilberg; Thomson
2. UNIX: Concepts and Applications; Sumitava Das; TMH

Reference

1. UNIX for Programmers and Users; Graham Glass, King Ables; Pearson Education
2. UNIX Programming Environment; Kernighan and Pike; PHI/Pearson Education
3. The Complete Reference UNIX; Rosen, Host, Klee, Farber, Rosinski; TMH
4. Your UNIX – The Ultimate Guide; Sumitava Das; TMH
5. Design of UNIX Operating System; Maurice Bach; PHI

COURSE OUTCOME:

At the end of this course the student will be able to

CO1 : Describe the architecture of multi user OS UNIX and its basic features and commands.

CO2 : Interpret and apply UNIX Commands and utilities in Linux/UNIX systems.

CO3 : Illustrate Shell Programming and to write Shell Scripts

CO4 : Design and develop UNIX File I/O operations.

CO5: Ability to understand and interpret UNIX Processes

Course Objective:

To define and highlight importance of software project management. To formulate strategy in managing projects. To estimate the cost associated with a project. To plan, schedule and monitor projects for the risk management. To define the software management metrics. To train software project managers and other individuals involved in software project planning and tracking and oversight in the implementation of the software project management process.

UNIT-I: INTRODUCTION**9**

Introduction to Competencies – Product Development Techniques – Management Skills – Product Development Life Cycle – Software Development Process.

UNIT-II: DOMAIN PROCESSES**9**

Managing Domain Processes – Project Selection Models – Project Portfolio Management – Financial Processes – Selecting a Project Team – Goal and Scope of the Software Project – Project Planning.

UNIT-III: SOFTWARE ESTIMATION**9**

Tasks and Activities – Software Size and Reuse Estimating – The SEI CMM – Problems and Risks – Cost Estimation – Effort Measures –COCOMO. A Regression Model – COCOMO II

UNIT-IV: SCHEDULING ACTIVITIES**9**

Project Management Resource Activities – Organizational Form and Structure – Software Development Dependencies – Brainstorming – Scheduling Fundamentals – PERT and CPM.

UNIT-V: SOFTWARE QUALITY ASSURANCE**9**

Quality Requirements – The SEI CMM – Guidelines – Challenges – Quality Function Deployment – Building the Software Quality Assurance – Plan – Software Configuration Management Principles – Requirements .

Total No. of Periods: 45 HOURS.**Course Outcome:**

CO1: Critically evaluate alternative standards, models and techniques aimed at achieving quality assurance in a variety of software development environments.

CO2: Propose and defend innovative solutions to software quality assurance and measurement problems in the context of various software development environments.

CO3: Interpret and apply various software cost estimation techniques.

CO4: Prepare a software quality plan for a software project - to include sections on change management, configuration management, defect elimination, validation and verification and measurement.

CO5: Discuss the role of software quality assurance in improving the software development process

Text Book:

1. Robert T. Futrell, Donald F. Shafer, Linda I. Safer, “Quality Software Project Management”, Pearson Education, Asia, 2002.

References:

1. PankajJalote, “Software Project Management in Practice”, Addison Wesley, 2002.
2. Hughes, “Software Project Management, 3rdEdition”, Tata McGrawHill, 2004.

COURSE OBJECTIVE

To gather knowledge on quality management, documentation and controlling for software quality. To provide knowledge on standards, models and tools used for quality management. To perform measurement and assessment of software quality. To introduce the basics and necessity of software testing along with software production.

UNIT I INTRODUCTION TO SOFTWARE QUALITY & ARCHITECTURE 9

Need for Software Quality – Quality Challenges – Software Quality Assurance (SQA) – Definition and Objectives – Software Quality Factors – McCall's Quality Model – SQA System and Architecture – Software Project Life Cycle Components – Management of SQA components – Pre-Project Software Quality Components – Contract Review – Development and Quality Plans.

UNIT II SQA COMPONENTS AND PROJECT LIFE CYCLE 9

Software Development Methodologies – Quality Assurance Activities in the Development Process – Verification, Validation and Qualification – Reviews: Objectives – Formal design Review – Peer Review – Quality of Software Maintenance Components – Pre-Maintenance Software Quality Components – Maintenance Software Quality Assurance Tools – Assuring the Quality of External Participants Contributions: Objectives, Types, Risks and Benefits – Tools: CASE Tools and Their Effect on Software Quality.

UNIT III SOFTWARE QUALITY INFRASTRUCTURE 9

Procedures and Work Instructions – Supporting Quality Devices – Templates – Checklists – Staff Training and Certification – Corrective and Preventive Actions – Configuration Management – Software Change Control – Configuration Management Audit – Documentation Control – Storage and Retrieval.

UNIT IV SOFTWARE QUALITY MANAGEMENT, METRICS & STANDARDS 9

Project Process Control – Computerized Tools – Software Quality Metrics – Objectives of Quality Measurement – Process Metrics – Product Metrics – Implementation – Limitations of Software Metrics – Cost Of Software Quality – Classical Quality Cost Model – Extended Model – Application of Cost Model. Quality Management Standards – ISO 9001 And ISO

9000-3 – Capability Maturity Models (CMM & CMMI) – Project Management
Responsibilities – SQA Units and Other Actors in SQA Systems.

UNIT V SOFTWARE TESTING

9

Definition and Objectives – Software Testing Strategies – Software Test Classifications –
White Box Testing: Data Processing, Calculation Correctness Tests, McCabe’s Cyclomatic
Complexity Metrics, Software Qualification and Reusability Testing, Advantages and
Disadvantages of White Box Testing – Black Box Testing: Equivalence Classes for Output
Correctness Tests, Revision Factor Testing Classes, Transition Factor Testing Classes,
Advantages and Disadvantages of Black Box Testing – Implementation: The Testing Process
– Test Case Design – Automated Testing – Alpha and Beta Site Testing Programs.

TOTAL: 45 PERIODS

COURSE OUTCOMES

CO1: Learn document control and manage software quality with the aid of tools and
Standards.

CO2: Distinguish between various software quality models.

CO3: Measure and assess software quality through process and product metrics.

CO4: Distinguish between the software quality standards.

CO5: Perform automated testing using test tools.

CO6: Document the testing procedures.

TEXT BOOK & REFERENCE BOOK:

1. Daniel Galin, “Software Quality Assurance: From theory to implementation”, Pearson Education, 2004.
2. Stephen H. Kan, “Metrics and Models in Software Quality Engineering”, Pearson Education, 2002.
3. Mordechai Ben-Menachem, Garry S. Marliss, “Software Quality”, BSP, Second Edition, 2014.
4. Allan C. Gillies, “Software Quality: Theory and Management”, Thomson Learning, 2003.
5. Glenford J. Myers, Tom Badgett, Corey Sandler, “The Art of Software Testing”, Third Edition, John Wiley & Sons, 2012.
6. Ron Patton, “Software testing”, Second Edition, Pearson Education, 2009.

7. Srinivasan Desikan, Gopaldaswamy Ramesh, “Software Testing – Principles and Practices”, Pearson Education, 2009.

COURSE OBJECTIVE:

The purpose of this course is to impart knowledge on IoT Architecture and various protocols, study their implementations. To incorporate the IOT concepts and develop smart systems

UNIT I – FUNDAMENTALS OF IOT**9**

IoT-An Architectural Overview– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations. 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.

UNIT II – REFERENCE ARCHITECTURE**9**

IoT Architecture-State of the Art – Introduction, State of the art, Reference Model and architecture, IoT reference Model - IoT Reference Architecture- Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views. Real-World Design Constraints- Introduction, Technical Design constraints-hardware is popular again, Data representation and visualization, Interaction and remote control.

UNIT III – IOT DATA LINK LAYER & NETWORK LAYER PROTOCOLS**9**

PHY/MAC Layer(3GPP MTC, IEEE 802.11, IEEE 802.15) – Wireless HART-ZWave - Bluetooth Low Energy- Zigbee Smart Energy-DASH7 - Network Layer-IPv4- IPv6- 6LoWPAN- 6TiSCH-ND-DHCP-ICMP-RPL- CORPL-CARP

UNIT IV – TRANSPORT & SESSION LAYER PROTOCOLS**9**

Transport Layer (TCP, MPTCP, UDP, DCCP, SCTP)-(TLS, DTLS) – Session LayerHTTP, CoAP - XMPP- AMQP - MQTT

UNIT V – SERVICE LAYER PROTOCOLS & SECURITY**9**

Service Layer -oneM2M, ETSI M2M, OMA, BBF – Security in IoT Protocols – MAC 802.15.4 , 6LoWPAN, RPL, Application Layer . Design smart system using IOT components.

Total: 45 HOURS.

COURSE OUTCOMES:

CO1: To Understand the Architectural Overview of IoT

CO2: To Understand the IoT Reference Architecture and Real World Design Constraints

CO3: To Understand the various IoT Protocols (Datalink, Network, Transport, Session, Service)

CO4: To gain knowledge how to design IOT based Applications

CO5: To demonstrate the concepts of networks and sensors in the real time applications

TEXT BOOKS:

1. Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, StamatisKarnouskos, David Boyle, “From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence”, 1st Edition, Academic Press, 2014.

2. Peter Waher, “Learning Internet of Things”, PACKT publishing, BIRMINGHAM – MUMBAI.

3. . Vijay Madiseti and ArshdeepBahga, “Internet of Things (A Hands-onApproach)”, 1 st Edition, VPT, 2014.

REFERENCES:

1. Bernd Scholz-Reiter, Florian Michahelles, “Architecting the Internet of Things”, ISBN 978-3-642-19156-5 e-ISBN 978-3-642-19157-2, Springer

2. Daniel Minoli, “Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications”, ISBN: 978-1-118-47347-4, Wiley Publications

3. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html

COURSE OBJECTIVE:

The course objective is to understand the object orientation software development process, use case model, user interface and various testing methods.

UNIT I INTRODUCTION 9

System Development – Object Basis – Development Life Cycle – Methodologies – Patterns – Unified Approach – UML.

UNIT II USE CASE MODELS 9

Use–Case Models – Object relations – Attributes – Methods – Class and Object responsibilities.

UNIT III CASE DESIGN 9

Design Processes – Design Axioms – Class Design – Object Storage – Object Interpretability – Case Studies.

UNIT IV USER INTERFACE DESIGN 9

User Interface Design – View layer Class – Micro–Level Processes – View Layer Interface – Case Studies.

UNIT V TESTING 9

Quality Assurance Tests – Testing Strategies – Test Cases – test Plants – Continuous testing – Debugging Principles – Measuring User Satisfaction – Case Studies.

Total : 45 HOURS

COURSE OUTCOMES:

At the end of this course the student will be able to

CO1: understand the formal object–oriented analysis and design processes.

CO2: understand the risks inherent to large–scale software development.

CO3: Develop the skills to determine which processes and OOAD techniques should be applied to a given project.

CO4: Develop an understanding of the application of OOAD practices.

CO5: Analyse the various testing strategies in Object oriented software development.

TEXT BOOK:

1. Ali Bahrami, “Object Oriented Systems Development”, McGraw Hill International Edition, 1999.

REFERENCE BOOK:

1. Grady Booch, "Object Oriented Analysis and design", Addison Wesley, 2nd, Edition, 1999.
2. Brett McLaughlin, Gary Pollice, David West "Head First Object-Oriented Analysis and Design- A Brain Friendly Guide to OOA&D", O'Reilly Media, November 2006.
3. Craig Larman " Applying UML and Patterns: An Introduction to Object-oriented Analysis and Design and the Unified Process", Prentice Hall Professional, 2002

COURSE OBJECTIVE:

To understand the basic concepts of Artificial Intelligence, fuzzy systems and NLP. To understand the various search techniques of AI. To analyze the various knowledge representation and their importance. To familiarize the AI programming using PROLOG.

UNIT-I: INTRODUCTION AND PROBLEM SOLVING 9

Various definitions of AI, Introduction to AI applications and AI techniques, Production systems, control strategies, reasoning - forward & backward chaining, Intelligent Agents

UNIT-II: SEARCH AND GAME PLAYING 9

Breadth first search, depth first search, iterative deepening, uniform cost search, hill climbing, simulated annealing, genetic algorithm search, heuristic search, Best first search, A* algorithm, AO* algorithm, Minmax & game trees, refining minmax, Alpha – Beta pruning, constraint satisfaction

UNIT-III: KNOWLEDGE REPRESENTATION 9

Representations and mappings, Approaches to knowledge Representation, Procedural versus Declarative knowledge; Predictive Logic: Representing Simple facts, Instance and Isa relationships in Logic, Proposition versus Predicate Logic, Computable Functions and Predicates- not, Rules of Inferences and Resolution-not, Forward versus Backward Reasoning, Logic Programming and Horn Clauses

UNIT-IV: AI PROGRAMMING LANGUAGES 9

(PROLOG): Introduction, How Prolog works, Backtracking, CUT and FAIL operators, Built –in Goals, Lists, Search in Prolog.

UNIT-V: APPLICATIONS OF ARTIFICIAL INTELLIGENCE 9

Fuzzy sets/systems, Natural language processing, Speech recognition, Computer vision and Expert systems

Total : 45 HOURS.

COURSE OUTCOME:

CO1: Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations.

CO2: Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.

CO3: Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.

CO4: Demonstrate proficiency IN developing applications in an 'AI language'

CO5: Able to apply various searching and game playing techniques.

CO6: Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications.

TEXT BOOK:

1. Stuart Russel and Peter Norvig: Artificial Intelligence – A Modern Approach, 2nd Edition Pearson Education
2. Elaine Rich and Kevin Knight: Artificial Intelligence, Tata McGraw Hill 2nd Ed.

REFERENCE:

1. N.P. padhy: Artificial Intelligence and Intelligent Systems, Oxford Higher Education, Oxford University Press
2. R. Akerkar, Introduction to Artificial Intelligence, Prentice-Hall of India, 2005
3. George F Luger: Artificial Intelligence- Structures and Strategies for complex Problem Solving, 4 th Ed. Pearson Education
4. Ivan Bratko :PROLOG Programming 2nd Ed., Pearson Education

COURSE OBJECTIVE:

This course introduces the basic concepts of Cloud computing. It provides the overview of technologies used in cloud computing. To understand the concept of the cloud architecture and its services. To provide the information on cloud platforms and its security. To get familiar with the tools and software's used in the cloud computing.

UNIT I -FUNDAMENTALS OF CLOUD COMPUTING 12

Cloud computing concepts and its Definition – Characteristics of Cloud -Types of Cloud Services – Parallel computing – Distributed Computing Cloud Types and its Layers

UNIT II- TECHNOLOGIES IN CLOUD 12

Service oriented Architecture – Virtualization – Virtualization types – Implementation Levels of virtualizations -- Web Technology – Multitenant Technology – Service Technology.

UNIT III - ARCHITECTURE OF CLOUD AND ITS SERVICES 12

Cloud Architecture – Public cloud – private cloud – Hybrid cloud – Types of Services in Cloud – Infrastructure as a Service (IAAS) - Platform as a Service (Paas) - Software-as-a- Service (SaaS)- Cloud Storage – pros and cons of Cloud Storage - Virtualization concepts – Disaster Recovery mechanism.

UNIT IV – CLOUD PLATFORMS AND ITS SECURITY 12

Resource management in Cloud – Scheduling – Scheduling Map reduce algorithms - cloud resource management policies - overview of cloud security -Security issues – security principles – security in Virtual machine – standards in Cloud Security.

UNIT V - TOOLS AND SOFTWARE IN CLOUD 12

Apache Cloud Stack- OpenStack- ManageIQ- Cloudify- Hadoop Framework – Google App - Map Reduce – Virtual Box – Nimbus – Develop applications based on tools and software in cloud.

TOTAL: 60 hrs.

COURSE OUTCOMES:

CO-1: To understand the concepts of Cloud computing.

CO-2: To examine various technologies in cloud.

CO-3: To identify and apply knowledge in architectures of infrastructure.

CO-4: To analyze the fundamental and advance architectures in cloud services.

CO-5: To apply the security models in the cloud environment.

TEXT BOOKS:

1. Thomas Erl, Zaigham Mahmood, and Ricardo Puttini, "Cloud Computing: Concepts, Technology and Architecture", Prentice Hall, U.S.A., 2013.

2. Rajkumar Buyya, James Broberg, Andrzej Goscinsky, "Cloud Computing Principles and Paradigms", Wiley India Pvt. Ltd., 2011.

REFERENCE BOOKS:

1. George Reese, "Cloud Application Architectures", Shroff O'Reilly, ISBN: 8184047142, 2009.

2. Michael Miller, "Cloud Computing Web Based Applications That Change The Way You Work and Collaborate Online", Pearson Education, 2009.

3. PrasantaPattnaik, ManasKabat, "Fundamentals of Cloud Computing", S.Chand (G/L) & Company Ltd; First edition (2014).

4. John W.Rittinghouse and James F.Ransome, "Cloud Computing: Implementation, Management, and Security", CRC Press, 2010.

5. Tim Mather, Subra Kumaraswamy, and Shahed Latif, "Cloud Security and Privacy", O'Reilly Media, Inc., 2009.

6. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach", McGraw-Hill Osborne Media, 2009.

COURSE OBJECTIVES:

Be exposed to big data , Learn the different ways of Data Analysis, Be familiar with data streams and Learn the basic understanding of R programming, data structures, functions, how to work with packages, files and know about the data visualization and data management techniques using R tool.

UNIT I: INTRODUCTION TO BIG DATA 9

Analytics – Nuances of big data – Value – Issues – Case for Big data – Big data options Team challenge – Big data sources – Acquisition – Nuts and Bolts of Big data. Features of Big Data -Security, Compliance, auditing and protection - Evolution of Big data – Best Practices for Big data Analytics - Big data characteristics - Volume, Veracity, Velocity, Variety – Data Appliance and Integration tools.

UNIT II: DATA ANALYSIS 9

Evolution of analytic scalability – Convergence – parallel processing systems – Cloud computing –grid computing – map reduce – enterprise analytic sand box – analytic data sets – Analytic methods –analytic tools – Cognos – Microstrategy - Pentaho. Analysis approaches – Statistical significance –business approaches – Analytic innovation – Traditional approaches – Iterative

UNIT III: PREDICTIVE ANALYTICS AND VISUALIZATION 9

Predictive Analytics – Supervised – Unsupervised learning – Neural networks – Kohonen models – Normal – Deviations from normal patterns – Normal behaviours – Expert options – Variable entry - Mining Frequent itemsets - Market based model – Apriori Algorithm – Handling large data sets in Main memory- IBM for Big Data – Map Reduce Framework - Hadoop – Hive - – Sharding – NoSQL Databases - S3 -Hadoop Distributed file systems

UNIT IV: INTRODUCTION TO R 9

Overview of R programming - Evolution of R - Applications of R programming – Basic syntax - Basic Concepts of R, Control flow of R -R packages - Data Reshaping: Joining Columns and Rows in a Data Frame - Merging Data Frames - Melting and Casting.

UNIT V: DATA VISUALIZATION AND DATA MANAGEMENT USING R 9

Data visualization in R and Data Management - Bar Chart, Dot Plot, Scatter Plot (3D), Spinning Scatter

Plots, Pie Chart - Histogram (3D) [including colorful ones], Overlapping Histograms – Boxplot, Plotting with Base and Lattice Graphics Missing Value Treatment - Outlier Treatment - Sorting Datasets - Merging Datasets - Binning variables.

Total =45 HOURS.

COURSE OUTCOME:

CO1: Compare and contrast various soft computing frameworks. CO2:

Design distributed file systems and Apply Stream data model. CO3: To know how to work with files in R.

CO4: To study about data visualization and data management techniques. CO5: Use R to create sophisticated figures and graphs.

TEXT BOOKS:

1. Frank J Ohlhorst, “Big Data Analytics: Turning Big Data into Big Money”, Wiley and SAS BusinessSeries, 2012.
2. Colleen Mccue, “Data Mining and Predictive Analysis: Intelligence Gathering and Crime Analysis”,Elsevier, 2007
3. Michael Berthold, David J. Hand,” Intelligent Data Analysis”, Springer, 2007.
4. Norman Matloff , “The Art of R Programming-a tour of statistical software design”, William Pollock, 2011.
5. Paul Teetor “R Cookbook: Proven Recipes for Data Analysis, Statistics, and Graphics”, O’Reilly Cookbooks, O’Reilly Media , 2011.

REFERENCES:

1. AnandRajaraman and Jeffrey David Ullman, Mining of Massive Datasets, Cambridge UniversityPress, 2012.
2. Bill Franks, “Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams withAdvanced Analytics”, Wiley and SAS Business Series, 2012.
3. Paul Zikopoulos, Chris Eaton, Paul Zikopoulos, “Understanding Big Data: Analytics for EnterpriseClass Hadoop and Streaming Data”, McGraw Hill, 2011.
4. Pete Warden, Big Data Glossary, O’Reilly, 2011.
5. Jiawei Han, Micheline Kamber “Data Mining Concepts and Techniques”, Second Edition, Elsevier,Reprinted 2008.
6. Glenn J. Myatt, Making Sense of Data, John Wiley & Sons, 2007.

COURSE OBJECTIVE:

The ANDROID Application Development Lab needed to implement rich Android applications for the Android mobile platform. Student will build the code, compile, execute, and debug mobile applications using the Java for Android programming language and Eclipse to develop programs using advanced programming concepts

LIST OF PROGRAMS

1. Introduction to mobile technologies and devices
- 2 Android platform and applications overview
- 3 Setting Android development environments
- 4 Writing Android applications
- 5 Essentials of Android user interface design
6. User interface design elements, events, and dialogs
7. User interface design layouts
8. Working with texts and shapes
9. Working with animations
- 10 .Using Android location based APIs
- 11 .Using Android storage APIs
- 12 .Using Android web APIs

Total No of Hours :30

COURSE OUTCOMES:

Upon the successful completion of the course, learners will be able to

CO1-demonstrate the android features and create, develop using android.

CO2-Demonstrate and Understanding anatomy of an Android application.

CO3-Apply the android geo location based services.

CO4-Illustrate the android wifi features and advance android development.

CO5-Demonstrate the Linux security and implement ADL interface.

TEXT BOOKS:

1. T1. Lauren Darcey and Shane Conder, “Android Wireless Application Development”, Pearson Education, 2nd ed. (2011)

REFERENCE BOOKS:

1. Reto Meier, “Professional Android 2 Application Development”, Wiley India Pvt Ltd
2. Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd
3. Android Application Development All in one for Dummies by Barry Burd, Edition:

WEB SITES

1. Www.w3schools.com
2. Www.tutorialspoint.com
3. <https://en.wikipedia.org>
4. Www.geeksforgeeks.org
5. www.investopedia.com
6. www.guru99.com

WEB SOURCES

1. <https://www.cs.cmu.edu/~bam/uicourse/830spring09/BFeiginMobileApplicationDevelopment.pdf>
2. <https://mrcet.com/pdf/Lab%20Manuals/IT/R15A0563%20MAD.pdf>
3. <https://www.mediapiac.com/uploads/conference/presenters/documents/17/8.pdf>
4. <https://lecturenotes.in/subject/465/mobile-application-development>

PDSE02

jQuery Lab

0 0 4 2

COURSE OBJECTIVE:

To study and understand the concept of responsive HTML tags, images, audio and video tags, inline style, internal style, external style sheet, positioning of HTML elements, font, Link, List, JQuery and background properties. It is used to **enhance the skill development.**

LIST OF PROGRAMS

1. Write a RWD program for Attribute Selector.
2. Write a RWD program for Element Selector.
3. Write a RWD program for Text Transparent.
4. Write a RWD program for Image Border
5. Write a RWD program for Custom Fonts
6. Write a RWD program for Media Screen.

COURSE OUTCOME:

After completion of this practical course, the student will be able to:

CO1: Implement the concept of Responsive Web page

CO2: Implement the concept of Text Transparent CO3:

Implement the concept of Attributes Selector CO4:

Implement the concept of Media screen

CO5: Implement the concept of Image Border

SKILL ENHANCEMENT
COURSE
(SEC)

COURSE OBJECTIVE:

- To train the students to improve the vocabulary and reading comprehension.
- To train the students to participate in group discussion
- To elevate their comprehension skills and conversation.

UNIT I: EFFECTIVE COMMUNICATION SKILLS

06

Talking about your company – Making Polite requests – Introducing yourself and others – Socialising with others – Talking about work activities – Talking about your job – Communication practice – Role plays

UNIT II: WRITTEN BUSINESS COMMUNICATION

06

Essential Email writing skills – Formal and Informal E-mails – Usage of formal language – Report Writing – Writing project reports – Extended writing practice – Email Etiquette – Understanding Business E-mails

UNIT III: TELEPHONE ETIQUETTE

06

The basics of Telephone Etiquette – Customer Service – Being courteous – Making arrangements – Giving clear and concise information – Tone and Rate of speech – Pronunciations – Summarisation – Mock Telephonic Conversations

UNIT IV: LEADERSHIP SKILLS

06

Essential Leadership Skills – Interpersonal Skills – Team Building – Team work – Do's and Don'ts of Leadership skills – Importance of communication in Leadership – Delegating and Handling of Projects

Listening for the main ideas – Listening for details – Listening for specific information –
Predicting and listening for opinions – Recognising context – Listening for sequence –
Understanding Pronunciation – Listening practice

Total No of Hours: 30 Hours

COURSE OUTCOME

On Completion of this course, students can able to

CO1: To enhance participant's Business Communication Skills

CO2: To enhance the participant's Reading, Speaking, Listening and Writing capabilities

CO3: To engage in a conversation with others to exchange ideas

CO4: To impart leadership qualities among the participants

CO5: To express opinions to enhance their social skills

TEXT BOOKS

1. Raman, M. & Sangeeta Sharma. Technical Communication.OUP.2008
2. Taylor, Grant.English Conversation Practice. Tata McGraw Hill Education Pvt. Ltd. 2005
3. Tiko, Champa & Jaya Sasikumar. Writing with a Purpose.OUP. New Delhi. 1979

WEB SOURCES

- <https://www.skillsyouneed.com/ips/communication-skills.html>
- <https://blog.smarp.com/top-5-communication-skills-and-how-to-improve-them>
- <https://blog.hubspot.com/service/phone-etiquette>

COURSE OBJECTIVE :

- To train the students to improve their skills.
- To teach them soft skills and strength their foundation in time and stress management
- To elevate their interview skills

UNIT I: READING COMPREHENSION AND VOCABULARY 06

Reading Techniques – Types of Reading – Skimming – Scanning – Reading for detail – Identifying key words – Underlining unfamiliar key words – Vocabulary Building – Reading Comprehension practice

UNIT II: PRESENTATION SKILLS 06

Presentation Methods – Preparation and Practice – Organising content – Do's and Don'ts of a Presentation – Presentation Techniques – Mock Presentation

UNIT III: GROUP DISCUSSION 06

Introduction to Group Discussion – Preparation for GD – Structure of GD's – Do's and Don'ts – Tips and Strategies – Etiquette and Practice – Body Language and Posture – Sharing Ideas with respect – Understanding Opinions – Mock GD Practice

UNIT IV: CONVERSATIONAL SKILLS 06

Introduction to Small talk – How to start and end a conversation – Exchanging ideas – Expressing Interests – Giving Opinions – Social skills and Etiquette – Informal Conversations – Formal Meetings – Group Practice

UNIT V: SELF – INTRODUCTION AND ROLE PLAY 06

Introducing oneself – Exchange of Greetings – Appropriate Greetings – Usage of Vocabulary – Rapport Building – Handshakes and First Impressions – Basic Etiquette

Total No of Hours: 30 Hours

COURSE OUTCOME:

On Completion of this course, students can be able to

CO1: To get students to understand the importance of communicating in English

CO2: To understand effective communication techniques

CO3: To increase self-confidence through regular practice

CO4: To encourage active participation in their regular class

CO5: To enable participants to face large group of audience with confidence

TEXT BOOKS

1. English for Competitive Examinations by R.P.Bhatnagar&Rajul BhargavaMacmillan India ltd. Delhi.
2. Carnegie, Dale. The Quick and Easy Way to Effective Speaking. New York: Pocket Books, 1977.
3. Kalish, Karen.How to Give a Terrific Presentation. New York: AMACOM, 1996

WEB SOURCES

1. <https://www.skillsyouneed.com/ips/communication-skills.html>
2. <https://venngage.com/blog/presentation-skills/>
3. <https://gdpi.hitbullseye.com/Group-Discussion.php>

COURSE OBJECTIVE:

- To enable students to develop their soft skills and Body Language
- To enhance students Reading, Writing, Listening and Speaking skills
- To develop their self-confidence to excel at Interviews

Credit Hours**UNIT I: SKILL ENHANCEMENT 06**

Time Management – Planning and Organisation – Scheduling – Prioritization – Delegation – Task Management – Stress Management – Overcoming anxiety – Confidence Building – Body Language

UNIT II: RESUME / COVER LETTER WRITING 06

SWOT Analysis – Details and Resume Writing – Resume Examples – Building Resume using SWOT – Writing Resume – Writing Cover Letter – Resume Correction – Resume Feedback

UNIT III: INTERVIEW SKILLS 06

Interview Do's and Don'ts – First Impression – Grooming – Body Language – Frequently asked questions – Useful Language – Mock Interview

UNIT IV: QUANTITATIVE ABILITY 06

Permutation & Combinations – Probability – Profit & Loss – Ratio Proportions & Variations – Cubes – Venn Diagrams – Logical Reasoning – Critical Reasoning

UNIT V: REVISIONARY MODULES 06

Group Discussions – HR Process – Interview Process – Mock Group Discussions

Total No of Hours: 30

COURSE OUTCOME

On Completion of this course, students can able to

CO1: To develop participant's social and professional skills

CO2: To help participants manage time effectively

CO3: To build a strong resume to suit corporate requirements

CO4: To face interviews confidently

CO5: To enhance their aptitude abilities

TEXTBOOKS

1. Meena. K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills: A Road Map to Success) P.R. Publishers & Distributors.
2. Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, NewDelhi
3. Prasad, H. M. How to Prepare for Group Discussion and Interview. NewDelhi: Tata McGraw-Hill Publishing Company Limited, 2001.
4. Pease, Allan. Body Language. Delhi: Sudha Publications, 1998.

WEB SOURCES

1. <https://www.skillsyouneed.com/ips/communication-skills.html>
2. <https://www.businessnewsdaily.com/5836-top-interviewing-skills.html>
3. <https://gdpi.hitbullseye.com/Group-Discussion.php>

COURSE OBJECTIVE:

- Social awareness programme
- Volunteer participation in social related campaign

UNIT I SPECIAL CAMPING PROGRAMME 6

- A) Nature and its objectives
- B) Selection of camp site and physical arrangement
- C) Organization of N.S.S. camp through various committees and discipline in the camp.
- D) Activities to be undertaken during the N.S.S. camp.
- E) Use of the mass media in the N.S.S. activities

UNIT II CONTRIBUTION OF SOCIAL REFORMS 6

- A) Mahatma JotibaPhule
- B) RajarshiShahuChhatrapati
- C) Dr.B.R.Ambedkar

UNIT III SOCIAL PROBLEMS 6

- A) Water scarcity
- B) Women harassment

UNIT IV NATIONAL INTEGRATION 6

- A) Need for National Integrity
- B) Various Obstacles such as caste , religion ,language

UNIT V SPECIAL PROGRAMME 6

- A) Legal Awareness
- B) Health Awareness
- C) First-aid
- D) Career Guidance

Total No of Hours : 30

COURSE OUTCOME

On Completion of this course , students can able to,

CO1: Develop documentation and reporting of a event.

CO2: Analyze the cost and planning and reports.

CO3: Analyze socio – Economic Problems

CO4: Explain the role of disaster management in modern life

CO5:List the of various environment issues

TEXT BOOKS

1. ChhatrapatiShahu – The Pillar of Social Democracy,Ed.P.B.Salunkhe
2. National Service Scheme Manual, Govt.of India

REFERENCE BOOKS

1. Social service opportunities in Hospitals, KapilK.Krishan,TISS
2. History of Social Reforms in Maharashtra, Ed.J.Y.Bhosale, S.U.Kolhapur

WEB SOURCES

- 1.<http://www.igntu.ac.in/Download/aboutNSS.pdf>
- 2.<https://www.slideshare.net/SiniAlby/nss-57278390>

COURSE OBJECTIVE:

- To increase ethical sensitivity.
- To increase ethical knowledge.
- To improve ethical judgment.

UNIT-I INTRODUCTION 6

Why Value Education – Ethical Reflections – What is Ethics? Swami Vivekananda

UNIT: II APPROACH TO LIFE 6

Approach to Life - Happiness as Goal - Historical Perspective – Life in the Past Economic Awareness – Economic

UNIT: III KINDS OF VALUES 6

Kinds of Values S.Ignacimuthu S.J – Living Excellence Anthony Robbins – Concern for Influence of Science and Technology in Human’s Social Life Social Relevance of Science and Technology Features – Status of Women – Mass Media and Values.

UNIT IV GOALS AND HUMAN RIGHTS 6

Use Goals to help you grow David J.Schwartz – essential Characteristics of Human Rights.

UNIT V INFLUENCE OF SCIENCE AND TECHNOLOGY 6

Social Relevance of Science and Technology – Economic Awareness – Economic Features – Status of Women – Mass Media and Values.

Total No of Hours : 30

COURSE OUTCOME

At the end of the course students can,

CO1: Can able to develop the ethical value defined by swami Vivekananda.

CO2: Able to analyze the obstacles in life and to reach the goal.

CO3: Able to understand the status of women in this society

CO4: Able to understand the influence of science & technology in Human Life.

CO5: Able to understand the economic drive.

TEXT BOOKS

1.Touchstone: Synergy of Values – University of Madras.

2.In harmony- Value Education at College Level- Dept. of Ethics and Religious Studies Loyolla College, Madras.

WEBSOURCES

1.https://vit.ac.in/files/Ethics_Manual.pdf

2.<https://soaneemrana.org/onewebmedia/Professional%20Ethics%20and%20Human%20Values%20by%20R.S%20NAAGARAZAN.pdf>

3. <https://eng.rizvi.edu.in/wp-content/uploads/2020/04/Handbook-Human-Values-and-Professional-Ethics.pdf>

SEC ENTREPRENEURSHIP DEVELOPMENT 2 0 0 2

COURSE OBJECTIVE:

- To develop and strengthen entrepreneurial quality and motivation in students
- To impart basic entrepreneurial skills and understanding to run a business efficiently and effectively.
- To understand the concept and process of entrepreneurship and its contribution in and role in the growth and development of individual and the nation.

UNIT I ENTREPRENEURSHIP 6

Entrepreneur – Personality characteristics of successful entrepreneur– Types of Entrepreneurs – Knowledge and skills required for an entrepreneur –Difference between Entrepreneur and Intrapreneur

UNIT II BUSINESS 6

Definition, Classification – Characteristics, Ownership Structures – Project Formulation – Steps involved in setting up a Business –Market Survey and Research–Techno Economic Feasibility Assessment

UNIT III BUSINESS PLAN PREPARATION 6

Sources of product for business – Pre-feasibility study – Criteria for selection of product– Ownership – Capital – Budgeting project profile preparation – Matching entrepreneur with the project – Feasibility report preparation and evaluation criteria.

UNIT IV SUPPORT TO ENTREPRENEURS 6

Sickness in small Business – Concept, Magnitude, Causes and Consequences, Corrective Measures – Business Incubators – Government Policy for Small Scale Enterprises – Growth Strategies in small industry.

Meaning, Objectives–Phases of EDP– steps in EDP–Strategies for Entrepreneurship development– Institutions in aid of Entrepreneurship Development Programme–Use of IT enabled services in entrepreneurship - E Licensing, E filing.

Total No of Hours: 30 hrs

COURSE OUTCOMES

At the end of the course, a student will be able to

CO1: Understand the concept of Entrepreneurship

CO2: Identify, create and analyze entrepreneurial opportunities.

CO3: Assess techno economic feasibility of a Business Plan

CO4: Create Business Plans

CO5: State various statutory institutions involved in the process of Entrepreneurship development

TEXT BOOKS:

1. Hisrich R D, Peters M P, “Entrepreneurship” 8th Edition, Tata McGraw-Hill, 2016
2. [Khanka S.S.](#), “Entrepreneurial Development” S Chand & Company; edition, 2016

REFERENCE BOOKS:

1. [Sharma](#), “Entrepreneurship Development”, PHI LEARNING PVT LTD, (2017)
2. [Abhinav Ganpule](#)&[Aditya Dhobale](#), “Entrepreneurship Development”, Kindle Edition, Jatayu Publication; 1 edition ,2018.
3. [Sangeeta Sharma](#), “Entrepreneurship Development”, 10th Edition, Kindle Edition PHI Learning, 2018

WEBSITES

1. <http://www.simplynotes.in/e-notes/mbabba/entrepreneurship-development/>
2. <https://openpress.usask.ca/entrepreneurshipandinnovationtoolkit/chapter/chapter-1-introduction-to-entrepreneurship/>

WEBSOURCES

1. <https://articles.bplans.com/10-great-websites-for-entrepreneurs/>
2. <https://www.entrepreneur.com/article/272185>

**ABILITY ENHANCEMENT
COMPULSORY COURSE (AECC)**

COURSE OBJECTIVE:

- This course is to subject the students to practise the components in various units. To make students ready for placement interviews within campus.
- To infuse confidence to face job situations.

UNIT I**06**

- Resume and CV Writing
- Complaint Letter
- Social Correspondence
- Letter of Enquiry

UNIT II**06**

- Short Essay Writing

UNIT III**06**

- Explaining Proverbs

UNIT IV**06**

- Use of Prepositions

UNIT V**06**

- Synonymous Words

Total No of Hours: 30 Hours**COURSE OUTCOME:**

On Completion of this Course, students can able

CO1: To enhance learners' confidence level.

CO2: To make learners' feel the assimilation of skills.

CO3: To engage in a conversation with others to exchange ideas.

CO4: To impart leadership qualities among the participants.

CO5: To express opinions to enhance their social skills.

TEXT BOOKS

- For Unit I – V Effective Communication For You – V. Syamala Emerald Publishers, Chennai.
- Cameron, David. Mastering Modern English, Hyderabad: Orient Blackswan, 1978 (rpt. 1989, 1993, 1995,1998).
- Freeman, Sarah. Written Communication in English, Hyderabad: Orient Blackswan, 1977 (21st Impression,2007).
- Singh, Vandana R. The Written Word. New Delhi: Oxford university Press, 2003 (3rd Impression, 2007)
- Seely, John. Oxford Guide to Effective Writing and Speaking. New Delhi: Oxford University Press, 2000 (4thImpression,2008)

Web Sources:

- <https://www.myperfectresume.com/career-center/resumes/how-to/write>
- <https://www.englishgrammar.org/>

GENERIC ELECTIVES (GE)

VI SEM 22UGE504 QQUNTITATIVE APTITUDE 3 0 0 3

Course objectives

To Introduce concepts of mathematics with emphasis on analytical ability computational skill needed in competitive examinations.

UNIT-1

Simplification -Permutations and Combination 06

UNIT-2

Problems on Trains - Ages - Time and distance Series - Time & Work- Percentage problems 06

UNIT-3

Ratio &Proportion - Square roots - Surds and Indices – Averages 06

UNIT-4

Interest – Simple and compound - Profit and Loss 06

UNIT-5

Calendar –Clocks -Odd Man Out & Series - logical Reasoning - direction sense test- Venn diagrams- Logical verbal puzzles 06

Total :30 hours

TEXT BOOK:

1. Quantitative Aptitude by R.S.Agarwal

Unit: I Definition and types of disaster

Hazards and Disasters, Risk and Vulnerability in Disasters, Natural and Man-made disasters, earthquakes, floods drought, landside, land subsidence, cyclones, volcanoes, tsunami, valanches, global climate extremes. Man-made disasters: Terrorism, gas and radiations leaks, toxic waste disposal, oil spills, forest fires.

Unit: II Study of Important disasters

Earthquakes and its types, magnitude and intensity, seismic zones of India, major fault systems of India plate, flood types and its management, drought types and its management, landside and its managements case studies of disasters in Sikkim (e.g Earthquakes, Landside). Social Economics and Environmental impact of disasters.

Unit: III Mitigation and Management techniques of Disaster

Basic principles of disasters management, Disaster Management cycle, Disaster management policy, National and State Bodies for Disaster Management, Early Warning Systems, Building design and construction in highly seismic zones, retrofitting of buildings.

Unit IV Training, awareness program and project on disaster management

Training and drills for disaster preparedness, Awareness generation program, Usages of GIS and Remote sensing techniques in disaster management, Mini project on disaster risk assessment and preparedness for disasters with reference to disasters in Sikkim and its surrounding areas.

Unit V Disaster Management: Applications and Case Studies and Field Works

Earthquake Vulnerability Assessment of Buildings and Infrastructure: Case Studies, Drought Assessment: Case Studies, Coastal Flooding: Storm Surge Assessment, Floods: and field works related to disaster management.

Text Books:

2. Disaster Management Guidelines, GOI-UND Disaster Risk Program(2009-2012)
3. Damon, P. Copola, (2006) Introduction to International Disaster Management, Butterworth Heineman.
4. Gupta A.K., Niar S.S and Chatterjee S. (2013) Disaster management and Risk Reduction, Role of Environmental Knowledge, Narosa Publishing House, Delhi.
5. Murthy D.B.N. (2012) Disaster Management, Deep and Deep Publication PVT. Ltd. New Delhi.

6. Modh S. (2010) Managing Natural Disasters, Mac Millan publishers IndiaLTD

COURSE OBJECTIVE:

- To make the student understands the overall view of internet.
- To inculcate the students about the various facilities available in internet.
- To gain practical knowledge about internet.

UNIT I INTRODUCTION 9

Internet and its history, defining and describing the Internet, Brief history, discussing the future of the Internet, Internet Resources. Describe the important features of the Web and Web browser software, Evaluate e-mail software and Web-based e-mail services

UNIT II EMAIL 9

Email , Parts of email , Email software , Web based email , Email address , List servers , Newsgroups , Newsgroups names , Newsgroups readers , Chat rooms , Conferencing

UNIT III INTERNET RESOURCES 9

Internet Resources, Games, File transfer protocol, Telnet, World Wide Web, Behavior on the Internet , Accessing the Internet , Types of access , Online services , Internet services providers , How and where to look for the service Browsing the Web , Browsing the Web.

UNIT IV FTP 9

Use FTP and other services to transfer and store data, Demonstrate the use of real-time chat and briefly describe the history of the wireless Internet. Use mailing lists, newsgroups, and newsfeeds, Create HTML documents and enhance them with browser extensions

UNIT V APPLICATIONS 9

Applications of Internet- education, business, government, Communication , Job searches, Health and medicine, Travel, Entertainment, Shopping, Stock market updates, Research.

Total No of Hours: 45

COURSE OUTCOME

At the end of the course students can able to,

CO1: Develop & design mail to his/her friends

CO2: Analyze the search engine (ie) browsers.

CO3: Use the applications of internet

CO4: Understand the basic concepts and features of Web.

CO5: Understand the security threats and electronic commerce.

TEXT BOOK

1. Rohit Khurana , “COMPUTER FUNDAMENTALS and INTERNET BASICS”, Aph Publishing Corporation,2010.

REFERENCE BOOK

1. Margaret Levine Young, “Internet Millenium Edition “,Osborne Publications,2000.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com

WEBSOURCES

- 1.https://www.oswaalbooks.com/download/freeresources/class10/175Quick%20Revision%20Notes%20_10th%20Computer%20Application.pdf
- 2.<https://fcit.usf.edu/internet/chap1/chap1.htm>
- 3.<https://www.slideshare.net/osuchin/internet-basics-13440260>
- 4.<https://www.slideshare.net/argusacademy/internet-40994977>

COURSE OBJECTIVE:

- To explain the student the major concepts of web designing.
- This course explains the graphics and animation..
- This course Introduce basics concept of CSS.

UNIT I WEB DESIGN PRINCIPLES 9

Basic principles involved in developing a web site , Planning process , Five Golden rules of web designing , Designing navigation bar , Page design , Home Page Layout , Design Concept.

UNIT II BASICS IN WEB DESIGN 9

Brief History of Internet , What is World Wide Web , Why create a web site , Web Standards, Audience requirement.

UNIT III INTRODUCTION TO HTML 9

What is HTML , HTML Documents , Basic structure of an HTML document ,Creating an HTML document , Mark up Tags , Heading-Paragraphs ,Line Breaks , HTML Tags, Elements of HTML, Introduction to elements of HTML , Working with Text , Working with Lists, Tables and Frames ,Working with Hyperlinks, Images and Multi media .Working with Forms and controls.

UNIT IV INTRODUCTION TO CASCADING STYLE SHEETS 9

Concept of CSS , Creating Style Sheet , CSS Properties , CSS Styling(Background, Text Format, Controlling Fonts) , Working with block elements and objects , Working with Lists and Tables , CSS Id and Class , Box Model(Introduction, Border properties, Padding , Properties, Margin properties) .

UNIT V INTRODUCTION TO WEB PUBLISHING OR HOSTING 9

Creating the Web Site, Saving the site, working on the web site, Creating web site structure, Creating Titles for web pages, Themes-Publishing web sites.

Total No of Hours: 45

COURSE OUTCOME

At the end of the course students can able to

CO1: Design static Websites using HTML.

CO2: Create websites using CSS.

CO3: Apply CSS properties & able to embed the style sheet into HTML documents

CO4: Demonstrate web hosting.

CO5: Understand basic tags and CSS Properties

TEXT BOOK

1. Ivan Bayross , “HTML 5 and CSS 3 Made Simple”,BPB publications,Dec 2012.

REFERENCE BOOK

1. Thomas A Powell, ”HTML Complete Reference “,McGraw Publications,2000

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com

WEBSOURCES

- 1.https://www.tutorialspoint.com/html/html_tutorial.pdf
- 2.<https://wtf.tw/ref/duckett.pdf>
- 3.<https://www.shahucollegelatur.org.in/Department/Studymaterial/bvoc/Web%20Hosting.pdf>

COURSE OUTCOME

At the end of the course students can able to

CO1: Create SQL Queries using DDL , DML & DCL commands

CO2: Understand the basic terminology & concepts of database.

CO3: Understand the entity-relationship model..

CO5: Understand SQL join & normalization.

CO4: Explainthe client /server concept.

TEXT BOOK

1. Paul DuBois, “MySQL Developer's Library,5th Edition, 2013.

REFERENCE BOOK

1. Michael Kruckenberg, “Pro MYSQL”, Apress Publications,2005.

WEBSITES

1. www.w3schools.com
2. www.tutorialspoint.com
3. www.javapoint.com

WEBSOURCES

- 1.https://www.tutorialspoint.com/mysql/mysql_tutorial.pdf
- 2.<https://downloads.mysql.com/docs/mysql-tutorial-excerpt-5.7-en.pdf>
- 3.<https://www.slideshare.net/webhostingguy/mysqlppt-3672569>
4. <https://slideplayer.com/slide/13209422/>

COURSE OBJECTIVE

To inculcate the importance of environmental pollution, preservation of nature and environmental management for human welfare.

**UNIT-I MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES,
NATURAL RESOURCES 06**

Definition, scope and importance, need for public awareness. Renewable and non-renewable resources - Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies. f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification - Role of an individual in conservation of natural resources- Equitable use of resources for sustainable lifestyles.

UNIT -II ECOSYSTEMS, BIODIVERSITY AND ITS CONSERVATION 06

Concept of an ecosystem. - Structure and function of an ecosystem Producers, consumers and decomposers. -Energy flow in the ecosystem. Ecological succession. - Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Introduction–Definition,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-diversity nation. Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT-III - ENVIRONMENTAL SCIENCE

06

Definition, Cause, effects and control measures of a) Air pollution b) Water pollution c) Soil pollution d) Marine pollution e) Noise pollution f) Thermal pollution g) Nuclear hazards. Solid waste Management. Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Disaster management- floods, earthquake, cyclone and landslides.

UNIT-IV SOCIAL ISSUES AND THE ENVIRONMENT

06

From Unsustainable to Sustainable development, Urban problems related to energy - Water conservation, rain water harvesting, watershed management- Resettlement and rehabilitation of people; its problems and concerns. Case Studies - Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. Wasteland reclamation. Consumerism and waste products. Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act - Issues involved in enforcement of environmental legislation. Public awareness.

UNIT-V HUMAN POPULATION AND THE ENVIRONMENT

06

Population growth, variation among nations. Population explosion – Family Welfare Programme. Environment and human health. Human Rights. Value Education. HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health. Case Studies. Field work - Visit to a local area to document environmental assetsriver/forest/grassland/hill/mountain, Visit to a local polluted site-Urban/Rural/Industrial/Agricultural, Study of common plants, insects, birds, Study of simple ecosystems-pond, river, hill slopes, etc.

Total No of Hours: 30 hrs

COURSE OUTCOME

CO1: To understand the nature and facts about environment.

CO2: To find and implement scientific, technological, economic solutions to environmental problems.

CO3: To know about the interrelationship between living organisms and environment.

CO4: To understand the integrated themes and biodiversity, natural resources, pollution control and waste management.

CO5: To appreciate the importance of environment by assessing its impact on the human world.

TEXT BOOKS

1. De AK, Environmental Chemistry, Wiley Eastern Ltd.
2. Bharucha Erach, 2003. The Biodiversity of India, Mapin Publishing Pvt. Ltd, India.
3. Brunner RC, 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480pgs.
4. Clark RS, Marine Pollution, Clanderson Press, Oxofrd (TB).

REFERENCE BOOKS

1. Agarwal KC, 2001. Environmental Biology, Nidi Publishers Ltd. Bikaner.
2. Gleick HP, 1993. Water in Crisis, Pacific Institute for Studies in Development, Environment and Security. Stockholm Environmental Institute, Oxford University Press, 473pgs.
3. Heywood VH, and Watson RT, 1995. global Biodiversity Assessment. Cambridge University Press 1140pgs.
4. Jadhav H and Bhosale VM, 1995. Environmental Protection and Laws. Himalaya Publishing House, Delhi 284pgs.
5. Miller TG, Jr. Environmental Science, Wadsworth Publishing CO. (TB)

