R18

B.Tech-CSE

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
(Approved by AICTE, New Delhi& Affiliated to JNTUA, Ananthapuramu)
(Accredited by NBA for Civil, EEE, Mech., ECE & CSE
Accredited by NAAC with 'A' Grade)
Puttur -517583, Chittoor District, A.P. (India)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Regulation - R18

B. Tech - Course Structure & Syllabus

R18

B.Tech-CSE

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INSTITUTE VISION

To be one among the premier institutions of the country producing ethically strong and technically sound engineers and managers to serve the nation.

INSTITUTE MISSION

To create sacred environment for the students to acquire knowledge through innovative and professional approach and utilize it for the welfare of the mankind.

DEPARTMENT VISION

"To produce innovative, qualified, and elegant technocrats who will provide global Services".

DEPARTMENT MISSION

"To employ qualified faculty, and state of the art resources, innovatively to produce world class technocrats".

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Program Outcomes

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

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

PO4: Conduct Investigations of Complex 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, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering 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.

PO12: Life-Long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Graduates with basic and advanced knowledge in science, mathematics, computer science and allied engineering, capable of analyzing, design and development of solutions for real life problems.

PEO2: Graduates who serve the Industry, consulting, government organizations, or who pursue higher education or research.

PEO3: Graduates with qualities of professional leadership, communication skills, team work, ethical values and lifelong learning abilities.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: **Mobile Apps:** Ability to design, develop and deploy mobile applications in Windows/ Google / Mac Apps Stores.

PSO2: **Architecture of Computer System:** Ability to visualize and articulate computer hardware and software systems for various complex applications.

PSO3: **Problem-Solving Skills:** The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INDUCTION PROGRAM (MANDATORY)	**3 WEEKS DURATION**
Induction program for students to be offered right at the start of the first year.	• Physical activity • Creative Arts • Universal Human Values • Literary • Proficiency Modules • Lectures by Eminent People • Visits to local Areas • Familiarization to Dept./Branch & Innovations

I B. Tech. – I Semester (CSE)

S.No.	**Course Code**	**Subject**	**L**	**T**	**P/Drg**	**C**
1	18HS0830	Mathematics-1	3	0	0	3
2	18HS0801	Chemistry	3	1	0	4
3	18ME0302	Engineering Graphics & Design	1	0	4	3
4	18HS0810	English	3	0	0	3
5	18HS0802	Chemistry Lab	0	0	3	1.5
6	18HS0811	English Lab	0	0	3	1.5
7	18ME0301	Workshop Practices Lab	0	0	4	2
8		Induction Program (3 weeks)	0	0	0	0
Contact Periods / Week			**10**	**01**	**14**	**18**
			Total/Week 25			

I B. Tech. – II Semester (CSE)

S.No.	**Course Code**	**Subject**	**L**	**T**	**P**	**C**
1.	18HS0831	Mathematics-II	3	1	0	4
2.	18HS0851	Semi-Conductor Physics	3	1	0	4
3.	18CS0501	Programming for Problem Solving	3	0	0	3
4.	18CS0502	Digital Logic Design	3	0	0	3
5.	18EE0239	Basic Electrical Engineering	3	0	0	3
6.	18CS0503	Programming for Problem Solving Lab	0	0	3	1.5
7.	18HS0852	Physics Lab	0	0	3	1.5
Non- Credit Course						
8.	18HS0817	Essence of Indian Traditional Knowledge	3	0	0	0
Contact Periods / Week			**18**	**02**	**06**	**20**
			Total/Week 26			

II B. Tech. – I Semester (CSE)

S.No.	Course Code	Subject	L	T	P	C
1	18HS0835	Probability & Statistics	3	0	0	3
2	18EC0443	Analog Electronics Circuits	3	1	0	4
3	18CS0504	Data Structures & Algorithms	3	0	0	3
4	18CS0505	Computer Organization & Architecture	3	0	0	3
5	18CS0506	Database Management Systems	3	0	0	3
6	18CS0507	Data Structures & Algorithms Lab	0	0	3	1.5
7	18CS0508	Database Management Systems Lab	0	0	3	1.5
8	18EE0241	Basic Electrical & Electronics Engineering Lab	0	0	2	1
Non- Credit Course						
9	18HS0816	Indian Constitution	3	0	0	0
Contact Periods / Week			**18**	**01**	**08**	**20**
			Total/Week 27			

II B. Tech. – II Semester (CSE)

S. No.	Course Code	Subject	L	T	P	C
1	18HS0836	Discrete Mathematics	3	0	0	3
2	18CS0509	Formal Languages and Automata Theory	3	1	0	4
3	18CS0510	Operating Systems	3	0	0	3
4	18HS0803	Biology for Engineers	3	0	0	3
5	18CS0511	Object Oriented Programming	3	0	0	3
6	18CS0512	Operating Systems Lab	0	0	3	1.5
7	18CS0513	Object Oriented Programming Lab	0	0	3	1.5
Credit Course						
8	COE-1	Comprehensive Online Examination – I	0	0	0	1
Non- Credit Course						
9	18HS0804	Environmental Sciences	3	0	0	0
Contact Periods / Week			**18**	**01**	**06**	**20**
			Total/Week 25			

III B. Tech. – I Semester (CSE)

S.No.	Course Code	Subject	L	T	P	C
1	18HS0812	Managerial Economics and Financial Analysis	3	-	-	3
2	18CS0514	Compiler Design	3	-	-	3
3	18CS0515	Computer Networks	3	1	-	4
4	18CS0516	Design and Analysis of Algorithms	3	-	-	3
5	18CS0517	Python Programming	3	-	-	3
6	18CS0518	Analysis of Algorithms Lab	-	-	3	1.5
7	18CS0519	Python Programming Lab	-	-	2	1
8	18CS0520	Object Oriented Analysis and Design Lab	-	-	3	1.5
Non- Credit Course						
9	18HS0842	Aptitude Practices	3	-	-	0
Contact Periods / Week			**18**	**01**	**08**	**20**
			Total/Week 27			

III B. Tech. – II Semester (CSE)

S. No.	Course Code	Subject	L	T	P	C
1	18CS0521	Data Warehousing and Data Mining	3	-	-	3
2	18CS0522	Software Engineering	3	-	-	3
3	18CS0523	Web Technologies	3	-	-	3
4	**Professional Elective Course (PEC)- I**		3	-	-	3
	18CS0531	Advanced Operating Systems				
	18CS0532	Linux Programming				
	18CS0533	Quantum Computing				
5	**Open Elective-I**		3	-	-	3
	18CE0127	Elements of Road Traffic Safety				
	18EE0234	Industrial Instrumentation				
	18ME0307	Non-Conventional Energy Resources				
	18EC0449	Introduction to IOT				
	18HS0814	Intellectual Property Rights				
6	18CS0524	Data Mining Lab	-	-	2	1
7	18CS0525	Web Technologies Lab	-	-	2	1
8	18CS0526	Internship (60 Hours)	-	-	-	2
	Credit Course					
9	COE-II	Comprehensive Online Examination-II	-	-	-	1
Non- Credit Course						
10	18HS0859	English for Corporate Communication Skills Lab	-	-	2	-
Contact Periods / Week			**15**	**-**	**06**	**20**
			Total/Week 21			

IV B. Tech. – I Semester (CSE)

S.No.	Course Code	Subject	L	T	P	C
1	18HS0813	Management Science	3	-	-	3
2	18CS0527	Mobile Application Development	3	-	-	3
3	**Professional Elective Course (PEC) –II**					
	18CS0535	Artificial Intelligence & Machine Learning	3	-	-	3
	18CS0536	Cloud Computing				
	18CS0537	Information Retrieval System				
4	**Professional Elective Course (PEC) –III**					
	18CS0538	Big Data Analytics	3	-	-	3
	18CS0539	Human Computer Interaction				
	18CS0540	Information Security				
5	**Professional Elective Course (PEC) –IV**					
	18CS0541	Data Science	3	-	-	3
	18CS0542	Cyber Security				
	18CS0543	Soft Computing				
6	**Open Elective-II**					
	18CE0146	Project Planning and Control	3	-	-	3
	18EE0236	Solar Photovoltaic Systems				
	18ME0353	Computer Aided Process Planning				
	18EC0450	MATLAB Programming				
	18HS0815	Entrepreneurship Development				
7	18CS0528	Mobile Application Development LAB	-	-	3	1.5
8	18CS0529	Machine Learning LAB	-	-	3	1.5
9	18CS0530	Project Phase-I	-	-	4	2
Contact Periods / Week			**18**	**-**	**10**	**23**
			Total/Week 28			

IV B. Tech. – II Semester (CSE)

S. No.	Course Code	Subject	L	T	P	C
1	**MOOC-I**		3	-	-	3
2	**MOOC-II**		3	-	-	3
3	18CS0534	Project Phase-II	-	-	22	11
Contact Periods / Week			**6**	**-**	**22**	**17**
			Total/Week 28			

***L-Lecture hours, T-Tutorial, P-Practical, C-Credit**

TOTAL NO. OF CREDITS

Year	I		II		III		IV		TOTAL
SEM	I	II	I	II	I	II	I	II	
CREDITS	18	20	20	20	20	20	23	17	158

Department of Computer Science and Engineering
List of Subjects

S.No.	Course Code	Subject
Core Subjects		
1	18CS0501	Programming for Problem Solving
2	18CS0502	Digital Logic Design
3	18CS0503	Programming for Problem Solving Lab
4	18CS0504	Data Structures & Algorithms
5	18CS0505	Computer Organization & Architecture
6	18CS0506	Database Management System
7	18CS0507	Data Structures & Algorithms Lab
8	18CS0508	Database Management Systems Lab
9	18CS0509	Formal Languages and Automata Theory
10	18CS0510	Operating Systems
11	18CS0511	Object Oriented Programming
12	18CS0512	Operating Systems Lab
13	18CS0513	Object Oriented Programming Lab
14	18CS0514	Compiler Design
15	18CS0515	Computer Networks
16	18CS0516	Design and Analysis of Algorithms
17	18CS0517	Python Programming
18	18CS0518	Analysis of Algorithms Lab
19	18CS0519	Python Programming Lab
20	18CS0520	Object Oriented Analysis and Design Lab
21	18CS0521	Data Warehousing and Data Mining
22	18CS0522	Software Engineering
23	18CS0523	Web Technologies
24	18CS0524	Data Mining Lab
25	18CS0525	Web Technologies Lab
26	18CS0526	Internship
27	18CS0527	Mobile Application Development
28	18CS0528	Mobile Application Development LAB
29	18CS0529	Machine Learning LAB
30	18CS0530	Project Phase-I
31	18CS0534	Project Phase-II
32	18CS0545	Comprehensive Viva Voce
Professional Elective Courses		
33	18CS0531	Advanced Operating Systems
34	18CS0532	Linux Programming
35	18CS0533	Quantum Computing
36	18CS0535	Artificial Intelligence and Machine Learning
37	18CS0536	Cloud Computing
38	18CS0537	Information Retrieval System

39	18CS0538	Big Data Analytics
40	18CS0539	Human Computer Interaction
41	18CS0540	Information Security
42	18CS0541	Data Science
43	18CS0542	Cyber Security
44	18CS0543	Soft Computing
Subjects for other Departments		
45	18CS0501	Programming for Problem Solving
46	18CS0503	Programming for Problem Solving Lab
Open Electives from CSE Department		
47	18CS0517	Python Programming
48	18CS0544	Software Development & Testing
Open Electives from Other Departments		
49	18CE0127	Elements of Road Traffic Safety
50	18EE0234	Industrial Instrumentation
51	18ME0307	Non-Conventional Energy Resources
52	18EC0449	Introduction to IOT
53	18HS0814	Intellectual Property Rights
54	18CE0146	Project Planning and Control
55	18EE0236	Solar Photovoltaic Systems
56	18ME0353	Computer Aided Process Planning
57	18EC0450	MATLAB Programming
58	18HS0815	Entrepreneurship Development
Subjects from Other Departments		
59	18HS0830	Mathematics-1
60	18HS0801	Chemistry
61	18ME0302	Engineering Graphics & Design
62	18HS0810	English
63	18HS0802	Chemistry Lab
64	18HS0811	English Lab
65	18ME0301	Workshop Practices Lab
66	18HS0831	Mathematics-II
67	18HS0851	Semi-Conductor Physics
68	18EE0239	Basic Electrical Engineering
69	18HS0852	Physics Lab
70	18HS0835	Probability & Statistics
71	18EC0443	Analog Electronics Circuits
72	18EE0241	Basic Electrical & Electronics Engineering Lab
73	18HS0836	Discrete Mathematics
74	18HS0803	Biology for Engineers
75	18HS0812	Managerial Economics and Financial Analysis
76	18HS0813	Management Science
Non-Credit Courses		
77	18HS0817	Essence of Indian Traditional Knowledge

78	18HS0816	Indian Constitution
79	18HS0804	Environmental Sciences
80	18HS0842	Aptitude Practices
81	18HS0859	English for Corporate Communication Skills Lab

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I B. Tech – I Sem.

L	T	P	C
3	-	-	3

(18HS0830) Mathematics-I
(Common to all branches)

COURSE OBJECTIVES

The objective of this course is to familiarize the prospective engineers with techniques in calculus, multivariate analysis and linear algebra. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines. More precisely, the objectives are:

1. *To introduce the idea of applying differential and integral calculus to notions of curvature and to improper integrals. Apart from some applications it gives a basic introduction on Beta and Gamma functions.*
2. *To introduce the fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.*
3. *To develop the tool of power series and Fourier series for learning advanced Engineering Mathematics.*
4. *To familiarize the student with functions of several variables that is essentialin most branches of engineering.*
5. *To develop the essential tool of matrices and linear algebra in a comprehensive manner.*

COURSE OUTCOMES (COs)

1. *Develop the use of matrix algebra techniques that is needed by engineers for practical applications*
2. *Apply Fundamental Theorem of Taylor's, Rolle's Theorem, Maclaurin's theorems.*
3. *Able to compare and analyse the methods in differential calculus.*
4. *Understand and analyze Methods of Lagrange multipliers; Gradient, directional derivatives.*
5. *Able to Learn Sequences and Series like Convergence of sequence and series, tests for convergence*
6. *Apply Fourier series for Determination of Fourier coefficients*

UNIT – I

Matrices: Inverse and rank of a matrix; System of linear equations; Symmetric,skew-symmetric and orthogonal matrices; Eigen values and eigen vectors; Diagonalization of matrices; Cayley-Hamilton Theorem, and Orthogonal transformation

UNIT – II

Calculus: Evaluation of definite and improper integrals; Applications of definite integrals to evaluate surface areas and volumes of revolutions; Beta and Gamma functions and their properties. Rolle‟sTheorem, Mean value theorems (without proof) Taylor‟s and Maclaurin‟s theorems.

UNIT – III

Multivariable Calculus : (Differentiation) Limit, continuity and partial derivatives, total derivative; Maxima, minima and saddle points; Method of Lagrange multipliers; Gradient, directional derivatives, curl and divergence.

UNIT – IV

Sequences and Series: Convergence of sequence and series, tests for convergence (Geometric test, P- test, limit comparison test, D‟ Alember ratio test, Cauchy‟ s nth root test); Power series, Taylor's series, series for exponential, trigonometric and logarithm functions.

UNIT-V

Fourier series: Determination of Fourier coefficients- Fourier series- Even and functions, Fourier Series in an arbitrary interval, Periodic function, Half range sine and cosine series,

TEXT BOOKS

1.Higher Engineering Mathematics, B.S.Grewal, Khanna publishers-42nd Edition(2012)

2.Engineering Mathematics Volume-I, by T.K.V. Iyengar, S.Chand publication-12thEdition

3.A Text book of B.Sc. mathematics volume-II, V.Venkateswara Rao S.Chand Publications

REFERENCES

1. Ramana B.V. Higher Engineering Mathematics,Tata McGraw Hill New Delhi,11th Reprint, 2010.
2. Engineering mathematics, volume-I&II, E.Rukmangadachari & E.Keshava Reddy Pearson Publishers.
3. D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005.
4. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, LaxmiPublications, Reprint, 2008.
5. Bhavanari Satyanarayana, T.V.Pradeepkumar&D.Srinivasulu “Linear Algebra & Vector Calculus”, Studera Press, New Delhi

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I B. Tech – I Sem.

L	T	P	C
3	1	-	4

(18HS0801) Chemistry
(Common to all Branches)

COURSE OBJECTIVES

1. *Developed in this course will aid in quantification of several concepts in chemistry that have been introduced at the 10+2 levels in schools.*
2. *Technology is being increasingly based on the electronic, atomic and molecular level modifications.*
3. *Quantum theory is more than 100 years old and to understand phenomena at Nanometer levels, one has to base the description of all chemical processes at molecular levels.*

COURSE OUTCOMES (COs)

1. *Understand the atomic ,molecular structure ,hard and soft acids*
2. *Understand the thermodynamic functions, process of corrosion &apply suitable control methods*
3. *Differentiates hard, soft water and their problems.*
4. *Understand the various water treatment methods.*
5. *Understands industrially based polymers & their application in preparing various engineering materials.*
6. *Acquires the knowledge of various Spectroscopic techniques and applications*

UNIT-I

Spectroscopic Techniques and Applications: Principles, selection rules and applications of absorption (UV/Visible, Atomic Absorption, Infrared) and Emission spectroscopy (Flame photometry and Fluorescence and its applications in medicine. Advanced Instrumental Techniques and their Significance: XRD, Scanning Electron microscope (SEM) and Transmission electron microscopy (TEM).

UNIT-II

Organic Reactions and Organic Polymers: Introduction to reactions involving substitution, addition, elimination, oxidation, reduction, Synthesis of a commonly used drug molecule. Organic polymers types (Thermosetting and Thermoplastics), Preparation, Properties and Engineering Applications of PVC, Teflon, Nylon6,6, Bakelite), Moulding Process and its uses, Conducting polymers (polyacetylene, Polyaniline).

UNIT-III

Atomic, Molecular Structure and Periodic Properties: Schrodinger wave equation, Molecular orbital‟s of diatomic molecules. Energy level diagrams of diatomic. Pi-molecular orbitals of butadiene and benzene and aromaticity. Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties.

Effective Nuclear charge, variations of s, p, d and f orbital energies of atoms in the periodic table, atomic and ionic sizes, oxidation states, hard soft acids and bases, molecular geometries.

UNIT-IV

Uses of Free Energy and Chemical Equilibria: Thermodynamic functions: Energy Entropy and free energy, Cell potentials, Nernest equations and Its Applications. Acid base Oxidation, reduction and Solubility Equilibria. Corrosion: Types of Corrosion, Factors Influencing the rate of Corrosion, Prevention of Corrosion (Sacrificial anodic protection, Impressed Cathodic Protection), Anodic and Cathodic Inhibitors, Electro plating (Copper, Nickel, Chromium) and Electroless Plating.

UNIT-V

Water Technology: Hardness of water and its units, Estimation of Hardness by EDTA method. Boiler Troubles: Scale & Sludge, Priming and Foaming and Boiler corrosion. Municipal Solid waste Treatment.Water softening methods (Lime-Soda, Zeolite, Ion- Exchange resins). Demineralization of Brackish Water: Reverse Osmosis and Electro Dialysis.

TEXT BOOKS

1. University chemistry, by B. H. Mahan
2. Chemistry: Principles and Applications, by M. J. Sienko and R. A. Plane
3. Fundamentals of Molecular Spectroscopy, by C. N. Banwell
4. Engineering Chemistry (NPTEL Web-book),by B. L. Tembe, Kamaluddin and M. S. Krishnan
5. Physical Chemistry, by P. W. Atkins 1.
6. Organic Chemistry: Structure and Function by K. P. C. Volhardt and N. E. Schore, 5th Edition http://bcs.whfreeman.com/vollhardtschore5e/default.asp

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I B. Tech – I Sem.

L	T	P	C
1	-	4	3

(18ME0302) ENGINEERING GRAPHICS & DESIGN

COURSE OBJECTIVES

1. *To familiarize the students in basic concept of conic sections, projections and Development of Objects.*
2. *To develop the imagination and drafting skills of students.*

COURSE OUTCOMES (COs)

1. *Describe and understand the basic principles of Engineering graphics and their significance in Engineering drawing.*
2. *Provide methods involved in sketching the projection of points and straight lines.*
3. *Sketch the projections of planes(Planes (Inclined to single plane only)*
4. *Recognize the basic solids like cylinders, cones, prisms and pyramids and sketch the projections of them*
5. *Able to develop surfaces like Right Regular Solids Prisms, Pyramids*
6. *Understand and construct the basic principles of isometric and Orthographic Projections(2D and 3D)*

UNIT-I

Introduction to Engineering Drawing: Principles of Engineering Graphics and their significance, usage of Drawing instruments, lettering, Conic sections, Cycloids and Involutes.

UNIT-II

Projections of Points: Principles of Orthographic Projections-Conventions - Projections of Points, Traces

Projections of straight lines: Inclined to both the planes - simple problems only, Traces

UNIT-III

Projections of Planes: Planes (Inclined to single plane only)

Projections of Solids: Introduction– Projections of right regular solids-Prisms, Pyramids in different positions. (Single plane only)

UNIT-IV

Sections of solids: Sectional Views of Right regular Solids - Prisms, Pyramids. **Development of surfaces** - Development of surfaces of Right Regular Solids - Prisms, Pyramids.

UNIT-V

Orthographic Projections: Principles of Orthographic projection, Conversion of objects from 3D to 2D

Isometric Projections: Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and compound Solids, Conversion of 2D to 3D.

Auto CAD (for Practice only not for External Exam)

Introduction to CAD, Applications, commands, Tool bar, modeling of Simple parts, isometric problems

TEXT BOOKS

1.Engineering Drawing, N.D.Bhatt, Charotar Publishers
2.A text Book of Engineering Drawing, K.L.Narayana, Kannaiah, Scitech Publishers, 2010
3.Engineering Graphics with using AutoCAD,2007. Jeyapoovan.T, Vikas Publishing House

REFERENCES

1. Fundamentals of Engineering Drawing, Warren J.Luzadder and Jon. M.Duff, Prentice Hall of India Pvt., Ltd., Eleventh Edition, 2001.
2. Engineering Graphics, Bhattacharyya, S.C.Bera, I.K .International Pvt Ltd. 2009.
3.A text Book of Engineering Drawing and Graphic, K.Venugopal New Age PublishinNew Delhi, 2008.

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I B. Tech – I Sem.

L	T	P	C
3	-	-	3

(18HS0810) ENGLISH
(Common to all branches)

COURSE OBJECTIVES

1. *To develop interest in reading English Literature for language learning.*
2. *To improve knowledge and understanding of Grammar.*
3. *To enhance the ability for making use of grammar in writing English.*
4. *To enrich communication skills among the students.*
5. *To develop their insight and positive attitude towards English language.*
6. *To impart LSRW skills and inculcate the habit of learning.*
7. *To build vocabulary.*
8. *To enhance employability skills.*

COURSE OUTCOMES

Students will be able:

1. *Understand the rules of English grammar and their usage in writing English.*
2. *Use LSRW skills through the prescribed text and develop their ability to communicate effectively.*
3. *Obtain the mastery of language to express ideas, views, feelings and experience.*
4. *Use effective writing skills for official correspondence.*
5. *Inculcate values and ideal characteristic qualities in students*
6. *Develop the skills needed to participate in a conversation that builds knowledge collaboratively.*

UNIT-I

Reading:

1.All the World's a Stage by William Shakespeare. (Act-II, Scene-VII).

2.After Twenty Years by O. Henry.

Writing: Nature and Style of Sensible Writing: Describing & Defining.

Speaking: Oral Communication (involves interactive practice sessions) Self -introduction and introducing a friend.

Listening: Listening activity (Present tense).

Vocabulary: The concept of word formation & root words from foreign languages. Grammar: Subject – Verb Agreement. Sentence Structures & use of phrases and clauses in sentences. Identifyin common errors in noun, pronoun and adjectives.

UNIT-II

Reading:

1. I Have a Dream Martin Luther King jr.
2. Knowledge and Wisdom by Bertrand Russell.

Writing: Importance of proper punctuation and creating coherence- Simple sentences.

Speaking: Expressing apology. Listening: Listening activity. (Past tense) Vocabulary: Prefixes and Suffixes.

Grammar: Identifying common errors in Articles, Modifiers and degrees of comparison.

UNIT-III

Reading:

1) Nelson Mandela (Biography)

2) "The Happy Prince" by Oscar wilde. Writing: Paragraph writing – letter writing.

Speaking: Situational dialogues. Listening: Listening activity. (Future tense) Vocabulary: Synonyms and Antonyms.

Grammar: Identifying common errors in Prepositions and Link words and complex sentences.

UNIT-IV

Reading:

1. Where the Mind is without Fear by RabindraNath Tagore.
2. Cause - Effect and Control Measures of Pollution (Air, Water, Noise) and Nuclear Hazards.

Writing: Essay writing - Organizing principles of essay writing - Introduction and Conclusion.

Speaking: Public speaking dynamics.

Listening: Listening activity. (Active voice and passive voice)

Vocabulary: Abbreviations and Acronyms.

Grammar: Identifying common errors in redundancies and compound sentences.

UNIT-V

Reading:

1. The Road not Taken by Robert Frost.
2. An Astrologer's Day by R K Narayan. Writing: Techniques for writing precisely.

Speaking: Interviews and formal presentations.

Listening: speeches of A P J Abdul Kalam, Steve Jobs and so on.

Vocabulary: One word substitutes.

Grammar: Identifying common errors in clichés

REFERENCES

1.Practical English Usage. Michael Swan. OUP. 1995.
2.Remedial English Grammar. F.T. Wood. Macmillan. 2007.
3.On Writing Well. William Zinsser. Harper Resource Book, 200.
4.Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press, 2006.
5.Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press, 2011.
6.Exercises in Spoken English. Parts. I-III. CIEFL, Hyd. Oxford University Press, 2005.
7.Oscar Wilde, Create Independence Publisher, Kindle Edition, 2017.
8. The Complete Works of William Shakespeare, Kindle Edition, 2017.
9. G. P. Editors, The Complete Works of William Shakespeare, Global Classic, 2018.
10.Robert Frost, Robert Frost Collection, Wider Publication, 2011.

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(18HS0802) CHEMISTRY LAB
(Common to all Branches)

COURSE OUTCOMES (COs)

1. *Estimate rate constants of reactions from concentration of reactants/products as a function of time*
2. *Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc*
3. *Synthesize a small drug molecule and analyse a salt sample.*
4. *To estimate the amount of hardness and DO.*
5. *Determination of conductivity of an acid*
6. *To compare the relation between the absorbance and conductance of different chemical samples (Beer-Lambert's Law).*

List of Experiments

1. Estimation of copper by EDTA method
2. Determination of chloride content of water
3. Determination of acidity of water sample.
4. Determination of alkalinity of water sample
5. Potentiometric determination of Fe^{2+} by potassium permanganate.
6. Determination of Viscosity of an oil by Redwood Viscometer
7. Determination of dissolved oxygen in a water sample by Winkler"s method
8. Conductometric titrations of strong acid against strong base.
9. Chemical analysis of a salt
10. Synthesis of a polymer/drug

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(18HS0811) ENGLISH LAB
(Common to all branches)

COURSE OBJECTIVES

To get the job students dream of today largely depends on the way they communicate. Due to globalization, civilization and fast growing technologies, communication has become a very important factor. Good communication skills increase the possibilities of getting good jobs.

1. *To meet the requirement of corporate word one has to be capable of expressing oneself.*
2. *To provide Computer Assisted Language Learning facility for the students on self-instructional method for improving language.*
3. *To improve the correct articulation as English is international language.*
4. *To enhance the communication skills with a variety of activities and practice sessions.*

COURSE OUTCOMES (COs)

1. *Recognize sounds of English language with different classifications.*
2. *Know the syllabification and intonation in pronunciation.*
3. *Understand and use vocabulary effectively in day to day communication.*
4. *Understand international accent and utilize the same in their daily conversation*
5. *.Use various describing process by participating professional activities.*
6. *To crease confidence for public speaking, for facing interviews, for making effective oral presentations, for having discussions, and for delivering impromptu speeches.*

UNIT -I

a) Importance of Phonetics – Introduction, organs of speech, classification of sounds, and Phonetic transcriptions.

UNIT-II

a) Syllable, Syllabification, Word stress, Stress Rules and Intonation.
b) Intonation (Falling, Raising, and fall-raise) - Pitch and Rhythm.
c) Influence of mother tongue (MTI) - Common Indian Variants in pronunciation.
d) Difference between British and American Pronunciation

UNIT-III

a) Vocabulary building.
b) Functional English; Telephone skills; Giving Directions; Situational dialogues; Role play.
c) JAM, Oral presentation-Prepared and extempore and PPT presentation.

UNIT-IV

a) Describing people, places, things and situations- Body language–- listening some

UNIT-V

a) Preparation of resume (C.V) & Cover Letter.
b) Interview Skills - mock interviews.
c) Group Discussion, Debate and Dress code.

Minimum requirement for ELCS LAB

1. Computer Assisted Language Learning (CALL) Lab: The Computer Aided Language Lab for 60 Students with 60 systems one Master Console, LAN facility and English Language Software for self-study by learners.
2. The Communication Skills Lab with movable chairs and audio visual aids with a P. A. system, Projector, a Digital stereo audio & video system and Camcorder etc.

System Requirement (Hardware component):

Computer network with: LAN with minimum 60 multimedia systems with the following.

Specifications:

i) P- IV Processor

a) Speed 2.8 GHZ
b) RAM – 512 MB Minimum
c) Hard Disk – 80 GB

ii) Headphones of High quality.

Software:

1. Clarity pronunciation power--- Part 1(sky pronunciation)
2. Clarity pronunciation power--- Part 2
3. K-Van Advanced Communication Skills.
4. Walden Info tech Software.

REFERENCES

1. A Textbook of English Phonetics for Indian Students, second edition T. Balasubramanian. (Mcmillian) 2012.
2. A Course in Phonetics and spoken English, DhamijaSethi, Prentice-hall of India Pvt. Ltd, 2000.
3. Speaking English Effectively, second Edition Krishna Mohan & NP Singh 2011 (Mcmillian).
4. A Hand Book of English Laboratories,E.Sureshkumar ,P.Sreehari, Foundation books, 2011.
5. Spring Board Success, SharadaKoshik, BinduBajwa, Orient Black Swan, Hyderabad, 2010.

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(18ME0301) WORKSHOP PRACTICES LAB

PART-A –Engineering Workshop

COURSE OBJECTIVES

1. *The course provides hands-on training in the trades of Carpentry, Fitting, House-wiring, TinSmithy, and Foundry. Overview of metal cutting processes, plumbing and welding is provided through live demonstrations.*
2. *To provide students with hands-on experience in basic hardware, productivity tools and basicoperating system installations.*

COURSE OUTCOMES (COs)

After completion of this course, a successful student will be able to:

1. *Utilize workshop tools for engineering practice.*
2. *Employ skills for the production a component for real time applications.*
3. *Appreciate the hard work and intuitive knowledge of the manual workers.*
4. *Identify the basic computer peripherals.*
5. *Gain sufficient knowledge on assembling and disassembling a PC.*
6. *Learn the installation procedure of Windows and Linux OS.*

LIST OF EXPERIMENTS

1. TRADES FOR EXERCISES

a. **Carpentry shop:** Two joints (exercises) involving tenon and mortising, groove and tongue: Making middle lap T joint, Cross lap joint, Mortise and tenon T joint, Bridle T joint from soft wood stock.

b. **Fitting shop:** Two joints (exercises) from: Square joint, V joint, Half round joint or Dovetail joint out of 100 x 50 x 5 mm M.S. stock.

c. **Sheet metal shop:** Two jobs (exercises) from: Tray, Cylinder, Hopper or Funnel from out of 22 or 20 gauge G.I. sheet.

d. **House-wiring:** Two jobs (exercises) from: Wiring for ceiling rose and two lamps (bulbs)with independent switch, two way switch, controls with or without looping, wiring for stair case lamp, wiring for water pump with single phase starter.

e. **Foundry: Preparation of two moulds (exercises):** for a single pattern and a double pattern.

f. **Welding: Preparation of two welds (exercises):** Single V butt joint, Lap joint, Double V butt joint or T fillet joint.

2. TRADES FOR DEMONSTRATION:

a. Plumbing
b. Machine Shop
c. Metal Cutting

Apart from the above the shop rooms should display charts, layouts, figures, circuits, hand tools, hand machines, models of jobs, materials with names such as different woods, wood

faults, Plastics, steels, meters, gauges, equipment, CD or DVD displays, First aid, shop safety etc. (though they may not be used for the exercises but they give valuable information to the student). In the class work or in the examination knowledge of all shop practices may be stressed upon rather than skill acquired in making the job.

REFERENCES

1. Engineering Work shop practice for JNTU, V. Ramesh Babu, VRB Publishers Pvt. Ltd., 2009
2. Work shop Manual, P.Kannaiah & K.L.Narayana, SciTech Publishers.
3. Dictionary of Mechanical Engineering, GHF Nayler, Jaico Publishing House.

PART-B – IT Workshop

Task 1:

Identification of the peripherals of a computer: To prepare a report containing the block diagram of the CPU along with the configuration of each peripheral and its functions. Description of various I/O Devices

Task 2:

A practice on disassembling the components of a PC and assembling them.

Task 3:

1. Basic DOS commands, Installation of MS windows.
2. Basic Linux Commands,Installation ofLinux.

Task 4:

Hardware Troubleshooting (Demonstration): Identification of a problem and fixing the solution (improper assembly or defective peripherals). Software Troubleshooting (Demonstration): Identification of a problem and fixing the PC for any software issues Productivity tools

Task 5:

1. **MS Word Orientation:** Accessing, overview of toolbars, saving files, Using help and resources, rulers, formatting ,Drop Cap , Applying Text effects, Using Character Spacing, using templates, Borders and Colors, Inserting Header and Footer, Using Date and Time option, security features in word, converting documents while saving

2. **Presentations:** Creating, opening, saving and running the presentations, selecting the style for slides, formatting the slides with different fonts, colors, creating charts and tables, inserting and deleting text, graphics and animations, bulleting and numbering, hyperlinking, running the slide show, setting the timing for slide show. Students should submit a user manual of the Presentation tool considered.

3. **Spreadsheet :**Students should be able to create, open, save the application documents and format them as per the requirement. Some of the tasks that may be practiced are Managing the worksheet environment, creating cell data, inserting and deleting cell data, format cells, adjust the cell size, applying formulas and functions, preparing charts, sorting cells. Students should submit a user manual of the Spreadsheet application considered.

Task 6:

Networking: Students should connect two computers directly using a cable or wireless connectivity and share information. Students shouldconnect two or more computers using switch/hub and share information. Crimpling activity, logical configuration etc should be done by the student. The entire process has to be documented.

REFERENCES

1. Introduction to Computers, Peter Norton, McGraw Hill
2. MOS study guide for word, Excel, Powerpoint & Outlook Exams", Joan Lambert,Joyce Cox, PHI.
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
4. Networking your computers and devices, Rusen, PHI
5. Trouble shooting, Maintaining& Repairing PCs", Bigelows, TMH

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(18HS0831) MATHEMATICS-II
(Common to all branches)

COURSE OBJECTIVES

The objective of this course is to familiarize the prospective engineers with techniques in Multivariate integration, ordinary and partial differential equations and complex variables. It aims to equip the students to deal with advanced level of mathematics and applications that would be essential for their disciplines. More precisely, the objectives are:

1. *To acquaint the student with mathematical tools needed in evaluating multiple integrals andtheir usage.*
2. *To introduce effective mathematical tools for the solutions of differential equations thatmodel physical processes.*
3. *To introduce the tools of differentiation and integration of functions of complex variablethat are used in various techniques dealing engineering problems.*

COURSE OUTCOMES (COs)

1. *Solve the differential equations related to various engineering fields*
2. *Classify the differential equations with respect to their order and linearity*
3. *Learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems.*
4. *Understand and apply the double and triple integrals in various engineering aspects.*
5. *Understand the significance of differentiability for complex functions and be familiar with the Cauchy-Riemann equations.*
6. *Recognize the Cauchy"s integral formula and the generalized Cauchy's integral formula*

UNIT-I

First order ordinary differential equations: Exact, linear and Bernoulli"s equations, Euler"s equations, Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut"s type.

UNIT-II

Ordinary differential equations of higher orders: Second order linear differential equations with variable coefficients, method of variation of parameters, Cauchy-Euler equation; Power series solutions; Legendre polynomials, Bessel functions of the first kind and their properties.

UNIT-III

Multivariable Calculus (Integration): Multiple Integration: Double integrals (Cartesian), change of order of integration in double integrals, Change of variables (Cartesian to polar), Applications: areas and volumes, Triple integrals (Cartesian), orthogonal curvilinear coordinates.

UNIT-IV

Complex Variable – Differentiation: Differentiation, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; elementary analytic functions (exponential, trigonometric, logarithm) and their properties; Conformal mappings, Mobius

transformations and their properties.

UNIT-V: Complex Variable – Integration: Contour integrals, Cauchy-Goursat theorem (without proof), Cauchy Integral formula (without proof), Taylor‟s series, zeros of analytic functions, singularities, Laurent‟s series; Residues, Cauchy Residue theorem (without proof), Evaluation of definite integral involving sine and cosine.

TEXT BOOKS

1. Higher Engineering Mathematics, B.S.Grewal, Khanna publishers
2. Engineering Mathematics Volume-I &III by T.K.V. Iyengar, S.Chand publication

REFERENCES

1. Engineering Mathematics, volume-I&III, E. Rukmangadachari& E.Keshava Reddy Pearson Publishers
2. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11thReprint, 2010.
3. Engineering Mathematics-I & III, T.K.V.Iyengar S.Chand Publications.
4. D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005.
5. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.

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(18HS0851) SEMI-CONDUCTOR PHYSICS
(Common to ECE & CSE)

COURSE OBJECTIVES

1. *Basic concepts of free electron theory and energy bands in solids.*
2. *Key points, formation and importance of semiconductors.*
3. *Will Understanding working principles and applications of optoelectronic devices.*
4. *Will recognize the basic concepts related properties of Lasers and Optical Fibers.*
5. *To understand the fundamentals Nano materials.*

COURSE OUTCOMES (COs)

1. *Understand the basic concepts of free electron theory and energy bands in solids.*
2. *Understand the importance of semiconductors in electronic devices.*
3. *Understand the working principles and applications of Light Emiting Diode*
4. *Understand the working principles and applications of Photo Detectors*
5. *Understand the concepts related to Lasers and Optical fibers.*
6. *Understand the importance of Nanotechnology.*

UNIT – I

ELECTRONIC MATERIALS: Free electron theory, density of states and energy band diagrams – Energy bands in solids – E – K band diagram, direct and indirect band gaps, types of electronic materials: metals, semiconductors and insulators – occupation probability – Fermi level – effective mass.

UNIT – II

SEMICONDUCTORS: Intrinsic and Extrinsic semiconductors – Dependence of Fermi level on carrier-concentration and temperature (equilibrium carrier statistics) - Carrier generation and recombination - Carrier transport: diffusion and drift -Hall Effect- p -n junction – Metal semiconductors junction-Ohmic and Schottky Junctions.

UNIT –III

LIGHTEMITING DIODE (LED) & PHOTODETECTORS: Rate equations for carrier density – radiative and non - radiative recombination mechanisms in semiconductors – LED: structure, materials, characteristics and figure of merits.

Photo detectors – PIN and Avalanche diode and their structure, materials working principle and characteristics – Solar cell. - Principle and characteristics

UNIT – IV

LASERS AND FIBER OPTICS: Characteristics of laser beams,Einstein‟s theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion, different types of lasers: Semiconductor laser, applications of lasers in science, engineering and medicine.

Principle of fiber optics – acceptance angle and numerical aperture – types of fibre cables-loses in fiber optics – optical fiber communication system - applications of fiber optics.

UNIT-V

PHYSICS OF NANOMATERIALS: Introduction, significance of nano scale – surface area and quantum confinement- Quantum dot, Quantum well , Quantum wire -Synthesis of nanomaterials- Top Down Process- Ball Milling ; Bottom Up Process: Sol-Gel method– CNT-Properties of Graphene- Applications.

TEXT BOOKS

1. J. Singh, Semiconductor optoelectronics, Physics and Technology, McGraw-Hill Inc. (1995).
2. S.M. Sze, Semiconductor devices: Physics and Technology, Wiley (2008).
3. P. Bhattacharya, Semiconductor optoelectronic devices, Prentice Hall of India (1997).
4. B.E.A. Saleh and M.C, Tech, Fundamentals of photonics, John Wiley & Sons.
5. Engineering Physics – K.Thyagarajan, MCGrawHill Education Private Ltd, New Delhi.

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(18CS0501) PROGRAMMING FOR PROBLEM SOLVING

COURSE OBJECTIVES

1. To understand the core aspects of computer problem solving techniques.
2. To understand the programming language constructs.
3. To understand the programming paradigms.

COURSE OUTCOMES (COs)

1. Understand the basics of C Programming and design the flowchart and algorithm for real world problems.
2. Analyze the flow of decision and loop control statements.
3. Understand and Develop the one dimensional and 2 dimensional array concepts.
4. Implement user defined functions with different categories.
5. Analyze and implement pointers and strings for real world problems.
6. Apply the Array of structures and understand the file management in C.

UNIT I

OVERVIEW OF COMPUTERS AND C-PROGRAMMING: Description of Computer Hardware &Software.

Introduction to C: overview of C, executing a „c" program, c-character set, constants, variables, data types, declaration of variables, assigning values to variables, managing input& output operations, operators and expressions, basics of algorithm and flow chart

UNIT II

DECISION&LOOPCONTROL STATEMENTS: Introduction, If Statement, If-else Statement, Nested- If-else Statement, Else if Ladder, Switch case – break – continue – go to Statement, for loop, nested for loop, while loop, do-while, do-while statement with while loop

UNIT III

ARRAYS: Introduction, one-dimensional (1D)-Arrays, declaration and initialization of one-dimensional (1D)-Arrays, Two- dimensional (2D)-Arrays, initialization of Two-dimensional(2D)-Arrays, Multi-dimensional Arrays

FUNCTIONS: Introduction, need for user-defined functions, a multi-function program, elements of user-defined functions, definition of functions, return values and types, category of functions, recursion, scope and life time of variables, preprocessor commands:#define, #include,

multi file programs

UNIT IV

POINTERS: Introduction, understanding pointers, accessing address of a variable, declaring and initialization of pointer variables, accessing variable through pointers, chain of pointers, pointer expressions, pointer increment and scale factor, pointers and arrays, passing arrays to functions, array of pointers, pointers as function arguments, functions returning pointers.

STRINGS: Introduction, declaring and initializing string variables, reading and writingstrings, arithmetic operations on characters, putting strings together, comparison of two strings, string handling functions, table of strings (array of strings)

UNIT V

STRUCTURES: Introduction, defining a structure, declaring structure variables, accessing structure members, structure initialization, copying and comparing structure variables, operations on individual members, arrays of structures ,arrays within structures, structures within structures, structures and functions, unions, typedef, enum

File Management in C: Introduction, Types of Files, Defining and Opening a File, Closing a File, Input / Output Operations on Files, Error handling during IO Operations, Random access to files, Command line arguments.

TEXT BOOKS

1. C and Data Structures – Ashok Kamthane Pearson education
2. Programming in C and Data Structures – E Balagurusamy – Mc GrawHill.

REFERENCES

1. Computer Fundamentals and C Programming - Dr. P. Chenna Reddy, ISBN: 9789351045885, Publisher: Pothi.com
2. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
3. Programming in C, Second Edition – Pradip Dey, Manas Ghosh, Oxford University Press.
4. “C from Theory to Practice”- George S. Tselikis- Nikolaos D. Tselikas- CRC Press.
5. “Programming with C”- R S Bichkar- University Press.
6. Programming in C and Data Structures, J.R.Hanly, Ashok N. Kamthane and A.Ananda Rao, Pearson Education. (UNIT-I)

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(18CS0502) DIGITAL LOGIC DESIGN

COURSE OBJECTIVES

1. To acquire the basic knowledge of digital logic levels and application of knowledge to understand digital electronics circuits.
2. To prepare students to perform the analysis and design of various digital electronic circuits.

COURSE OUTCOMES (COs)

At the end of this course, students will demonstrate the ability to

1. Understand the basics of number systems and logic gates.
2. Implement the Minimization Techniques like variable map methods and tabulation methods.
3. Design and implement Combinational circuits.
4. Understand the concepts of Decoders, Encoders, Multiplexers, DeMultiplexers.
5. Design and implement Sequential logic circuits.
6. Design PLAs for implementing the logical problems.

UNIT- I

Binary systems and Boolean algebra: Digital Systems, Binary Numbers, Number Base Conversions, Octa land Hexa decimal Numbers, Complements, Signed Binary Numbers, Binary Codes, Binary Storage and Registers, Axiomatic Definition of Boolean Algebra, Basic Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Other Logic Operations, Digital Logic Gates.

UNIT- II

Gate–Level Minimization: The Map Method, Four Variable Map, Five-Variable Map, Product of Sums Simplification, Don,,t-Care Conditions, NAND and NOR Implementation, Other Two Level Implementations, EX-OR Function, Tabular Minimization method.

UNIT- III

Combinational Logic: Combinational Circuits, Analysis Procedure, Design Procedure, Binary Adder-Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers, De-Multiplexers.

UNIT- IV

Synchronous Sequential Logic: Sequential Circuits, Latches, Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Design Procedure, Registers, Shift Registers, Ripple counters, Synchronous counters, Ring Counter and Johnson Counter.

UNIT- V

Memory And Programmable Logic: Random access memory, memory decoding, Error Detection and Correction, Read-only Memory, Programmable Logic Array, Programmable Array Logic, Sequential Programmable Devices, Integrated circuits.

TEXT BOOK

1. Digital Design, M.Morris Mano, Micheal D.Ciletti, 5th Edition, 2013, Pearson.

REFERENCES

1. Digital Logic & State Machine Design, David J. Comer, Oxford University Press, 3rd Reprinted Indian Edition, 2012.

2. Digital Logic Design, R.D.Sudhakar Samuel, Elsevier Fundamentals of Logic Design, 5/e, Roth, Cengage

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(18EE0239) BASIC ELECTRICAL ENGINEERING

COURSE OBJECTIVES

To make the student learn about:

1. To understand the nature of different circuit elements, fundamental laws and network Theorems.
2. Understand the operation of dc machines and single phase transformers.

COURSE OUTCOMES (COs)

Upon completion of the course, students will:

1. *Determine the equivalent impedance of given network by using network reduction techniques.*
2. *Determine the current through any element and voltage across any element*
3. *Apply the network theorems suitably.*
4. *Analyze the operating principles of electrical machines and transformer.*
5. *Student will gain various LAWs and principles associated with electrical systems.*
6. *Understand the various network theorems and analyze the various parameters for port networks.*

UNIT-I

DC Circuits: Electrical circuit elements (R, L and C), voltage and current sources, Kirchoff current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits.

UNIT-II

AC Circuits: Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance. Three phase balanced circuits, voltage and current relations in star and delta connections.

UNIT-III

Transformers: Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

UNIT-IV

Electrical Machines: Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators.

UNIT-V

Electrical Installations

Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup.

TEXT BOOKS

1. D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill,2010.
2. D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.

REFERENCES

1. L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press,2011.
2. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
3. V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.

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(18CS0503) PROGRAMMING FOR PROBLEM SOLVING LAB

COURSE OBJECTIVES

1. *To make the student learn C Programming language.*
2. *To make the student solve problems, implementthose using C & C++ programming languages.*
3. *To strengthen the ability to identify and apply the suitable datastructure for the given real world problem.*

COURSE OUTCOMES (COs)

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

1. *Understand basic DOS commands and implement basic programs in C.*
2. *Implement decision control statements for solving the simple mathematical problems.*
3. *Implement loop control statements for solving the simple mathematical problems.*
4. *Implement the modular programming using different type of user defined functions.*
5. *Develop String related problems like sorting array of strings and finding the no of characters in a line of string.*
6. *Implement the file operations like reading, writing and appending to a file.*

Experiments List:

1. a) Acquainting students to "c" programming environment and DOS commands
   b) Calculate sum of three numbers using c-program

2. a) Swap(exchange) values of two integer variables using c-program
   b) Read an integer, a character and a float values through keyboard and display
   c) Check operators precedence and associativity using c-program
   d) Write a c-program using all basic data types of c language

3. a) Read 3 integer values through keyboard and display largest among them
   b) Read marks of 5 subjects obtained by a student through keyboard and display "fail" or "pass" message on console
   c) Using switch() statement implement arithmetic operations.

4. a) check whether entered number is prime number
   b) display factorial of entered number
   c) display all multiples of an entered number upto given value(n)

5. a) Generate fibonacci series upto entered number(n)
   b) find out sum of the digits of a number

6. a) Find the binary equivalent of entered decimal number
   b) Generation multiplication table of entered number(n)

7. a) Calculate sum of two integer matrices
   b) Calculate product of two integer matrices
8. a) Create your header file by including 2 user(your) defined functions and include them in a c-program student
   b) Find out factorial of a number using recursive function
   c) Find square of an entered number using "call by address(reference)" technique
   d) A program that tells us purpose of few predefined functions in "math.h" header file.
9. a) Check whether entered string is palindrome.
   b) Write a program to sort the entered set of strings using structure concept.
10. a) Count number of vowels, consonants, digits, white spaces and special characters in entered string(a line of text)
    b) Swap (exchange) values of two integer variables using pointers.
11. a) For 3 students with 3 subjects, calculate total marks and grade obtained by each
    b) Read data from a file(text) and display it on the monitor
12. a) Copy contents of one file(text) to other created file
    b) Merge contents of two files(text) and store it in another created file

REFERENCES

1. How to solve it by Computer, R.G. Dromey, Pearson.
2. The C Programming Language, Brian W. Kernighan, Dennis M. Ritchie, Pearson.
3. Let us C Yeswant Kanetkar, BPB publications
4. Pointers in C, Yeswant Kanetkar, BPB publications.
5. Programming in C and Data Structures, J.R.Hanly, Ashok N. Kamthane and A.Ananda Rao, Pearson Education

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(18HS0852) PHYSICS LAB
(Common to All Branches)

COURSE OBJECTIVES

Physics practical course is meant for making the students to gain practical knowledge to correlate with the theoretical studies. It covers experiments on principle of Mechanics and Optics, measurement of magnetic field and studying resonance using LCR circuit.

COURSE OUTCOMES (COs)

1. *Plot the intensity of the magnetic field of induction along the axis of circular coil carrying current with distance.*
2. *Estimate wavelength of laser and particles size using laser.*
3. *Operate various optical instruments.*
4. *Evaluate the acceptance angle of an optical fiber and numerical aperture.*
5. *Evaluate Energy gap of a Semiconductor diode.*
6. *Determine Rigidity modulus of the given wire by using torsional pendulum.*

Suggested list of experiments from the following: (Perform any EIGHT experiments from the following)

1. Determination of wavelengths of variouscolors of Mercury spectrum using Diffraction Grating – Normal Incidence method.
2. Determination of Dispersive power of prism.
3. Rigidity Modulus – Torsional Pendulum
4. Study of Resonance effect in Series and Parallel LCR circuit.
5. Determination of thickness of thin object by wedge method.
6. Determination of radius of curvature of Plano convex lens – Newton‟s Rings.
7. Determination of wavelength of a given laser source by using diffraction grating.
8. Determination of particle size using laser source.
9. Determinationof energy gap of a semi conductor using p – n junction diode.
10. B- H curve.
11. Magnetic field along the axis of current carrying coil – Stewart & Gee‟s Method.
12. Determination of frequency of tuning fork - Melde‟s Apparatus.
13. Determination of Spring constant – Coupled Oscillator.
14. Study of Characteristics of Solar Cell.
15. Determination of Numerical Aperture of an Optical fiber.

REFERENCES

1. Engineering Physics practical – NU Age Publishing House, Hyderabad.
2. Engineering Practical Physics – Cengage Learning, Delhi.

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(18HS0817) ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE (NON-CREDIT COURSE)

COURSE OBJECTIVES

The course aims at imparting basic principles of thought process, reasoning and inference. Sustainability is at the core of Indian Traditional knowledge Systems connecting society and nature. Holistic life style of yogic science and wisdom capsules in Sanskrit literature are also important in modern society with rapid technological advancements and societal disruptions. The course focuses on introduction to Indian Knowledge Systems, Indian perspective of modern scientific world-view, and basic principles of Yoga and holistic health care system.

COURSE OUTCOMES (COs)

Ability to understand, connect up and explain basics of Indian traditional Knowledge in modern scientific perspective.

UNIT-I

Basic structure of Indian Knowledge System: Astadash Vidya- 4 ved 4 Upaved (Ayurved, Dhanurved, Gandharva Ved & Sthapthya Adi.,)

UNIT-II

6 Vedanga (Shisha, Kalppa, Nirukha, VYkaran, Jyothish & Chand) 4 Upanga (Dharma Shastra, Meemamsa, Purana & Tharka Shastra)

UNIT-III

Modern Science and Indian Knowledge System Yoga and Holistic Health care Case studies

UNIT-IV

Philosophical Tradition (Sarvadarshan) Nyaya, Vyshepec,Sankhya, Yog, Meemamsa, Vedantha, Chavanka, Jain & Boudh

Indian Linguistic Tradition –(Phonology, morphology, syntax and semantics)

UNIT-V

Indian Artistic Tradition - Chitra kala, Moorthi kala, Vasthu kala , Sthapthya, Sangeetha, Nruthya Yevam Sahithya

Case studies

TEXT BOOKS

1. V. Sivaramakrishnan (Ed.), Cultural Heritage of India-course material, Bharatiya Vidya Bhavan, Mumbai. 5th Edition, 2014
2. Swami Jitatmanand, Modern Physics and Vedant, Bharatiya Vidya Bhavan
3. Swami Jitatmanand, Holistic Science and Vedant, Bharatiya Vidya Bhavan
4. Fritzof Capra, Tao of Physics
5. Fritzof Capra, The Wave of life

REFERENCES

1. VN Jha (Eng. Trans.), Tarkasangraha of Annam Bhatta, International Chinmay Foundation, Velliarnad, Arnakulam

2. Yoga Sutra of Patanjali, Ramakrishna Mission, Kolkata GN Jha (Eng. Trans.), Ed. RN Jha, Yoga-darshanam with Vyasa Bhashya, Vidyanidhi Prakashan, Delhi 2016

3. RN Jha, Science of Consciousness Psychotherapyand Yoga Practices, Vidyanidhi Prakashan, Delhi 2016

4. P B Sharma (English translation), Shodashang Hridayan

5. V. Sivaramakrishnan (Ed.), Cultural Heritage of India-course material, Bharatiya Vidya Bhavan, Mumbai. 5th Edition, 2014

6. S.C. Chaterjee & D.M. Datta, An Introduction to Indian Philosophy, University of Calcutta, 1984

7. K.S. Subrahmanialyer, Vakyapadiya of Bhartrihari, (Brahma Kanda), Deccan College Pune 1965.

8. Panini Shiksha, MotilalBanarasidas

9. V.N. Jha, Language, Thought and Reality, Vasudevasharan AGRAWAL Kala yevam Samskruthi, Shithya Bhavan Elahabad, 1952

10. Pramod Chandra, India Arts, Howard Univ. Press, 1983

11. Krishna Chaitanya, Arts of India, Abhinav Publications, 1987

12. R. Nagaswamy, Foundations of Indian Art, Tamil Arts Academy, 2002

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(18HS0835) PROBABILITY & STATISTICS
(Common to ME and CSE)

COURSE OBJECTIVES

1. *To train the students thoroughly in Mathematical concepts fundamentals of probability, test of hypothesis, Test of significance.*
2. *To prepare students for lifelong learning and successful careers using mathematical concepts of probability, test of hypothesis, Test of significance.*
3. *To develop the skill pertinent to the practice of the mathematical concepts including the Student abilities to formulate and modeling the problems, to think creatively and to Synthesize information*

COURSE OUTCOMES (COs)

At the end of the course, students would be expected to:

1. *Understanding of the laws of probability axioms and rules.*
2. *Understanding of moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.*
3. *Calculate and interpret the correlation between two variables.*
4. *Calculate the simple linear regression equation for a set of data*
5. *Analyze to fit a curve by the method of least squares and apply for real time problems.*
6. *Apply the various test of significance to improve the quality of control.*

UNIT I

Basic Probability:

Probability spaces, Addition theorem, conditional probability, independence, Baye‟s rule.

Random variables:

Discrete and Continuous random variables- distribution functions, densities and their properties. Expectation of Discrete and Continuous Random Variables, Moments

UNIT II

Probability Distributions:

Binomial, Poisson and Normal - evaluation of statistical parameters for these three distributions.

UNIT III

Basic Statistics:

Measures of Central tendency: Moments, skewness and Kurtosis.Correlation and regression – Rank correlation

UNIT IV

Applied Statistics:

Curve fitting: Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves (Exponential & Power curve).

Test of Hypothesis: Large sample test for single proportion, difference of proportions, single mean, difference of means, and difference of standard deviations.

UNIT V

Test of significance:

Test for single mean, difference of means and correlation coefficients, test for ratio of variances - Chi-square test for goodness of fit and independence of attributes.

TEXT BOOKS

1. B.S. Grewal, "*Higher Engineering Mathematics*", Khanna Publishers, 2000
2. *Statistical methods* by S.P. Gupta, S.Chand publications.
3. *Probability & Statistics* by T.K.V. Iyengar, S.Chand publications.

REFERENCES

1. *Probability & Statistics* by E. Rukmangadachari & E. Keshava Reddy, Pearson Publisher.
2. *Probability & Statistics for engineers* by Dr. J. Ravichandran WILEY-INDIApublishers.
3. *Probability & Statistics for Science and Engineering* by G.Shanker Rao, Universities Press.
4. *Probability and Statistics for Engineering and Sciences* by Jay L.Devore, CENGAGE.
5. *Probability and Statistics* by R.A. Jhonson and Gupta C.B.

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(18EC0443) ANALOG ELECTRONICS CIRCUITS
(Common to CSE & EEE)

COURSE OBJECTIVES

The objectives of this course is to

1. *Discuss the principle and operation of Diode Circuits, BJT and FET.*
2. *Introduce the basic building blocks of linear integrated circuits.*

COURSE OUTCOMES (COs)

Upon completion of this course, student will be able to:

1. *Understand the characteristics of various Diodes and their applications.*
2. *Understand the operation of BJT in different configurations and their h-parameters to design the Amplifier.*
3. *Understand the operation and characteristics of different types of FET.*
4. *Understand the small signal and high frequency model of FET*
5. *Understand the basic characteristics of op-amp.*
6. *Apply op-amp to design various electronic components*

UNIT I

DIODE CIRCUITS: P-N junction diode, V-I characteristics of a diode; Half-wave and Full-wave Rectifiers, filters, Zener diode, clipping and clamping circuits.

UNIT II

BJT CIRCUITS: Construction, Operation NPN transistor, Transistor Configuration: CB, CE and CC, Transistor Characteristics, BJT as an Amplifier, Transistor Biasing Circuits, h-parameter model for low frequency

UNIT III

FET CIRCUITS: FET Classification, FET configurations : CG, CS and CD, JFET- Construction, Operation, Characteristics and Parameters, MOSFET- N-channel Enhancement and Depletion MOSFETs: Construction, Working and Characteristics; Comparison of BJT and FET, Biasing of FET, FET small signal model, FET amplifiers – CS amplifier, CD amplifier, CG amplifier, High frequency model of FET.

UNIT IV

OPERATIONAL AMPLIFIER: Basic Information of Op-Amp, Ideal Op-Amp, Inverting Amplifier, Non Inverting Amplifier, Voltage Follower, Differential Amplifier, Difference and Common Mode gains, Operational Amplifier Internal Circuit, CMRR, DC Characteristics – Input Bias Current, Input Offset Current, Input and Output Offset Voltage, Thermal Drift, AC Characteristics – Frequency Response, Frequency Compensation, Slew rate.

UNIT V

APPLICATIONS OF OP-AMP: Scale Changer, Summing Amplifier, Subtractor, Instrumentation Amplifier, Differentiator, Integrator, Fixed Voltage Series Regulator, IC 723 General purpose Regulator, Active filters: Low pass, High pass, Band pass and Band stop, DAC – Weighted Resistor DAC, R-2R ladder DAC, Inverted R-2R Ladder DAC, ADC– Flash Type ADC, Successive Approximation ADC, Dual Slope ADC, DAC/ADC Specifications.

TEXT/REFERENCES

1. Electronic Devices and Circuits, Salivahanan, N.Suresh Kumar, McGraw Hill Education, Third Edition.

2. Linear Integrated Circuits, D.Roy Choudhury, Shail B.Jain, New Age International Publishers, Fourth Edition, 2010.

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(18CS0504) DATA STRUCTURES & ALGORITHMS

COURSE OBJECTIVE

1. *Understand different data structures*
2. *Understand searching and sorting techniques*

COURSE OUTCOMES (COs)

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

1. *Understand and analyze the linear data structures like arrays, linked lists, circular linked list, Double linked list.*
2. *Understand and implement the stacks and Queues data structures.*
3. *Understand the basic terminologies of Trees and application of Trees.*
4. *Implement Nonlinear data structures like Binary Trees, , Heap, AVL trees, Red Black Trees.*
5. *Analyze and implement the Graph traversal and Searching techniques like map coloring, Dijkstra"s technique, linear and binary search.*
6. *Analyze and implement the various sorting techniques.*

UNIT-I

Arrays and Linked lists: One Dimensional array : insert, delete, merging operations, Multi Dimensional array, Single linked list, Circular linked list, Double linked list, Circular Double linked list, Applications of linked lists.

UNIT-II

Stacks: Introduction-Definition-Representation of Stack-Operations on Stacks- Applications of Stacks. Queues: Introduction, Definition- Representations of Queues- Various Queue Structures- Applications of Queues.

UNIT-III

Trees: Basic Terminologies- Definition and Concepts- Representations of Binary Tree- Operation on a Binary Tree- Types of Binary Trees-Binary Search Tree, Heap Trees, AVL Trees, Red black trees

UNIT-IV

Graphs: Introduction- Graph terminologies- Representation of graphs, Graph traversal techniques, Applications of Graph Structures: map colouring, Dijkstra"s technique, topological sorting.

Searching:

Linear Search, Binary Search, Hash based searching: Hashing Techniques, Collision Resolution Techniques: Closed Hashing, Open Hashing.

UNIT-V

Sorting: Sorting Techniques: Sorting by Insertion: Straight Insertion sort- List insertion sort-

Sorting by selection: Straight selection sort- Heap Sort- Sorting by Exchange: bubble sort, Shell Sort- Quick Sort, merge sort technique

TEXT BOOKS

1. "Classic Data Structures", Second Edition by Debasis Samanta, PHI.
2. "Data Structures A Pseudo code Approach with C", Second Edition by Richard F. Gilberg, Behrouz A. Forouzan, Cengage Learning.

REFERENCES

1. Fundamentals of Data Structures in C – Horowitz, Sahni, Anderson-Freed, Universities Press, Second Edition.
2. Schaum‟ Outlines – Data Structures – Seymour Lipschutz – McGrawHill- Revised First Edition.

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(18CS0505) COMPUTER ORGANIZATION AND ARCHITECTURE

COURSE OBJECTIVES

To expose the students to the following:

1. *How Computer Systems work & the basic principles*
2. *Instruction Level Architecture and Instruction Execution*
3. *The current state of art in memory system design*
4. *How I/O devices are accessed and its principles.*
5. *To provide the knowledge on Instruction Level Parallelism*
6. *To impart the knowledge on micro programming*
7. *Concepts of advanced pipelining techniques.*

COURSE OUTCOMES (COs)

1. *Analyze the functionalities of computer and Addressing modes, instruction sets.*
2. *Perform various Computer arithmetic operations like addition, subtraction, multiplication, division.*
3. *Understanding Basic Processing Unit like RTL interpretation of instructions Register Transfer.*
4. *Analyze the CPU control unit design like hardwired and micro-programmed design approaches.*
5. *Interpret the Memory organization concepts and peripheral devices.*
6. *Understand Pipelining concepts and parallel processors.*

UNIT - I

Functional blocks of a computer: CPU, memory, input-output subsystems, control unit. Basic operational concepts - Bus Structures - Instruction set architecture of a CPU – registers, instruction execution cycle, addressing modes, instruction set, Data Transfer, Data Manipulation and Program Control.

UNIT – II

Data Representation: signed number representation, fixed and floating point representations, character representation. Computer arithmetic – integer addition and subtraction, ripple carry adder, carry look-ahead adder, etc. multiplication – shift-and add, Booth multiplier, carry save multiplier, etc. Division restoring and non-restoring techniques, floating point arithmetic.

UNIT - III

Basic Processing Unit: RTL interpretation of instructions - Register Transfer -Bus and Memory Transfers -Arithmetic Micro operations-Logic Micro operations -Shift Micro operations

CPU control unit design: hardwired and micro-programmed design approaches. Address Sequencing

UNIT – IV

Memory organization: Concept of hierarchical memory organization, semiconductor memory technologies – Secondary memories.Virtual Memory, Cache memory, mapping functions, replacement algorithms, write policies.

Peripheral devices and their characteristics: Input-output subsystems, I/O deviceinterface, I/O transfers –interrupt driven and DMA,

UNIT - V

Pipelining: Basic concepts of pipelining, throughput and speedup, instruction hazards

Parallel Processors: Introduction to parallel processors, Multiprocessor –Inter Connection Structures- Concurrent access to memoryand cache coherency.

TEXT BOOKS

1. **"Computer Organization and Design:** The Hardware/Software Interface", 5th Edition by David A. Patterson and John L. Hennessy, Elsevier.
2. "Computer Organization and Embedded Systems", 6th Edition by Carl Hamacher, McGraw Hill Higher Education.

REFERENCES

1. "Computer Architecture and Organization", 3rd Edition by John P. Hayes, WCB/McGraw- Hill
2. "Computer Organization and Architecture: Designing for Performance", 10th Edition by William Stallings, Pearson Education.
3. "Computer System Design and Architecture", 2nd Edition by Vincent P. Heuring and Harry F. Jordan, Pearson Education.

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(18CS0506) DATABASE MANAGEMENT SYSTEMS

COURSE OBJECTIVES

1. *To understand the different issues involved in the design and implementation of a database system.*
2. *To study the physical and logical database designs, database modeling, relational, hierarchical, and network models*
3. *To understand and use data manipulation language to query, update, and manage adatabase*
4. *To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.*

COURSE OUTCOMES (COs)

1. *Understand the basics of Database management system, database design and Relational model.*
2. *Analyze Relational algebra and calculus and execute SQL queries on it.*
3. *Understanding the Schemas refinement Problems Caused by redundancy.*
4. *Interpret and implement Normal Forms.*
5. *Analyze Transaction Management using ACID properties and Interpret the concepts of Concurrency Control and Recovery system.*
6. *Inferring Indexing techniques like Tree, hashing and Data base security.*

UNIT- I

Introduction: Database System Applications, Purpose of Database Systems, View of Data - Data Abstraction, Data Independence , Data Models, Database Languages - DDL, DML, Database Architecture, Database Users and Administrators.

Introduction to Data base design: ER diagrams, Entities, Attributes and Entity sets, Relationships and Relationship sets, Conceptual Design with the ER Model.

Relational Model:Integrity Constraints over Relations, Logical data base Design, Introduction to Views Destroying/ altering Tables and Views.

UNIT- II

Relational Algebra and Calculus: Relational Algebra - Selection and Projection, Set operations, Renaming, Joins, Division, Examples of Algebra Queries, Relational calculus - Tuple relational Calculus - Domain relational calculus.

Form of Basic SQL Query- Examples of Basic SQL Queries, Introduction to Nested Queries, Correlated Nested Queries, Set - Comparison Operators, Aggregate Operators, NULL values - Comparison using Null values - Logical connectives - AND, OR and NOT - Outer Joins, Triggers.

UNIT -III

Introduction to Schema Refinement- Problems Caused by redundancy, Functional Dependencies, Armstrong‟s axioms, Normal Forms - FIRST, SECOND, THIRD Normal forms - BCNF - Properties of Decompositions- Loss less join Decomposition, Dependency preserving Decomposition - FOURTH Normal Form, FIFTH Normal form.

UNIT- IV

Transaction Management: Transaction Concept, Transaction State, ACID Property, Serializability, Recoverability.

Concurrency Control: Lock - Based Protocols, Timestamp Based Protocols, Validation - Based Protocols, Multiple Granularity.

Recovery System: Log - Based Recovery, Buffer Management, Remote Backup systems.

UNIT- V

Storage strategies and Indexing: RAID Levels, Indices.

Tree Structured Indexing: Indexed Sequential Access Methods (ISAM) B+ Trees: Search, Insert, Delete.

Hash Based Indexing: Static Hashing, Extendable hashing, Linear Hashing, Extendible vs. Linear Hashing.

Database Security: Authentication, Authorization and access control, DAC, MAC and RBAC models

TEXT BOOKS

1. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, McGrawHill Education, 3rd Edition, 2003.
2. Data base System Concepts, A.Silberschatz, H.F. Korth, S.Sudarshan, McGraw Hill, VI edition, 2006.

REFERENCES

1. Database Systems, 6th edition, RamezElmasri, Shamkat B. Navathe, Pearson Education, 2013.
2. “Principles of Database and Knowledge – Base Systems”, Vol 1 by J. D. Ullman, Computer Science Press.
3. Database Systems Concepts, Peter Rob & Carlos Coronel, Cengage Learning, 2008.
4.Introduction to Database Systems, C.J. Date, Pearson Education.
4. Database Management Systems, G.K. Gupta, McGrawHillEducation.
5. “Foundations of Databases”, Reprint by Serge Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley

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(18CS0507) DATA STRUCTURES & ALGORITHMS LAB

COURSE OBJECTIVES

1. *Understand different data structures*
2. *Understand searching and sorting techniques*

COURSE OUTCOMES (COs)

1. *Perform the operations insertion, deletion, and traversing on arrays , single linked lists and doubly linked list*
2. *Implement stacks, Queues and Circular Queue using arrays and linked lists*
3. *Perform different operations on Binary tree and Binary search Tree*
4. *Implement the Graph Traversal techniques like DFS and BFS.*
5. *Implement Linear Search , Binary Search and Hash searching using arrays*
6. *Implement various sorting techniques like insertion sort, selection and quick sort*

1. Perform the operations insertion, deletion, and traversing on arrays, single linked lists and doubly linked list
2. Implement stacks, Queues and Circular Queue using arrays and linked lists
3. Perform different operations on Binary tree and Binary Search Tree
4. Implement the Graph Traversal techniques like DFS and BFS.
5. Implement Linear Search, Binary Search and Hash searching using arrays
6. Implement various sorting techniques like insertion sort, selection and quick sort.

1. Write a program to perform the operations insertion, deletion, and traversing an array.

2. Write a program to perform the operations creation, insertion, deletion, and traversing a Singly linked list.

3. Write a program to perform the operations creation, insertion, deletion, and traversing a Doubly linked list.

4. Write a program to implement stack using arrays and linked lists.

5. Write a program to convert infix expression to postfix expression.

6. Write a program to implement queue using arrays and linked lists.

7. Write a program to implement circular queue using arrays.

8. Write a program to implement Binary Tree

9. Write a program to perform different operations on Binary Search Trees

10. Write a program to implement depth first search and breadth first search on graphs.

11. A)Write a program to perform Linear Search on the elements of a given array

B) Write a program to perform Binary Search on the elements of a given array

12. Write a program to perform Hash Based Searching.

13. Write a program to sort the elements of an array using Selection Sort.

14. Write a program to sort numbers using insertion sort.

15. Write a program to implement quick sort using non-recursive function

REFERENCES

1. Fundamentals of Data Structures in C – Horowitz, Sahni, Anderson-Freed, Universities Press, Second Edition.
2. Schaum‟ Outlines – Data Structures – Seymour Lipschutz – McGrawHill- Revised First Edition.

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(18CS0508) DATABASE MANAGEMENT SYSTEMS LAB

COURSE OBJECTIVES

1. *To know the components of DBMS.*
2. *To understand design of ER Diagrams and represent using Relational model.*
3. *To understand the concept of normal forms in the design of databases.*
4. *To Understand representation of retrieval of data using relational algebra andcalculus.*

COURSE OUTCOMES (COs)

Apply ER concepts to design databases.

1. *Installation of appropriate DBMS software configure it and start working on it.*
2. *Execute simple SQL Queries on given sample database*
3. *Design the views by considering SQL queries*
4. *Able to create user interface screens and generate reports using appropriate Visual programming tools like oracle forms and reports, visual basic etc*
5. *Draw the ER diagrams for the real world applications by understanding the DBMS concepts.*
6. *Implement the concept of triggers.*

LIST OF EXPERIMENTS:

1. Practice session: Students should be allowed to choose appropriate DBMS software, install it, configure it and start working on it. Create sample tables, execute some queries, use SQLPLUS features, use PL/SQL features like cursors on sample database. Students should be permitted to practice appropriate User interface creation tool and Report generation tool.

2. A college consists of number of employees working in different departments. In this context, create two tables employee and department. Employee consists of columns empno, empname, basic, hra, da, deductions, gross, net, date-of-birth. The calculation of hra, da are as per the rules of the college. Initially only empno, empname, basic have valid values. Other values are to be computed and updated later. Department contains deptno, deptname, and description columns. Deptno is the primarykey in department table and referential integrity constraint exists between employee and department tables.
Perform the following operations on the database:

- Create tables department and employee with required constraints.
- Initially only the few columns(essential) are to be added. Add the remaining columns separately by using appropriate SQL command
- Basic column should not be null
- Add constraint that basic should not be less than 5000.
- Calculate hra, da, gross and net by using PL/SQL program.
- Whenever salary is updated and its value becomes less than5000 a trigger has to be raised preventing the operation.
- The assertions are: hra should not be less than 10% of basic and da should not be less than 50% of basic.
- The percentage of hra and da are to be stored separately.
- When the da becomes more than 100%, a message has to be generated and with user permission da has to be merged with basic.

- Empno should be unique and has to be generated automatically.
- If the employee is going to retire in a particular month, automatically a message has to be generated.
- The default value for date-of-birth is1jan, 1970.
- When the employees called daily-wagers are to be added the constraint that salary should be greater than or equal to5000 should be dropped. • Display the information of the employees and departments with description of the fields.
- Display the average salary of all the departments.
- Display the average salary department wise.
- Display the maximum salary of each department and also all departments put together.
- Commit the changes whenever required and rollback if necessary.
- Use substitution variables to insert values repeatedly.
- Assume some of the employees have given wrong information about date-of-birth. Update the corresponding tables to change the value.
- Find the employees whose salary is between 5000 and 10000 but not exactly 7500.
  Find the employees whose name contains „en".
- Try to delete a particular deptno. What happens if there are employees in it and if there are no employees.
- Create alias for columns and use them in queries.
- List the employees according to ascending order of salary.
- List the employees according to ascending order of salary in each department.
- Use„&&"wherever necessary
- Amount 6000 has to be deducted as CM relief fund in a particular month which has to be accepted as input from the user. Whenever the salary becomes negativeit has to be maintained as1000 and the deduction amount for those employees is reduced appropriately.
- The retirement age is 60 years. Display the retirement day of all the employees.
- If salary of all the employees is increased by 10% every year, what is the salary of all the employees at retirement time.
- Find the employees who are born in leap year.
- Find the employees who are born on feb 29.
- Find the departments where the salary of at least one employee is more than 20000.
- Find the departments where the salary of all the employees is less than 20000.
- On first January of every year a bonus of 10% has to be given to all the employees. The amount has to be deducted equally in the next 5 months. Write procedures for it.
- As a designer identify the views that may have to be supported and create views.
- As a designer identify the PL/SQL procedures necessary and create the musing cursors.
- Use appropriate Visual programming tools like oracle forms and reports, visual basic etc. to create user interface screens and generate reports.

Note: As a designer identifies other operations that may be required and add to the above list.

The above operations are not in order. Order them appropriately. Use SQL or PL/SQL depending on the requirement.

3. Students may be divided in to batches and the following experiments may be given to them to better understand the DBMS concepts. Students should gather the required information, draw ER diagrams, map them to tables, normalize, create tables, triggers, procedures, execute queries, create user interfaces, and generate reports.

- Student information system
- APSRTC reservation system
- Hostel management
- Library management
- Indian Railways reservation
- Supermarket management
- Postal system
- Banking system
- Courier system
- Publishing house system

REFERENCES

1. "Learning Oracle SQL and PL/SQL", Rajeeb C. Chatterjee,PHI.
2. "Oracle Database11g PL/SQL Programming",M.McLaughlin,TMH.
3. "Introduction to SQL",RickF.VanderLans, Pearson education.

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II B. Tech – I Sem.

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(18EE0241) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OBJECTIVES

To enhance the student with knowledge on electrical and electronic equipment's.

COURSE OUTCOMES (COs)

1. *Demonstrate the characteristics of PN Junction Diode, Rectifiers, Filters, BJT, JFET and MOSFET.*
2. *Analyze numerical and analytical problems in Rectifiers, Filters, and Transistor biasing*
3. *Circuits.*
4. *Design and develop electronic circuits such as Rectifiers with and without filters and*
5. *Transistor biasing circuits.*
6. *Solve engineering problems and arrive at solutions relating to electronic devices and*
7. *circuits.*
8. *Identify a suitable semiconductor device and transistor for any given specification.*
9. *Select suitable technique for Device modeling.*

PART – A
BASIC ELECTRICAL ENGINEERING LAB

1. Verification of Superposition Theorem.
2. Verification of Thevenin"s Theorem.
3. Determination of Open circuit and Short circuit parameters
4. Swinburne"s Test on DC Shunt Machine (Predetermination of Efficiency of a Given DC Shunt Machine Working as Motor and Generator).
5. Brake Test on DC Shunt Motor. Determination of Performance Characteristics.
6. OC & SC Tests on Single-Phase Transformer (Predetermination of Efficiency and Regulation at Given Power Factors).

PART – B
ELECTRONICS LABORATORY
(Any Six Experiments)

1. P-N Junction Diode and Zener Diode Volt-Ampere Characteristics.
2. Bipolar Junction Transistor in CB Configuration-Input and Output Characteristics, Computation of α.
3. Half-Wave Rectifier- a) Without Filter b) With Capacitor Filter.
4. Full-Wave Rectifier- a) Without Filter b) With Capacitor Filter.
5. Bipolar Junction Transistor in CE Configuration-Input and Output Characteristics, Computation of β.
6. Junction field effect Transistor in Common Source Configuration Output and Transfer Characteristics.
7. Verification of Logic Gates- AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR.

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(18HS0816) INDIAN CONSTITUTION
(NON-CREDIT COURSE)

COURSE OBJECTIVES

Students will be able to:

1. *Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.*
2. *To address the growth of Indian opinion regarding modern Indian intellectuals" constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.*
3. *To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.*

COURSE OUTCOMES (COs)

Students will be able to:

1. *Explain the key concepts of political economy.*
2. *Analyse the significant developments in the political ideologies.*
3. *Describe the salient features of the constitution of India interpret, integrate and critically.*
4. *Analyse the political economy of Indian international relations and gain knowledge in Judiciary system.*
5. *Apply their knowledge and skills acquired to write various competitive examinations.*
6. *Analyse the constitutional rights in relating to Practical life.*

UNIT-I

Meaning of the Constitution Law

UNIT-II

Historical Perspective of the Constitution of India.Salient features and characteristics of the Constitution of India.

UNIT-III

Scheme of the fundamental rights.The scheme of the Fundamental Duties and its legal status

The Directive Principles of State Policy – Its importance and implementation.Federal structure and distribution of legislative and financial powers between the Union and the States .

UNIT-IV

Parliamentary Form of Government in India – The constitution powers and status of the President of India.Amendment of the Constitutional Powers and Procedure.The historical perspectives of the constitutional amendments in India.

Emergency Provisions : National Emergency, President Rule, Financial Emergency

UNIT-V

Local Self Government – Constitutional Scheme in India.Scheme of the Fundamental Right to Equality.Scheme of the Fundamental Right to certain Freedom under Article 19 Scope of the Right to Life and Personal Liberty under Article 21

TEXT BOOKS

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar framing of Indian Constitution, 1st Edition, 2015,

REFERENCES

1. M. P. Jain, Indian Constitution Law, 7th Edn., Lexis Nexis, 2014.
2. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis,2015

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(18HS0836) DISCRETE MATHEMATICS

COURSE OBJECTIVES

1. *To train the students thoroughly in Mathematical concepts of Mathematical logic, Relations, Algebraic structures, Recurrence Relation, Graph Theory.*
2. *To prepare students for lifelong learning and successful careers using Mathematical concepts of Mathematical logic, Relations, Algebraic structures, Recurrence Relation, Graph Theory.*
3. *To develop the skill pertinent to the practice of the Mathematical concepts including the students" abilities to formulate and modeling the problems, to think creatively and to synthesize information.*

COURSE OUTCOMES (COs)

1. *Write an argument using logical notation and determine if the argument is valid or not.*
2. *Understanding of relations and functions and be able to determine their properties*
3. *Understand the concepts of arrangement and selection in real time applications.*
4. *Understand and apply the knowledge of binomial and multinomial concepts.*
5. *Solve Recurrence relation by substitution and generating function.*
6. *Develop Model problems in Computer Science using graphs and trees*

UNIT-I

Mathematical Logic: Statements and notations, Connectives, Well-formed formulas, Truth Tables, tautology, equivalence implication, Normal forms, Quantifiers, universal quantifiers Predicates: Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of Contradiction, Automatic Theorem Proving.

UNIT-II

Relations: Properties of Binary Relations, equivalence, transitive closure, compatibility and partial ordering relations, Functions: Inverse Function, Composition of functions, recursive Functions

Algebraic structures: Algebraic systems examples and general properties, Semi groups and monads, groups, sub groups homomorphism, Isomorphism.

UNIT-III

Elementary Combinatories: Basis of counting, Enumerating Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion – Exclusion. Pigeon hole principles and its application

UNIT-IV

Recurrence Relation: Generating Functions & Sequences , Calculating Coefficient of generating function, Recurrence relations, Solving Recurrence relation by substitution and

Generating functions. Characteristic roots, solution of Inhomogeneous Recurrence Relation.

UNIT-V

Graph Theory: Representation of Graph, DFS, BFS, Spanning Trees, planar Graphs, Graph Theory Applications: Basic Concepts Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers

TEXT BOOKS

1. Discrete Mathematics with Applications, Thomas Koshy, Elsevier.
2. Discrete Mathematics and its applications, 6th edition, K.H.Rosen, TMH.

REFERENCES

1. Elements of Discrete Mathematics- A Computer Oriented Approach, C.L.Liu, D.P. Mohapatra, 3/e,TMH.
2. Discrete Mathematics for Computer Scientists & Mathematicians, 2/e, J.L.Mott, Kandel, T.P. Baker, PHI
3. Discrete Mathematical Structures with Application to Computer Science, Tremblay, Manohar McGraw Hill Publication
4. Discrete and Combinatorial Mathematics- An Applied Introduction, Ralph. P.Grimaldi, 5/e, Pearson Education
5. Discrete Mathematical Structures, Mallik and Sen, Cengage Learning.
6. Discrete Mathematical Structures, Bernand Kolman, Robert C. Busby, Sharon Cutler Ross, PHI/ Pearson Education
7. Discrete Mathematics, Lovasz, Springer.

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(18CS0509) FORMAL LANGUAGES AND AUTOMATA THEORY

COURSE OBJECTIVES

1. *Understand formal definitions of machine models.*
2. *Classify machines by their power to recognize languages and understanding of formal grammars, analysis.*
3. *Understanding of hierarchical organization of problems depending on their complexity.*
4. *Understanding of the logical limits to computational capacity.*
5. *Understanding of decidable and undecidable problems.*

COURSE OUTCOMES (COs)

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

1. *Understand the basics of Finite Automata and construct finite Automata for various problems.*
2. *Understand and analyze regular expressions in the designing of FA*
3. *Interpret the Pumping lemma for real world applications*
4. *Illustrate the Context free grammars, derivations , ambiguity and Normal forms*
5. *Understand push down automata and design PDA for various problems*
6. *Able to design Turing machines and distinguish between computability , Decidability and un decidability problems*

UNIT-I

Introduction: Basics of set theory, Relations on sets, Alphabet, languages and grammars, Chomsky hierarchy of languages.

Finite Automata: Automata theory, Characteristics of Automata, Graphical notation of FA, DFA and NFA, Conversion of an NFA to DFA,NFA with ϵ(null)Move, Equivalence of DFA and NFA, Finite Automata with Output, Conversion from Moore to Mealy and Mealy to Moore Machine , Minimization of Finite Automata, Myhill-Nerode Theorem, Applications and Limitations FA.

UNIT-II

Regular Languages: Basics of Regular Expressions, Identities of Regular Expression, The Arden's Theorem, Construct RE from FA, Equivalence of Two FAs, Equivalence of Two REs, Regular grammars and equivalence with finite automata, Pumping Lemma for RLs, Applications of Pumping Lemma, Closure properties of Regular Sets, Applications of Regular Expressions.

UNIT-III

Context Free Grammar: Context-free grammars (CFG) , Derivation trees, Ambiguity in CFG , Left recursion and Left factoring, Simplification of CFGs, Chomsky Normal form and Greibach Normal form, Pumping lemma for Context-free languages, closure properties of CFLs.

UNIT-IV

Push Down Automata (PDA): The Formal Definition, Graphical notation, Instantaneous description, The Languages of a PDA, Equivalence of PDAs and CFGs, Deterministic Push Down Automata, Non-Deterministic Push Down Automata.

UNIT-V

Turing Machines and Undecidability: The basic model of Turing machines (TM), Instantaneous Description , Variants of Turing Machines, Conversion from RE to TM, LBA, Universal Turing Machine, Turing Reducibility, PCP, MPCP.

TEXT BOOKS

1. Introduction to Automata Theory, Formal Languages and Computation, Shyamalendukandar, Pearson.
2. John E. Hopcroft, Rajeev Motwani and Jeffrey D. Ullman, Introduction to Automata Theory, Languages, and Computation, Pearson Education Asia.

Reference books:

1. Harry R. Lewis and Christos H. Papadimitriou, Elements of the Theory of Computation, Pearson Education Asia.
2. Dexter C. Kozen, Automata and Computability, Undergraduate Texts in Computer Science,Springer.
3. Michael Sipser, Introduction to the Theory of Computation, PWSPublishing.
4. John Martin, Introduction to Languages and The Theory of Computation, TataMcGraw Hill.

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(18CS0510) OPERATING SYSTEMS

COURSE OBJECTIVES

1. *To make the students understand the basic operating system concepts such as processes, threads, scheduling, synchronization, deadlocks, memory management, file and protection.*
2. *To get acquaintance with the class of abstractions afford by general purpose operating systems that aid the development of user applications.*

COURSE OUTCOMES (COs)

1. *Understanding the basics of Operating Systems and structures*
2. *Implement various CPU scheduling algorithms and understand the thread concepts*
3. *Solve synchronization problems: Producer Consumer Problem, Semaphores, Monitors, Readers & Writer Problem, Dinning Philosopher Problem*
4. *Analyze the Dead lock conditions and implement it.*
5. *Analyze and implement various disk scheduling algorithms*
6. *Illustrate the file management and understand the basics of Cryptography.*

UNIT I

Operating Systems Overview: What is an operating system, history of operating systems, Operating system functions, Operating systems Operations, Types of Operating Systems, Computing Environments.

System Structures: Operating System Services, User and Operating-System Interface, systems calls, Types of System Calls, system programs, Structure of an OS - Layered, Monolithic, Microkernel Operating Systems, Concept of Virtual Machine. Case study on UNIX and WINDOWS Operating System.

UNIT II

Processes: Definition, Process Relationship, Different states of a Process, Process State transitions, Process Control Block (PCB), Context switching.

Processes Scheduling: Foundation and Scheduling objectives, Types of Schedulers, Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, **Response Time; Scheduling algorithms:** Pre-emptive and Non pre-emptive, FCFS, SJF, RR; Multiprocessor scheduling.

Threads: Definition, Various states, Benefits of threads, Types of threads, Concept of multithreads.

UNIT III

Process Synchronization: Inter process Communication, Critical Section, Race Conditions, Mutual Exclusion, Hardware Solution, Strict Alternation, Peterson‟s Solution, The Producer- Consumer Problem, Semaphores, Monitors, Message Passing, Classical IPC Problems: Reader‟s & Writer Problem, Dinning Philosopher Problem

Deadlocks: Definition, Necessary and sufficient conditions for Deadlock, Deadlock Prevention, Deadlock Avoidance: Banker‟s algorithm, Deadlock detection and Recovery.

UNIT IV

Memory Management: Basic concept, Logical and Physical address map, Memory allocation: Contiguous Memory allocation – Fixed and variable partition– Internal and External fragmentation and Compaction, Paging, Segmentation.

Virtual memory: Basics of Virtual Memory ,Demand paging, page-replacement, Page Replacement algorithms, Thrashing.

Disk Management: Disk structure, Disk scheduling - FCFS, SSTF, SCAN, C-SCAN.

UNIT V

File Management: Concept of File, Access methods, File types, File operation, Directory structure, File System structure, Allocation methods (contiguous, linked, indexed), Free-space management (bit vector, linked list, grouping), directory implementation (linear list, hash table).

Protection & Security: Protection Mechanisms, Protection matrix, Authentication Techniques, Threats, intruders, Basics of Cryptography-Secret key, public key, One-Way Function, Digital Signature.

TEXT BOOKS

1. Operating System Concepts, Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Wiley , Eight Edition,
2. Modern Operating Systems, Andrew S Tanenbaum, 3rd edition, Pearson Education International

REFERENCES

1. Operating System: A Design-oriented Approach, 1st Edition by Charles Crowley, Irwin Publishing
2. Operating Systems: A Modern Perspective, 2nd Edition by Gary J. Nutt, Addison-Wesley
3. Design of the Unix Operating Systems, 8th Edition by Maurice Bach, Prentice-Hall of India
4. Understanding the Linux Kernel, 3rd Edition, Daniel P. Bovet, Marco Cesati, O'Reilly and Associates

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(18HS0803) BIOLOGY FOR ENGINEERS
(Common to all Branches)

COURSE OBJECTIVES

1. *Describe how biological observations of 18th Century that lead to major discoveries.*
2. *Convey that classification per se is not what biology is all about but highlight the underlying criteria, such as morphological, biochemical and ecological*
3. *Highlight the concepts of recessiveness and dominance during the passage of genetic material from parent to offspring*
4. *Convey that all forms of life have the same building blocks and yet the manifestations are as diverse as one can imagine*

COURSE OUTCOMES (COs)

1. *Classify enzymes and distinguish between different mechanisms of enzyme action.*
2. *Identify DNA as a genetic material in the molecular basis of information transfer.*
3. *Analyse biological processes at the reductionistic level*
4. *Apply thermodynamic principles to biological systems.*
5. *Identify and classify microorganisms.*
6. *Understand the Role of catalysis life in existed on earth Enzymology*

UNIT I
INTRODUCTION & CLASSIFICATIONS OF ORGANISMS

Introduction - classification based on (a) cellularity- Unicellular or multicellular (b) ultrastructure - prokaryotes or eucaryotes. (c) energy and Carbon utilisation - Autotrophs, heterotrophs, lithotropes (d) Ammonia excretion – aminotelic, uricoteliec, ureotelic

(e) Habitata- acquatic or terrestrial (f) Molecular taxonomy- three major kingdoms of life.Model organisms - study of different groups - E.coli, S.cerevisiae, D. Melanogaster, C. elegance, A. Thaliana, M. musculus

UNIT II
GENETICS PURPOSE

Concept of allele.Gene mapping, Gene interaction, Epistasis. Meiosis- Concepts of recessiveness and dominance - Concept of mapping of phenotype to genes - single gene disorders in humans - Complementation in human genetics.

UNIT III
BIOMOLECULES PURPOSE & ENZYMES PURPOSE

Building blocks of Molecules of life&it‟s types.Introduction & Concepts- Monomer units and polymeric structures,Sugars, starch, cellulose, Amino acids, proteins, Nucleotides, DNA/RNA, Two carbon units and lipids.

Role of catalysis life in existed on earth Enzymology: Enzyme classification. Mechanism of enzyme action. Enzyme kinetics and kinetic parameters related to Biology.RNA catalysis. Classifications and Procedure for Enzyme catalysed reactions with two examples.

UNIT IV

INFORMATION TRANSFER PURPOSE & MACROMOLECULAR ANALYSIS PURPOSE

Molecular basis of coding and decoding genetic information is universal Molecular basis of information transfer. Genetic material of DNA, Hierarchy of DNA structure- from single stranded to double helix to nucleosomes. Introduction and Explanation of genetic codeand degeneracy of genetic code.Gene - complementation and recombination.

Biological processes at the reductionist level Proteins- structure and function. Hierarch in protein structure.Primary secondary, tertiary and quaternary structure.Proteins as enzymes, transporters, receptors and structural elements.

UNIT V

METABOLISM PURPOSE

The principles of energy transactions - in physical and biological world. Thermodynamics as applied to biological systems. Exothermic and endothermic versus endergonic and exergoinc reactions.Concept of Keq and its relation to standard free energy.Spontaneity.ATP as an energy currency- including breakdown of glucose to CO2 + H2O (Glycolysis and Krebs cycle) and synthesis of glucose from CO2 and H2O (Photosynthesis).Energy yielding and energy consuming reactions.

Microbiology -single celled organisms -species and strains.Identification and classification of microorganisms. Microscopy.Ecological aspects of single celled organisms.Sterilization and media compositions.Growth kinetics.

TEXT BOOKS

1. Biology: A global approach: Campbell, N. A.; Reece, J. B.; Urry, Lisa; Cain, M, L.; Wasserman, S. A.; Minorsky, P. V.; Jackson, R. B. Pearson Education Ltd
2. Outlines of Biochemistry, Conn, E.E; Stumpf, P.K; Bruening, G; Doi, R.H. John Wiley and Sons
3. Principles of Biochemistry (V Edition), By Nelson, D. L.; and Cox, M. M.W.H. Freeman and Company
4. Molecular Genetics (Second edition), Stent, G. S.; and Calender, R. W.H. Freeman and company, Distributed by Satish Kumar Jain for CBS Publisher
5. Microbiology, Prescott, L.M J.P. Harley and C.A. Klein 1995. 2nd edition Wm, C. Brown

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(18CS0511) OBJECT ORIENTED PROGRAMMING

COURSE OBJECTIVES

The course will introduce standard tools and techniques for software development, using object oriented approach, use of a version control system, an automated build process, an appropriate framework for automated unit and integration tests.

COURSE OUTCOMES (COs)

After taking the course, students will be able to:

1. *Understand the basics of the Java programming Language.*
2. *Understand the object oriented programming concepts*
3. *Analyze Exception Handling mechanism*
4. *Implement Multithreaded Programming using runnable interfaces*
5. *Understand Generics and Applet event handling mechanism*
6. *Develop AWT tools and establish the Database connectivity using JDBC and sql packages.*

UNIT- I

The Java Language - Importance of Java- Programming Paradigms-The History and Evolution of Java–Security-Portability-Java Byte Code-The Java Buzzwords - An Overview of Java-Overview of JShell-Data Types-Java Tokens-Operators–Lambda Expression-Java Statements-Type Casting-Arrays.

UNIT- II

Introducing Classes - Class Fundamentals -Declaring Objects - Introducing Methods Constructors - Garbage Collection -Understanding static - Introducing final - Command line arguments -Varargs - Inheritance -Using Super - Method Overriding - Dynamic Method Dispatch- abstract classes - Packages and Interfaces.

UNIT- III

Exception Handling - Exception Fundamentals - Exception Types -Uncaught Exceptions - Using try and catch - Nested try Statements -throw -throws -finally - Java‟s Built-in Exceptions -Creating Your Own Exception Subclasses - Chained Exceptions
Multithreaded Programming - The Java Thread Model -Thread Priorities - The Thread Class and the Runnable Interface - Creating Multiple Threads -Using isAlive( ) and join( ) – Thread Priorities, Synchronization-String Handling.

UNIT- IV

Generics-A simple Generic Example-General form of Generic class-Generic Interfaces Collection Framework-Collections overview, Collection class, Collection interfaces.

The Applet Class - Event Handling -Two Event Handling Mechanism - The Delegation Event Model - Event Classes -Source of Events -Event Listener Interfaces.

UNIT- V

Introducing the AWT - Using AWT Controls-Layout Managers and Menus Introducing Swing -Exploring Swing.

Java.net package, basics of network programming, address ports, sockets, simple client server program. Introduction to JDBC, java.sql package, JDBC architecture, Drivers, Connections, Statement, Prepared Statement, Example Programs.

TEXT BOOKS

1. The Complete Reference Java Eight Edition – Herbert Schildt – McGrawHill.
2. Introduction to Java programming – Y Daniel Liang – Que E & T.

REFERENCES

1. Java for Programmers, P.J. Deitel and H.M. Deitel, Pearson education (OR) Java: How to Program P.J. Deitel and H.M. Deitel, PHI.
2. Thinking in Java, Bruce Eckel, Pearson Education

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(18CS0512) OPERATING SYSTEMS LAB

COURSE OBJECTIVES

COURSE OUTCOMES (COs)

After taking the course, students will be able to:

1. *Implement CPU Scheduling algorithms*
2. *Develop producer and consumer problem, dining philosopher's problem, bankers Algorithm*
3. *Implement Paging Techniques and Page Replacement algorithms.*
4. *Implement Disk Scheduling Algorithms.*
5. *Implement all File allocation strategies.*
6. *Implement all File Organization Techniques*.

Develop AWT tools and establish the Database connectivity using JDBC and sql packages.

1. Simulate the following CPU scheduling algorithms
   a) Round Robin b) SJF c) FCFS d) Priority
2. Simulate producer and consumer problem
3. Simulate dining philosopher„s problem
4. Simulate Bankers Algorithm for Dead Lock Avoidance
5. Simulate MVT and MFT
6. Simulate Paging Technique of memory management
7. Simulate all page replacement algorithms
   a) FIFO b) LRU c) Optimal
8. Simulate Disk Scheduling Algorithms
   a) FCFS b) SSTF c) SCAN
9. Simulate all File allocation strategies
   a) Sequential b) Indexed c) Linked
10. Simulate all File Organization Techniques
    a. Single level directory b) Two level c) Hierarchical

REFERENCES

1. Operating System: A Design-oriented Approach, 1st Edition by Charles Crowley, Irwin Publishing

2. Operating Systems: A Modern Perspective, 2nd Edition by Gary J. Nutt, Addison-Wesley.

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(18CS0513) OBJECT ORIENTED PROGRAMMING LAB

COURSE OUTCOMES

1. *Develop basic mathematical operations using JAVA programming.*
2. *Implement user defined classes using packages .*
3. *Implement constructor overloading and inheritance.*
4. *Implement thread priorities and exception handling.*
5. *Implement java generics with multiple parameters.*
6. *Develop a simple application using applet and event handling*

.

1. a) Write a Java program to read and write different types of data through keyboard and display them?
   b) Write a java program to find maximum among three numbers.
   c) How to working with JShell-opening JShell, Working with JShell.

2. a) Write a java program to find Factorial of given number.
   b) Write a java program to find Fibonacci series of given number.

3. a) Write a java program to display prime number series up to N.
   b) Write a java program to find the maximum and minimum of N array elements.
   c) Write a java program to sort array elements using any sorting methods.

4. Create a class with the name “Dog” with properties(attributes) name, age, colour, gender
and create 3 objects to access those properties

5. Write java program to create a super class called Figure that receives the dimensions of two dimensional objects. It also defines a method called area that computes the area of an object. The program derives two subclasses from Figure. The first is Rectangle and second is Triangle. Each of the sub class overridden area() so that it returns the area of a rectangle and a triangle respectively.

6. a) Create a user(your) defined package and import it into a java program.
   b) How to implement an interface in java program using your own example.

7. Write a Java program that prints all real and imaginary solutions to the quadratic equation ax2 + bx + c = 0. Read in a, b, c and use the quadratic formula.

8. a) A simple Java program to illustrate Constructor Overloading.
   b) Write a java program to method overloading

9. Use inheritance to create an exception super class called Exception A and exception

sub class Exception B and Exception C, where Exception B inherits from Exception A and Exception C inherits from Exception B. Write a java program to demonstrate that the catch block for type Exception A catches exception of type Exception B and Exception C

10. Write a Java program that creates three threads. First thread displays ―Good Morning, every one second, the second thread displays Hello, every two seconds and the third thread displays Welcome every three seconds.

11. Write a java program to accept a string from user and display number of vowels, consonants, digits and special characters present in each of the words of the given text.

12. How to create your own exception subclass and how to handle it.

13. Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication

14. a) Write a Java Program for waving a Flag using Applets and Threads.
    b) Write a Java program to design Login Window using Applets.

15. A Simple Java program to show multiple type parameters in Java Generics.

16. a) Write a Java program for handling mouse events
    b) Write a Java program to design simple calculator using Applet and Event Handling

17. How to use swings to create frame and buttons in java program with your own example.

18. Write a java JDBC program create a table student with properties name, register number, mark1, mark2, mark3, mark4, mark5. Insert the values into the table by using the java and display the information of the students at front end (Applet or AWT or Swings).

TEXT BOOKS

1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI
2. Java The Complete Reference" by Herbert Schildt, TMH, 8th Edition

REFERENCES

1. Introduction to Java programming, Sixth edition, Y.Daniel Liang, Pearson Education
2. Programming in Java, Sachine
3. Big Java, 2nd edition, Cay Horstmann, Wiley Student Edition, Wiley India Private Limited.
4. Introduction to Programming with Java, J.Dean&R.Dean, McGraw Hill

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(18HS0804) ENVIRONMENTAL SCIENCES
(Common to all Branches)
(NON-CREDIT COURSE)

COURSE OBJECTIVES

1. Students have got an idea about the importance of pollution free air, water, soil and food.
2. They know about global environmental problems like Acid Rains, Global Warming, Green House Effects, Ozone layer depletion.
3. To understand the impacts of developmental activities and mitigation measures along with the environmental policies and regulations.
4. To recognize major concepts in environmental studies and demonstrate in-depth understanding the environment.

COURSE OUTCOMES (COs)

1. *Recognize the physical, chemical and biological components of the earth's systems and show how they function.*
2. *Characterize and analyze human impacts on the environment.*
3. *Integrate facts, concepts and methods from multiple disciplines and apply to environmental Problems.*
4. *Create informed opinions about how to interact with the environment on both a personal and a social level.*
5. *Perform independent research on human interactions with the environment.*
6. *Recognize the ecological basis for regional and global environmental issues*

UNIT- I INTRODUCTION:

Definition, Scope and Importance-Need for Public Awareness

NATURAL RESOURCES: Classification of resources-Forest resources: Use and over-exploitation, deforestation- Mining, dams and their effects on forests and tribal people – Water resources - Use and over utilization of surface and ground water- Floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources –Energy resources: Renewable and Non- Renewable sources of energy- Solar energy, Hydro electrical energy, Wind energy, Nuclear energy, etc.

UNIT-II

ECOSYSTEMS: Concept of an ecosystem– structural features of ecosystem- Producers, Consumers and Decomposers–-Biogeochemical cycles- Ecological succession-Food chains, food webs and ecological pyramids – Energy flow in the ecosystem-Types of ecosystems (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems.

UNIT-III

BIODIVERSITY AND ITS CONSERVATION: Introduction, Definition, genetic, species and ecosystem diversity, Bio-geographical classification of India, India as a Mega-diversity Nation, Hot spots of biodiversity, Value of biodiversity, threats to biodiversity, endemic, endangered and extinct species of India, In-Situ and Ex-situ conservation of biodiversity.

UNIT-IV

ENVIRONMENTAL POLLUTION AND GLOBAL ENVIRONMENTAL ISSUES:

Natural Disasters: Droughts, Floods, Cyclone, Landslides, Earthquake,

Pollution episodes: Air pollution, Water pollution, Land pollution, Noise pollution, Automobile pollution and Nuclear pollution –Effects-Global warming, Acid Rain and Ozone layer depletion and controlling measures.

Global Environmental Issues: Population Growth, Urbanizations, Land Management, Water and Waste Water Management. Climate change and impacts on human environment Solid Waste Management: causes, effects and control measures of Municipal solid wastes – E-waste and management, Role of an individual in prevention of pollution – pollution case studies.

UNIT-V

ENVIRONMENTAL LEGISLATION, LAWS, POLICIES FOR SUSTAINABLE DEVELOPMENT: Environmental Legislation, Environmental Protection act – Air Prevention and Control of Pollution act–Water Prevention and control of Pollution act– Wildlife protection act – Forest conservation act – Municipal Solid Waste management, International conventions/Protocols : Earth summit, Kyoto protocol and Montreal Protocol. From Unsustainable to sustainable development, Role of NGO‟s for Sustainable development, Concepts of Green belt development, Role of IT in Environment-Remote Sensing and GIS methods for Sustainable development.

Field work- visit to a local area to document environmental assets-river forest grassland/hill, mountain and polluted sites (urban/rural/industrial/Agriculture)- study simple ecosystems (pond/river/hill slopes)

TEXT BOOKS

1. A.Kaushik and C.P.Kaushik, Environmental Sciences, 5th edition, New age international publishers, 2015.
2. Text Book of Environmental Science and Technology by M.Anji Reddy, BS Publications.

REFERENCES

1. Anil Kumar and Arnab Kumar De, Environmental Studies, New Age International Publishers, New Delhi, 3rd Edition 2015.
2. R.K. Trivedi, “Handbook of Environmental Laws, Rules, Guidelines, Compliances andStandards”, Vol.I and II, Enviro Media.
3. Environmental Studies by Dr.K.Mukkanthi, S.Chand Publishers.
4. Rajagopalan.R, “Environmental Studies-From Crisis to Cure”, Oxford University

Press, 2005.

5. ErachBharucha, 2010 “Text Book of Environmental Studies”, University Grants Commission, University Press (India) Pvt.Ltd., Hyderabad

E-learning resources:

1. http://nptel.ac.in/courses.php
2. http://jntuk-coeerd.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

(Approved by AICTE, New Delhi& Affiliated to JNTUA, Ananthapuramu)
(Accredited by NBA for Civil, EEE, Mech., ECE & CSE
Accredited by NAAC with 'A' Grade)
Puttur -517583, Chittoor District, A.P. (India)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INSTITUTE VISION

To emerge as one of the premier institutions through excellence in education and research, producing globally competent and ethically strong professionals and entrepreneurs

INSTITUTE MISSION

M1: Imparting high-quality technical and management education through the state-of-the-art resources.

M2: Creating an eco-system to conduct independent and collaborative research for the betterment of the society

M3: Promoting entrepreneurial skills and inculcating ethics for the socio-economic development of the nation.

DEPARTMENT VISION

To impart quality education and research in Computer Science and Engineering for producing technically competent and ethically strong IT professionals with contemporary knowledge

DEPARTMENT MISSION

M1: Achieving academic excellence in computer science through effective pedagogy, modern curriculum and state-of-art computing facilities.

M2: Encouraging innovative research in Computer Science and Engineering by collaborating with Industry and Premier Institutions to serve the nation.

M3: Empowering the students by inculcating professional behavior, strong ethical values and leadership abilities

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1: To provide software solutions for arising problems in diverse areas with strong knowledge in innovative technologies of computer science.

PEO2: To serve in IT industry as professionals and entrepreneurs or in pursuit of higher education and research.

PEO3: To attain professional etiquette, soft skills, leadership, ethical values meld with a commitment for lifelong learning.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: **Analysis & Design:** Ability to design, develop and deploy customized applications in all applicable domains using various algorithms and programming languages.

PSO2: **Computational Logic:** Ability to visualize and configure computational need in terms of hardware and software to provide solutions for various complex applications.

PSO3: **Software Development:** Ability to apply standard procedures, tools and strategies for software development.

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III B. Tech – I Sem.

L	T	P	C
3	-	-	3

(18HS0812) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

COURSE OBJECTIVES

The Objectives of this course:

1. *To familiarize the students with the concepts of microeconomics and make them understand the concept of demand and supply analysis in business applications*
2. *To understand the pricing and output decisions under different market structures*
3. *To understand the basic financial statements and techniques of financial statement analysis*

COURSE OUTCOMES (CO's)

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

1. *Understand the nature of managerial economics and the role of it in business firms*
2. *Identify the determinants of demand and apply cost analysis under different market conditions*
3. *Integrate the concepts of price and output decisions of business firms*
4. *Appreciate the importance of market structures and implement appropriate price and output decisions*
5. *To assess the financial statements of a firm and the financial performance of the firm through the financial statements*
6. *To measure operating, investing and financial performance of a firm*

UNIT-I

Introduction To Managerial Economics - Managerial Economics - Definition, nature and scope – contemporary importance of Managerial Economics - Demand Analysis: Determinants- Law of Demand - Elasticity of Demand. Significance –Types – measurement of elasticity of demand - Demand forecasting- factors governing demand Forecasting- methods of demand forecasting –Relationship of Managerial Economics with Financial Accounting and Management.

UNIT-II

Theory Of Production and Cost Analysis -Production Function – Short-run and long-run production - Isoquants and Isocosts, MRTS, least cost Combination of inputs - Cobb-Douglas production function - laws of returns - Internal and External Economies of scale.

Cost Analysis: Cost concepts - Break-Even Analysis (BEA) – Managerial Significance and limitations of BEA - Determination of Break Even Point (Simple Problems).

UNIT-III

Introduction to Markets and New Economic Environment - Market structures: Types of Markets - Perfect and Imperfect Competition - Features, Oligopoly -Monopolistic competition. Price-Output determination - Pricing Methods and Strategies - New Economic Environment- Economic systems – Economic Liberalization – Privatization and Globalization

UNIT-IV

Capital and Capital Budgeting - Concept of Capital - Over and under capitalization – Remedial measures - Sources of Short term and Long term capital - Estimating Working Capital requirement – Capital budgeting – Features of Capital Budgeting proposals – Methods and Evaluation of Capital budgeting – Pay Back Method – Accounting Rate of Return (ARR) – Net Present Value (NPV) – Internal Rate Return (IRR) Method (simple problems)

UNIT-V

Introduction to Financial Accounting and Analysis - Financial Accounting – Concept - emerging need and importance - Double-Entry Book Keeping-Journal - Ledger – Trial Balance - Financial Statements - Trading Account – Profit & Loss Account –Balance Sheet (with simple adjustments). Financial Analysis – Ratios – Techniques – Liquidity, Leverage, Profitability, and Activity Ratios (simple problems).

TEXT BOOKS

1. Aryasri, *Managerial Economics and Financial Analysis*, 4/e, TMH,2009.
2. Varshney & Maheswari, *Managerial Economics*, Sultan Chand,2009.

REFERENCES

1. PremchandBabu, Madan Mohan, *Financial Accounting and Analysis*,Himalaya, 2009
2. S.A. Siddiqui and A.S. Siddiqui, *Managerial Economics and Financial Analysis*,New Age International,.2009.
3. Pearson Joseph G. Nellis and David Parker, *Principles of Business Economics*, 2/e, New Delhi.
4. Domnick Salvatore, *Managerial Economics in a Global Economy*, Cengage,2009.
5. H.L.Ahuja, *Managerial Economics*, S.Chand, 3/e,2009

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III B. Tech – I Sem.

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(18CS0514) COMPILER DESIGN

COURSE OBJECTIVES

The objectives of this course:

1. Realize that computing science theory can be used as the basis for real applications
2. Introduce the major concept areas of language translation and compiler design.
3. Learn how a compiler works
4. Know about the powerful compiler generation tools and techniques, which are useful to the other non-compiler applications
5. Know the importance of optimization and learn how to write programs that execute faster

COURSE OUTCOMES (COs)

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

1. Understand the phases of compiler and analyze the role of lexical analyzer and lex tool
2. Illustrate the role of parser, Top down parsing, LL(1) parser, recursive descendant parsing.
3. Understand and Analyze LR parsing techniques
4. Able to understand the evaluation order of Syntax directed definition
5. Inferring the storage allocation strategies and implementation of 3address code
6. Interpret various code optimization techniques, flow graphs, basic block, Register allocation and assignment.

UNIT- I

Introduction: Language processors, The Structure of a Compiler, Bootstrapping, applications of compiler technology, Compiler Construction Tools.

Lexical Analysis: The Role of the lexical analyzer, Input Buffering, Specification of tokens, Recognition of tokens, Lexical Analyzer generator - LEX

UNIT- II

Syntax Analysis: Role of the parser, Context Free Grammars - Definition, Derivations, Parse trees, Ambiguity, Eliminating ambiguity, Left recursion, Left factoring.

Top Down Parsing: Recursive descent parsing, Non-recursive predictive parsing,LL(1) grammars, Error recovery in predictive parsing.

UNIT- III

Bottom Up Parsing: Handle pruning, Shift-Reduce parsing, SLR Parsing, Canonical LR(1) parsers, LALR parsers, YACC tool.

Semantic Analysis: Syntax Directed Definition, SDT, Evaluation order of SDD, Type Checking.

UNIT- IV

Run Time Environment: Storage organization- Static, Stack, Heap management, Activation Records, Symbol Table Entries, operations on ST, Symbol Table organization

Intermediate Code Generation: Types of Intermediate code, three address code- Quadruples, Triples, Indirect Triples, Type checking, control flow statements.

UNIT- V

Code Optimization: Principle source of optimization, function preserving transformations, loop optimization, global data flow analysis, machine dependent optimization

Code Generation: Issues in the design of a code generator, The Target Machine, Basic Blocks and flow graphs, optimization on basic blocks, simple code generator, Register allocation and Register assignment.

TEXT BOOKS

1. Alfred V. Aho, Monica, S.Lam, RaviSethi, Jeffrey D. Ullman, *Compilers Principles, Techniques and Tools,* Second Edition, Pearson.
2. K. Muneeswaran, *Compiler Design*, Oxford University Press, 2012

REFERENCES

1. K. Muneeswaran, *Compiler Design*,Oxford University Press, 2012
2. Keith D. Cooper & Linda Torczon., K Morgan - Kaufmann, *Engineering A Compiler,* Second Edition - ELSEVIER
3. Parag H. Dave, Himanshu B. Dave, *Compilers Principles and Practice‖,* PEARSON
4. Sandeep Saxena, Rajkumar Singh Rathore., *Compiler Design,* S.Chand publications
5. Santanu Chattopadhyay., *Compiler Design,* PHI
6. Nadhni Prasad, *Principals of Compiler Design,* Elsevier

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III B. Tech – I Sem.

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(18CS0515) COMPUTER NETWORKS

COURSE OBJECTIVES

The objectives of this course:

1. Introduce Computer network Reference Models
2. Explain various layers of a TCP/IP network reference model
3. Explain various protocols present in different layers of TCP/IP network reference model

COURSE OUTCOMES (COs)

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

1. Understand the TCP/IP Reference Models in computer networks and transmission media
2. Illustrate the services of Data link layer
3. Analyze the principles of network layer and categorize routing algorithms used for data transmission.
4. Understand the differences between IPV4 and IPV6 protocols.
5. Identify the essential services of transport layer
6. Interpret the functioning of various protocols of Application layer

UNIT – I

Introduction: Networks, Network criteria, Physical structures - Reference Models: The OSI Reference Model, The TCP/IP Reference Model- Introduction to physical layer: Data and Signals, Data rate limits, Performance.

Transmission Media: Introduction,-Guided Media, -Unguided Media

UNIT – II

Introduction to Data Link Layer: Introduction, Link layer addressing- Error detection and Correction: Cyclic codes, Checksum, Forward error correction- Data link control: DLC Services- Data link layer protocols, HDLC, Point to Point Protocol- Media Access control:- Random Access -Controlled Access- Channelization

UNIT – III

The Network Layer: Network layer design issues- Routing algorithms - Congestion control algorithms - Quality of service- Internetworking- The network layer in the Internet: IPV4 - IPV6, Internet Control protocols- OSPF- BGP

UNIT – IV

The Transport Layer: The Transport Service- Elements of Transport Protocols- Congestion Control- The internet transport protocols: UDP, TCP- Performance problems in computer networks

UNIT – V

Introduction to Application Layer: Introduction, WWW and HTTP – FTP - E-mail- TELNET - Secure Shell - Domain Name System - SNMP.

TEXT BOOKS

1. Behrouz A. Forouzan, *"Data communications and networking"* TMH, 5th edition, 2012.

2. Andrew S. Tanenbaum, David J Wetherall, *"Computer Networks",* Pearson.5th edition, 2010.

REFERENCES

1. Bhushan Trivedi, Data Communication and Networks, Oxford Publications

2. Douglas E.Comer, *Internetworking with TCP/IP – Principles, protocols, and architecture,* Volume 1, 5th edition, PHI

3. Davie Peterson, *Computer Networks,* 5E, Elsevier.

4. Chawan- Hwa Wu, Irwin, *Introduction to Computer Networks and Cyber Security,* CRC Publications.

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III B. Tech – I Sem.

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3	-	-	3

(18CS0516) DESIGN AND ANALYSIS OF ALGORITHMS

COURSE OBJECTIVES

The objectives of this course:

1. Demonstrate the importance of algorithms in computing.
2. Explain the analysis of algorithms
3. Illustrate the method of finding the complexity of algorithms
4. Describe the advanced algorithm design and analysis techniques
5. Introduce special classes of algorithms NP completeness and the classes P &NP

COURSE OUTCOMES (COs)

On successful completion of this course, the student will be able to

1. Understand the performance analysis of algorithms using various notations and disjoint sets.
2. Apply the Divide and Conquer strategy to solve searching, sorting and matrix multiplication problems.
3. Analyze the efficiency of Greedy method to solve Minimum-cost spanning trees, Single source shortest path.
4. Apply dynamic programming to solve various search operations.
5. Apply Backtracking technique for solving constraint satisfaction problems.
6. Understand NP-Hard and NP-Complete problems.

UNIT- I

Introduction: Algorithm, Pseudo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Order of growth, Asymptotic Notation-Big oh (O) notation, Omega notation, Theta notation and Little oh (o) notation. Recurrences - Towers of Hanoi.

Disjoint Sets -disjoint set operations, union and find algorithms.

UNIT- II

Basic Traversal and Search Techniques: Techniques for Binary Trees, Techniques for Graphs, Connected Components and Spanning Trees.

Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort, Strassen‘s matrix multiplication.

UNIT- III

Greedy method: General method, applications-Job sequencing with dead-lines, knapsack problem, Minimum-cost spanning trees, Single source shortest path.

Dynamic Programming: General method, applications-Optimal binary search trees, 0/1 knapsack, All pairs shortest path, The Travelling sales person problem.

UNIT- IV

Backtracking: General method, applications-8-queen problem, sum of subsets, graph coloring, Hamiltonian cycles.

Branch and Bound: General method, Applications -Travelling sales person, 0/1 knapsack problem - LC Branch and Bound solution, FIFO Branch and Bound solution.

UNIT- V

NP-Hard and NP-Complete problems: Basic concepts, nondeterministic algorithms, The classes-NP-Hard and NP Complete, Cook's theorem, Reduction Source Problems, Reductions: Reductions for some known problems.

TEXT BOOKS

1. Ellis Horowitz,S. Satraj Sahni and Rajasekharam, *Fundamentals of Computer Algorithms,* Galgotia Publications Pvt. Ltd., 4th Edition, 1998.

2. Parag Himanshu Dave, Himanshu Bhalchandra Dave,*Design and Analysis Algorithms* - Pearson Education India, 2007.

REFERENCES

1. Anany Levitin, *"Introduction to the Design and Analysis of Algorithms",* Third Edition, Pearson Education, 2012.
2. Thomas H.Cormen, Charles E.Leiserson, Ronald L. Rivest and Clifford Stein, *"Introduction to Algorithms",* Third Edition, PHI Learning Private Limited, 2012.
3. Alfred V. Aho, John E. Hopcroft and Jeffrey D. Ullman, *"Data Structures and Algorithms",* Pearson Education, Reprint 2006.
4. Donald E. Knuth, *"The Art of Computer Programming",* Volumes 1& 3 Pearson Education, 2009.
5. Steven S. Skiena, Second Edition, *"The Algorithm Design Manual",* Springer, 2008.

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III B. Tech – I Sem.

L	T	P	C
3	-	-	3

(18CS0517) PYTHON PROGRAMMING

COURSE OBJECTIVES

The objectives of this course:

1. Introduce Scripting Language
2. Exposure to various problem solving approaches of computer science
3. Introduce function-oriented programming paradigm
4. Exposure to solve the problems using object oriented concepts, exceptional handling
5. Exposure to solve the problems using Files, Regular Expressions and, Standard Libraries

COURSE OUTCOMES (COs)

On successful completion of this course, the student will be able to*:*

1. Understand the history, features of python programming and various data types.
2. Analyze and implement various operators and control structures.
3. Understand and Implement function by passing different parameters.
4. Interpret Object Oriented Programming concepts like class, object, inheritance, method overloading and constructors.
5. Understand and develop programs on Modules, Exception handling.
6. Understand the concepts on file operations and GUI Programming.

UNIT – I

Introduction: History of Python- Python features- Applications-Programming Using the REPL-Running Python Scripts-Variables – Assignment- Keywords- Input-Output-Indentation.
Data Types: Single-Value data types - int, float, Complex and Boolean.
Multi-Valued Data types - Lists, Tuples, Sets, Dictionaries, Strings- indexing and slicing.

UNIT – II

Operators and Expressions: Operators-Arithmetic Operators, Comparison Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators- Expressions and order of evaluations
Control Flow: Branching- simple if, if-else, if-elif-else, nested if, looping-while and for-jumping – break- continue and pass

UNIT – III

Functions: Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful Functions-Nested functions, Recursive functions- Scope of the Variables in a Function.
Object Oriented Programming in Python: Classes and Objects- self-variable- Methods – Constructor- Inheritance-polymorphism- Method Overloading- Method Overriding.

UNIT – IV

Modules: Creating modules, import statement, from...import statement and name spacing.

Python packages: Introduction to PIP- Installing Packages via PIP (Numpy, Pandas, MatPlotlib etc.,)- Using Python Packages.

Exception Handling: Introduction to Errors and Exceptions, Handing Exceptions, Raising Exceptions, User Defined Exceptions, Regular Expressions-Searching and Matching.

UNIT – V

Functional Programming: Iterators and Generators - Maps and Filters.

Files: Text files- Reading and Writing files- Command line arguments.

Brief Tour of the Standard Library: Dates and Times- Data Compression- Python Runtime Services- Data Management and Object Persistence.

GUI Programming - Turtle Graphics

TEXT BOOKS

1. Reema Thareja, *Python Programming: Using Problem Solving Approach,* First Edition, Oxford University Press.
2. Vamsi Kurama, *Python Programming: A Modern Approach,* Pearson.

REFERENCES

1. Mark Lutz*, Learning Python,* Orielly
2. Allen Downey, *Think Python ,* Green Tea Press
3. W.Chun, *Core Python Programming ,* Pearson.
4. Kenneth A. Lambert, *Introduction to Python ,* Cengage
5. Michael T. Goodrich , Roberto Tamassia, Michael H. Goldwasser, *Data Structures and Algorithms in Python,*1st Edition , Kindle.

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III B. Tech – I Sem.

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(18CS0518) ANALYSIS OF ALGORITHMS LAB

COURSE OBJECTIVES

The Objectives of this course:

1. Analyze the asymptotic performance of algorithms.
2. Write rigorous correctness proofs for algorithms.
3. Demonstrate a familiarity with major algorithms and data structures.
4. Apply important algorithmic design paradigms and methods of analysis.
5. Synthesize efficient algorithms in common engineering design situations.

COURSE OUTCOMES (COs)

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

1. Implement the Topological ordering of vertices in a given digraph.
2. Implement sorting techniques to find time complexity.
3. Implement the Graph Traversal techniques BFS and DFS
4. Analyze and implement Minimal spanning tree using prim's and kruskal'salgorrithm
5. Implement O/1 Knapsack Problem and Travelling Sales Person problem using Dynamic Programming
6. Implement the Dijkstra's algorithm for finding the shortest path in the given graph.

LIST OF EXPERIMENTS:

1. Obtain the Topological ordering of vertices in a given digraph.
2. Sort a given set of elements using the Quick sort method and determine the time required to sort the elements.
3. Sort a given set of elements using the Merge sort method and determine the time required to sort the elements.
4. Check whether a given graph is connected or not using DFS method.
5. Print all the nodes reachable from a given starting node in a directed graph using BFS method
6. Find Minimum Cost Spanning Tree of a given undirected graph using Prim's algorithm.
7. Find Minimum Cost Spanning Tree of a given undirected graph using Kruskal's algorithm.
7. Implement 0/1 Knapsack problem using Dynamic Programming.
8. Write a program to implement Travelling Sales Person problem using Dynamic programming.

9. From a given vertex in a weighted connected graph, find shortest paths to other vertices using Dijkstra's algorithm.
10. Design and implement the presence of Hamiltonian Cycle in an undirected Graph G of n vertices.

TEXT BOOKS

1. Ellis Horowitz, S.Satraj Sahni and Rajasekharam, *Fundamentals of Computer Algorithms*, Galgotia Publications Pvt. Ltd., 4th Edition, 1998.

2. Parag Himanshu Dave, Himanshu Bhalchandra Dave, *Design and Analysis Algorithms*- Pearson Education India, 2007.

REFERENCES

1. Anany Levitin, *"Introduction to the Design and Analysis of Algorithms",* Third Edition, Pearson Education, 2012.

2. Thomas H.Cormen, Charles E.Leiserson, Ronald L. Rivest and Clifford Stein, *"Introduction to Algorithms",* Third Edition, PHI Learning Private Limited, 2012.

3. Alfred V. Aho, John E. Hopcroft and Jeffrey D.Ullman, *"Data Structures and Algorithms",* Pearson Education.

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III B. Tech – I Sem.

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(18CS0519) PYTHON PROGRAMMING LAB

COURSE OBJECTIVES

The Objectives of this course:

1. Exposure to various problem solving approaches of computer science
2. Learn how to carry out a range of commonly used statistical methods including analysis of variance and linear regression.
3. Explore data-sets to create testable hypotheses and identify appropriate statistical tests.

COURSE OUTCOMES (COs)

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

1. Implement the simple basic programs using python.
2. Perform the various operations in python and implement the programs using python script
3. Perform the various operations on lists using python script like create, access, slice, change delete
4. Implement the tuple operations and operations on dictionary using python script
5. Execute the string operations using string libraries and implement the file operations
6. Implement the directory operations using python commands and GUI programming using turtle.

LIST OF EXPERIMENTS:

1. Implement the following tasks
   a) Write a python program to check whether the number is positive or negative.
   b) Write a python program to find whether a given number is even or odd.
   c) Write a python program to find biggest number among three numbers.
2. Implement the following tasks
   a) Write a python program to displaying reversal of a number.
   b) Write a python program to print factorial of a number
   c) Write a python program to generate prime numbers series up to N
3. Implement following problems using python script
   a)Swapping of two number with and without using temporary variable.
   b) If the age of Ram, Sam, and Khan are input through the keyboard, write a python program to determine the eldest and youngest of the three.
   c) Arithmetic operations (Addition, Subtraction, Multiplication, and Division) on integers. Input the two integer values and operator for performing arithmetic Operation through keyboard.
4. Implement the following tasks
   a) Implement the python program to generate the multiplication table.
   b) Implement Python program to find sum of natural numbers
   c) If the first name of a student is input through the keyboard, write a program to display the vowels and consonants present in his/her name.

5. Implement the following tasks

a) The marks obtained by a student in 5 different subjects are input through the keyboard. Find the average and print the student grade as per the SISTK examination policy

b) Given a number x, determine whether it is Armstrong number or not. Hint: For example,371 is an Armstrong number since 3**3 + 7**3 + 1**3 = 371. Write a program to find all Armstrong number in the range of 0 and 999.

6. Implement the following tasks

a) Write a Python script to

- create a list
- access elements from a list
- slice lists
- change or add elements to a list
- delete or remove elements from a list

b) Write a Python script to read the values from a list and to display largest and smallest numbers from list.

c) Write a Python script to compute the similarity between two lists.

7. Implement the following tasks:

a) Write a Python script to read set of values from a Tuple to perform various operations.

b) Write a Python script to perform basic dictionary operations like insert, delete and Display.

c) Write a Python program to count the occurrence of each word in a given sentence.

8. Implement the following tasks

a) Write a Python script to create Telephone Directory using dictionary and list to perform basic functions such as Add entry, Search, Delete entry, Update entry, View and Exit.

b) Implement Python script to display power of given numbers using function.

c) Implement a Python program that takes a list of words and returns the length of the longest one using function.

9. Implement the following tasks

a) Implement Python program to perform various operations on string using string libraries.

b) Implement Python program to remove punctuations from a given string.

c) Write a Python program to change the case of the given string (convert the string from lower case to upper case). If the entered string is “computer”, your program should output “COMPUTER” without using library functions.

10. Implement the following tasks

a) Implement Python program to capitalize each word in a string. For example, the entered sentence “god helps only people who work hard” to be converted as “God Helps Only People Who Work Hard”

b) Write a Python script to display file contents.

c) Write a Python script to copy file contents from one file to another.

11. Implement the following tasks

a) Write a Python script to combine two text files contents and print the number of lines, sentences, words, characters and file size.

b) Write a Python commands to perform the following directory operations.

- List Directories and Files
- Making a New Directory
- Renaming a Directory or a File
- Removing Directory or File

12. Implement the following tasks

a) Create a package named Cars and build three modules in it namely, BMW, Audi and Nissan. Illustrate the modules using class. Finally we create the _init__.py file. This file will be placed inside Cars directory and can be left blank or we can put the initialization code into it.

b) Write a python script to display following shapes using turtle.

TEXT BOOKS

1. Reema Thareja, *Python Programming: Using Problem Solving Approach,* First Edition,
Oxford University Press.
2. Vamsi Kurama, *Python Programming: A Modern Approach,* Pearson.

REFERENCES

1. Mark Lutz, *Learning Python,* Orielly
2. Allen Downey, *Think Python* , Green Tea Press
3. W.Chun, *Core Python Programming* , Pearson.
4. Kenneth A. Lambert, *Introduction to Python* , Cengage
5. Michael T. Goodrich , Roberto Tamassia, Michael H. Goldwasser, *Data Structures and Algorithms in Python,* 1st Edition , Kindle.

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(18CS0520) OBJECT ORIENTED ANALYSIS AND DESIGN LAB

COURSE OBJECTIVES

The Objectives of this Course:

1. Illustrate the requirements specification for an intended software system
2. Demonstrate the UML diagrams for the given specification
3. Map the design properly to the code

COURSE OUTCOMES (COs)

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

1. Implement the 3 layered architecture using uml diagrams
2. Identify use cases , conceptual classes and develop usecase model and class diagram
3. Design Sequence and Collaboration diagrams
4. Design state chart and Activity diagrams
5. Develop the reusability and maintainability of the software system by applying appropriate design patterns
6. Design and implement the UML diagrams for real world applications

LIST OF EXPERIMENTS:

Draw standard UML diagrams using an UML modeling tool for a given case study and map design to code and implement a 3 layered architecture. Test the developed code and validate whether the SRS is satisfied.

1. Identify a software system that needs to be developed.
2. Document the Software Requirements Specification (SRS) for the identified system.
3. Identify use cases and develop the Use Case model.
4. Identify the conceptual classes and develop a Domain Model and also derive a Class Diagram from that.
5. Using the identified scenarios, find the interaction between objects and represent them using UML Sequence and Collaboration Diagrams
6. Draw relevant State Chart and Activity Diagrams for the same system.
7. Implement the system as per the detailed design.
8. Test the software system for all the scenarios identified as per the use case diagram
9. Improve the re usability and maintainability of the software system by applying appropriate design patterns.
10. Implement the modified system and test it for various scenarios.

OOAD Problems that may be considered are

1. College information system
2. Hostel management
3. ATM system
4. Library management system
5. Passport Automation System
6. Political Administration System.

TEXT BOOKS

1. Grady Booch, James Rumbaugh, Ivar Jacobson, *The Unified Modeling Language, User Guide*, 2nd edition, Pearson Education, 2005.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, *UML 2 Toolkit*, WILEY-Dreamtech India Pvt. Ltd, 2009.

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(18HS0842) APTITUDE PRACTICES

COURSE OBJECTIVES

The objectives of this course:

1. *To evaluate various real life situations by resorting to Analysis of key issues and factors.*
2. *To read between the lines and understand various language structures.*
3. *To demonstrate various principles involved in solving Mathematical problems and there by reducing the time taken for performing job functions.*

COURSE OUTCOMES (COs)

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

1. *Develop the subtle way of approaching in the candidate.*
2. *Acquired the decision making with in no time.*
3. *Implement logical thinking during professional tenure.*
4. *Improve knowledge on problem solving.*
5. *Understand problems on coding and decoding.*
6. *Apply the knowledge on the concept of reasoning in real life.*

UNIT – I

Percentages, Partnership, Ratio and Proportion**,** Time and Distance, Time and Work.

UNIT – II

Clocks, Calendars, Blood relations, Profit and Loss**,** Simple Interest, Compound Interest.

UNIT – III

Permutations and Combinations, Probability**.**

Menstruation: Areas, Volumes of different solids, Problems on Areas, Volumes and Surface Areas, Cubes.

UNIT – IV

Number and letter series: Difference series, Product series, Squares series, Cubes series, Alternate series, Combination series, miscellaneous series, Place values of letters.

Number and Letter Analogies: Definition of Analogy, Problems on number analogy.

Odd man out: Problems on number Odd man out, Problems on letter Odd man out, Problems on verbal Odd man out.

UNIT – V

Coding and decoding, Directions.

Critical Reasoning: Problems on assumption, Problems on conclusions, Problems on inferences, Problems on strengthening and weakening of arguments, Problems on principle, Problems on paradox.

TEXTBOOKS

1. Barrons GL*, Thorpe's verbal reasoning,* McGraw Hills, LSAT Materials, 2010.
2. Agarwal R S, *A Modern Approach to Logical reasoning,* S.Chand, 2017.

REFERENCES

1. Agarwal R S, *Quantitative Aptitude*, S Chand, 2017.

2. BARRONS G L , *Quantitative Aptitude*, 2010.

3. Abhijit Guha, *Quantitative Aptitude*, PHI Learning PVT. LTD, 2019.

4. Tyra, *Magical Book on Quicker Maths*, BSC publishing company, 2018.

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(18CS0521) DATA WAREHOUSING AND DATA MINING

COURSE OBJECTIVES

The objectives of this course:

1. Know the basic concepts and principles of data warehousing and data mining
2. Learn pre-processing techniques and data mining functionalities.
3. Learn and create multidimensional models for data warehousing
4. Study and evaluate performance of Frequent Item sets and Association Rules.
5. Understand and Compare different types of classification and clustering algorithms

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to:

1. Understand the basic concepts of data warehouse and data mining and Apply preprocessing techniques for data cleaning.
2. Understand the OLAP Technology in data warehousing.
3. Illustrate the concepts of Mining Frequent Patterns, Associations and Correlations in data mining
4. Understand the Various Kinds of Association Rules in mining
5. Analyze various Classification and prediction algorithms and also evaluate the performance of classifier and predictor
6. Illustrate the various clustering methods in cluster analysis.

UNIT -- I

Introduction:

Motivation to Data Mining, Importance, Kinds of Data that can be mined, Data Mining Functionalities, Classification of Data mining Systems, Data Mining Task Primitives, Major Issues in Data Mining.

Data Preprocessing: Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization and Concept Hierarchy Generation.

UNIT -- II

Data Warehouse and OLAP Technology: An Overview

Data Warehouse fundamentals - A Multidimensional Data Model: From Tables and Spreadsheets to Data Cubes, Stars, Snowflakes, and Fact Constellations, Measures: Their Categorization and Computation, Concept Hierarchies, OLAP Operations in Multidimensional Data Model, A Starnet Query Model for Querying Multidimensional Databases - Data Warehouse Architecture, Data Warehouse Implementation, From Data Warehouse to Data Mining, Attribute Oriented Induction.

UNIT -- III

Mining Frequent Patterns, Associations and Correlations:

Basic Concepts and a Road Map, Efficient and Scalable Frequent Item Set Mining Methods, Mining Various Kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint based Association Mining.

UNIT -- IV

Classification and Prediction:

Classification and Prediction fundamentals, Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification,

Classification by Back propagation.

Prediction: Prediction, Accuracy and Error Measures, Evaluating the Accuracy of a Classifier or Predictor.

UNIT -- V

Cluster Analysis:

Basics of 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, Outlier Analysis, Data mining applications.

TEXT BOOKS

1. Jiawei Han and Micheline Kamber, *Data Mining: Concepts and Techniques,* Elsevier, Second Edition,2010.
2.Prabhu C.S.R.,*Data Ware housing: Concepts, Techniques, Products and Applications*, Prentice Hall of India, 2011

REFERENCES

1. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, *Introduction to Data Mining*, Pearson Education.
2. Arun K Pujari, *Data Mining Techniques*, University Press,2001.
3. Sam Aanhory & Dennis Murray,*Data Warehousing in the Real World*, Pearson EdnAsia
4. K.P.Soman, S.Diwakar,V.Ajay, *Insight into Data Mining*, PHI,2008.

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(18CS0522) SOFTWARE ENGINEERING

COURSE OBJECTIVES

The objectives of this course:

1. Illustrate the Software Development Models
2. Explain Software Requirements Engineering Process and SRS document
3. Illustrate the importance of modeling and modeling languages
4. Explain various testing methodologies

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

1. Understand the basics of Software Engineering models and analyze the Agile process
2. Understand the Requirement analysis and develop various analysis models
3. Analyze the design concepts and design models
4. Understand various architectural design styles, genres and designs
5. Analyze user interface and design web apps
6. Implement various testing approaches and apply in various software applications

UNIT – I

Introduction: Introduction to Software Engineering, Software Process, Software Myths, A generic view of process, A layered Technology, A Process Framework, Software Process Models., Unified process

Introduction to Agility: Agility, Agile Process, Extreme Programming, Other Agile Process Models

UNIT – II

Requirements Analysis and Specification: Requirements Engineering, Establishing the groundwork, Eliciting Requirements, Developing Use Cases, Building the requirements model, Negotiating Requirements, Validating Requirements. Requirements Modeling

Scenarios, Information and Analysis Classes: Requirements Analysis, Scenario-Based Modeling, UML Models that Supplement the Use Case, Data Modeling Concepts, Class-Based Modeling, Behavioral Models

UNIT – III

Design Concepts: The Design Process, Design Concepts, Design Model.

Architectural Design: Software Architecture, Architecture Genres, Architecture Styles, Architectural Design, Assessing Alternative Architectural Designs.

UNIT – IV

User Interface Design: The Golden Rules, User Interface Analysis and Design, Interface Analysis, Interface Design Steps.

Web App Design: Introduction, Web App Interface Design, Aesthetic Design, Content Design, Architecture Design, Navigation Design, Component-Level Design

UNIT – V

Testing: : A strategic Approach to Software Testing, Strategic Issues, Test Strategies for Conventional Software, Test Strategies for Object-Oriented Software, Validation Testing, System Testing, The Art of Debugging.

Testing Conventional Applications: Software Testing Fundamentals, White-Box Testing, Black-Box Testing, Testing for Specialized Environments, Architectures and Applications, Object-Oriented Testing Strategies, Object-Oriented Testing Methods, Testing Methods Applicable at the Class level, Interclass Test-Case Design.

TEXT BOOK

1. Roger S.Pressman, *Software engineering- A practitioner's Approach*, McGraw-Hill International Edition, seventh edition, 2001.

REFERENCES

1. Ian Sommerville, *Software Engineering*, 8th Edition, Pearson Education, 2008.
2. Richard Fairley, *Software EngineeringConcepts* , McGraw Hill, 2004.
3. Stephan Schach, *Software Engineering*, Tata McGraw Hill, 2007.
4. Pfleeger and Lawrence, *Software Engineering : Theory and Practice*, Pearson Education, 2nd, 2001
5. Brian Marick, *The craft of software testing,* Pearson Education.

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(18CS0523) WEB TECHNOLOGIES

COURSE OBJECTIVES

The objectives of this course:

1. Introduce the basic web concepts and Internet Protocols
2. Explain client side scripting with Javascript and DHTML
3. Introduce server side programming with Java servlets, JSP and PHP
4. Implement web services through XML.

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

1. Understand basic concepts of HTML.
2. Apply Cascading Style Sheets and develop client side programming.
3. Understand the Document Object Model concepts.
4. Understand and implement server side programming.
5. Understand basics of PHP and implement XML based parser.
6. Design client presentation using AJAX

UNIT – I

Web Essentials: Clients, Servers, and Communication. The Internet-Basic Internet Protocols -The World Wide Web-HTTP request message-response message-Web Clients Web Servers.
Markup Languages: An Introduction to HTML History-Versions-Basic XHTML Syntax and Semantics-Some Fundamental HTML Elements-Relative URLs-Lists-tables-Frames-Forms-HTML 5.0.

UNIT – II

Style Sheets: CSS-Introduction to Cascading Style Sheets-Features-Core Syntax-Style Sheets and HTML- Style Rule Cascading and Inheritance-Text Properties-Box Model Normal Flow Box Layout-Beyond the Normal Flow-CSS3.0.
Client-Side Programming: The JavaScript Language-History and Versions Introduction JavaScript in Perspective-Syntax-Variables and Data Types-Statements-Operators-Literals-Functions-Objects-Arrays-Built-in Objects-JavaScript Debuggers.

UNIT – III

Host Objects: Introduction to the Document Object Model DOM History and Levels- Intrinsic Event Handling-Modifying Element Style-The Document Tree-DOM Event Handling-Accommodating Noncompliant Browsers Properties of window.
Server-Side Programming: Java Servlets- Architecture -Overview-A Servlet-Generating Dynamic Content-Life Cycle- Parameter Data-Sessions-Cookies-URL Rewriting-Other Capabilities-Data Storage Servlets and Concurrency- Databases and Java Servlets.

UNIT – IV

Introduction to PHP: PHP- Using PHP- Variables- Program control-Built-in functions connecting to Database – Using Cookies-Regular Expressions.
Representing Web Data: XML-Documents and Vocabularies-Versions and Declaration-Namespaces- DOM based XML processing Event-oriented Parsing: SAX-Transforming XML Documents-Selecting XML Data.

UNIT – V

AJAX: Ajax Client Server Architecture-XML Http Request Object-Call Back Methods, web services Writing a Java Web Service-Writing a Java Web Service Client-Describing.
XML Schema-Communicating Object Data: SOAP Related Technologies-Software Installation-Storing Java Objects as Files.

TEXT BOOKS

1. Jeffrey C. Jackson, *Web Technologies–A Computer Science Perspective*, Pearson Education, 2006
2. Jason Gilmore, *Beginning PHP and MySQ*L, 3rd Edition, Apress Publications (Dream tech.).

REFERENCES

1. Lee Babin, Nathan A Good, Frank M.Kromann and Jon Stephens, *PHP 5 Recipes A problem Solution Approach*, Apress publisher, 1st Edition 2005.
2. Deitel and Deitel and Nieto, Prentice Hall, *Internet and World Wide Web - How to Program*, 5 th Edition, 2011.
3. Herbert Schildt, *Java-The Complete Reference*, Eighth Edition, Mc Graw Hill Professional,2011.
4. Brian Marick, *The craft of software testing*, Pearson Education

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(18CS0531) ADVANCED OPERATING SYSTEMS
(PROFESSIONAL ELECTIVE COURSE-I)

COURSE OBJECTIVES

The objectives of this course:

1. Understand and make effective use of memory management techniques.
2. Implement Distributed Mutual Exclusion Algorithms
3. Develop the skills necessary for Synchronous and Asynchronous Check Pointing andRecovery
4. Develop the basic skills required to Real Time Systems
5. Develop Process Management Scheduling and Input-Output Management

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

1. Understand the fundamentals of operating systems: threads, deadlocks, scheduling and memory management
2. Analyze and implement Distributed Mutual Exclusion Algorithms, Distributed Deadlock Detection Algorithms
3. Understand the Algorithms for Implementing Distributed Shared memory
4. Analyze the fundamental skills required to Two Phase Commit Protocol and Fault Tolerance
5. Interpret the Real Time and Mobile Operating Systems concepts.
6. Understand and analyze various case studies.

UNIT – I

FUNDAMENTALS OF OPERATING SYSTEMS: Overview – Synchronization Mechanisms – Processes and Threads - Process Scheduling Deadlocks: Detection, Prevention and Recovery – Models of Resources – Memory Management Techniques.

UNIT – II

DISTRIBUTED OPERATING SYSTEMS: Issues in Distributed Operating System – Architecture – Communication Primitives – Lamport's Logical clocks – Causal Ordering of Messages – Distributed Mutual Exclusion Algorithms – Centralized and Distributed Deadlock Detection Algorithms – Agreement Protocols.

UNIT – III

DISTRIBUTED RESOURCE MANAGEMENT: Distributed File Systems – Design Issues - Distributed Shared Memory – Algorithms for Implementing Distributed Shared memory– Issues in Load Distributing – Scheduling Algorithms – Synchronous and Asynchronous Check Pointing and Recovery – Fault Tolerance – Two-Phase Commit Protocol – Non blocking Commit Protocol – Security and Protection.

UNIT – IV

REAL TIME AND MOBILE OPERATING SYSTEMS: Basic Model of Real Time Systems - Characteristics- Applications of Real Time Systems – Real Time Task Scheduling - Handling Resource Sharing - Mobile Operating Systems – Micro Kernel Design - Client Server Resource Access – Processes and Threads - Memory Management - File system.

UNIT – V

CASE STUDIES: Linux System: Design Principles - Kernel Modules - Process Management Scheduling - Memory Management - Input-Output Management - File System -Inter process Communication. iOS and Android: Architecture and SDK Framework - Media Layer - Services Layer - Core OS Layer - File System.

TEXT BOOKS

1. Mukesh Singhal and Niranjan G. Shivaratri, *Advanced Concepts in Operating Systems Distributed Database and Multiprocessor Operating Systems*, Tata McGraw-Hill, 2001.
2. Abraham Silberschatz; Peter Baer Galvin; Greg Gagne, *Operating System Concepts*, Seventh Edition, John Wiley & Sons, 2004.

REFERENCES

1. Andrew S. Tanenbaum and Maarten van Steen, *Distributed Systems: Principles and Paradigms*, Prentice Hall, 2nd Edition, 2007.
2. Daniel P Bovet and Marco Cesati, *Understanding the Linux kernel,, 3rd edition, O'Reilly,2005.*
3. Rajib Mall, *Real-Time Systems: Theory and Practice, Pearson Education India, 2006.*
4. Neil Smyth, *iPhone iOS 4 Development Essentials – Xcode, Fourth Edition, Payload media, 2011.*

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(18CS0532) LINUX PROGRAMMING
(PROFESSIONAL ELECTIVE COURSE-I)

COURSE OBJECTIVES

The objectives of this course:

1. Explain Linux utilities and shell scripting language

2. Implement standard Linux utilities

3. Develop the skills necessary for system programming including file system programming,Korn shell and C shell

COURSE OUTCOMES (COs)

On successful completion of this course, the student will be able to

1. Understand the basics of UNIX Commands and analyze the file system concepts
2. Understand the basics of Shell commands
3. Interpret the Filters and Pipes related Commands
4. Implement Local, Global and Range commands and Text manipulation using Vi Editor.
5. Analyze the commands related to Regular Expressions and Interactive korn shell
6. Implement korn shell programming and Execute commands related to C shell.

UNIT – I

Introduction: The UNIX Environment, Unix structure, Accessing UNIX, common anduseful commands. The Vi Editor – Concepts, Modes and Commands.

File Systems: File names and types, regular files and Directories and their implementation. Operations on directories, files and on both. Security levels, Changing permissions, Ownership and group

UNIT – II

Introduction to Shells: Shells**,** UNIX Session, standard streams, redirection, pipes tee Command, Command Execution and Substitution, Command-Line Editing, job control, Aliases, Variable Types and options, Shell Customization.

UNIT – III

Filters: Filters and Pipes – related Commands. Commands for Translating Characters, Files with duplicate Lines, Counting characters, words and Lines and Comparing files.

User Communication, Electronic mail, Remote access, and File Transfer. Vi Editor – Local, Global and Range commands and Text manipulation in vi. Editor, Over view of ex Editor.

UNIT – IV

Regular Expressions: Atoms and Operators, grep – family and operations and searching for file contents. Overview of sed and awk

Interactive korn shell : An overview on sed, Korn shell - Features, Files, Variables, input and output. Environmental Variables and options. Startup Script, Command history and Execution process.

UNIT – V

Korn shell Programming: Script Concept, Expressions, Decision making and Repetition, Special Parameters and variables, Changing Positional parameters, Argument Validation, Debugging Scripts and Examples.

Interactive C shell : An overview on awk, C Shell – Features, Files and Variables, output, input, eval Command, environmental Variables, on-off Variables, Startup and Shutdown Scripts, Command history and execution Script.

TEXT BOOKS

1. Behrouz A. Forouzan and Richard F. Gilberg, *UNIX and Shell Programming*, Cengage learning publications, Indian Reprint 2012
2. Sumitabha Das, *UNIX Concepts and Applications*, 4th Edition, TMH.

REFERENCES

1. N. Mathew, R. Stones, Wrox, *Beginning Linux Programming*, 4th Edition, Wiley India Edition
2. Graham Glass, King Ables, *LINUX for programmers and users*, 3rd Edition, Pearson.
3. A. Hoover, *System Programming with C and LINUX*, Pearson.
4. S. G. Kochan and P. Wood, *LINUX shell Programming*, 3rd edition, Pearson Education
5. K. A. Robbins, *LINUX System Programming, communication, Concurrency and Thread*s, Pearson Education.
6. S. Parker, *Shell Scripting*, Wiley India Pvt. Ltd.

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(18CS0533) QUANTUM COMPUTING
(PROFESSIONAL ELECTIVE COURSE-I)

COURSE OBJECTIVES

The objectives of this course:

1. Highlight the paradigm change between conventional computing and quantum computing
2. Translate fluently between the major mathematical representations of quantum operations
3. Implement basic quantum algorithms
4. Discuss the physical basis of uniquely quantum phenomena
5. Explain quantum de-coherence in systems for computation

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

1. Understand the basic principles of quantum computing, Linear Algebra and The Dirac Notations
2. Understand the state of quantum system, measurements and quantum computations
3. Understand Quantum dense coding and apply teleportation
4. Analyze various Quantum Algorithms
5. Understand the physical principles of quantum computation and the working of quantum algorithms such as Shor's and Grover's
6. Analyze the basics of Quantum computations and Quantum error corrections techniques

UNIT – I

Introduction and Background: Overview of traditional computing – Church-Turing thesis – circuit model of computation – reversible computation – quantum physics – quantum physics and computation

Linear Algebra and The Dirac Notation: Dirac notation and Hilbert Spaces – dual vectors – operators – the spectral theorem –functions of operators – tensor products – Schmidt decomposition theorem

UNIT – II

Qubits and The Framework of Quantum Mechanics: State of a quantum system – time evolution of a closed system – composite systems – measurement – mixed states and general quantum operations

A Quantum Model of Computation: Quantum circuit model – quantum gates – universal sets of quantum gates – unitary transformations – quantum circuits.

UNIT – III

Super dense Coding and Quantum Teleportation: Super dense coding – quantum teleportation – applications of teleportation

Introductory Quantum Algorithms: Probabilistic versus quantum algorithms – phase kick-back – the Deutsch algorithm – the Deutsch- Jozsa algorithm – Simon's algorithm

UNIT – IV

Algorithms with Super Polynomial Speed-Up: Quantum phase estimation and quantum Fourier Transform – eigenvalue estimation – Orders-finding problem – eigenvalue estimation approach to order finding – Shor's algorithm for order finding – finding discrete logarithms – hidden subgroups

Algorithms Based on Amplitude Amplification: Grover's quantum search algorithm – amplitude amplification – quantum amplitude estimation and quantum counting – searching without knowing the success probability

UNIT – V

Quantum Computational Complexity: Computational complexity – black-box model – lower bounds for searching – general black-box lower bounds – polynomial method – block sensitivity – adversary methods

Quantum Error Correction: Classical error correction – classical three-bit code – fault tolerance – quantum error correction – three- and nine-qubit quantum codes – fault-tolerant quantum computation

TEXT BOOK

1. P. Kaye, R. Laflamme, and M. Mosca, *An introduction to Quantum Computing*, Oxford University Press, 1999

REFERENCES

1. V. Sahni, *Quantum Computing*, Tata McGraw-Hill Publishing Company, 2007.
2. Michael A. Nielsen and Isaac L.Chuang (2000), *Quantum Computation and Quantum Information*, Cambridge University Press.

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(18CE0127) ELEMENTS OF ROAD TRAFFIC SAFETY
(OPEN ELECTIVE-I)

COURSE OBJECTIVES

1. *To understand the accident statistics globally and in India specifically, its causes and measures to overcome the situation.*
2. *The traffic regulation, parking problems, understanding of road signs, signals and marking are also taught; so that the student is well informed about all safety measures that a traffic engineer need to understand*
3. *To understand the various aspects of street lighting*

COURSE OUTCOMES (COs)

On successful completion of this course, the student will be able to

1. *Identify the causes for road accidents and can implement measures to prevent road accidents*
2. *Describe traffic regulations and implement parking methods*
3. *Classify different traffic signal and can design traffic signal system*
4. *List and illustrate various traffic signs*
5. *List and discuss various road markings*
6. *Discuss importance of street lighting and classify various street lighting system*

UNIT – I

Road Accidents – Causes & Prevention: Road Accidents & Traffic Engineering – Accident Situation in India – International Comparison of Road Accidents – Road & its Effects on Accidents – The Vehicle – The Driven – Skidding – Speed in Relation of Safety – Weather & its Effects on Accidents – Pedestrian Safety -Cyclists – Motor Cycle & Scooter Rider – Parking & Its Influence on Accident – Legislation, Enforcement, Education & Propaganda – Cost of Road Accidents

UNIT – II

Regulations of Traffic: Basic Principals of Regulation – Regulation of Speed – Regulation of Vehicles – Regulations Concerning the Driver – Regulations Concerning Traffic – Parking Regulations – Enforcement of Regulations.

Parking: Traffic & Parking Problems – Ill-Effects of Parking – Zoning & Parking Space Requirement Standards – Design Standards for On-Street Parking Facilities – Traffic Regulatory Measures for On-Street Parking – Off-Street Parking Facilities – Peripheral Parking Schemes – Loading & Unloading Facilities – Truck Terminals – Long Distance Bus Terminals

UNIT – III

Traffic Signs: Importance of Traffic Signs – Need for International Standardization – The Situation in India – General Principals of Traffic Signing – Types of Traffic Signs – Danger Signs (Warning Signs or Cautionary Signs) – Prohibitory Signs – Mandatory Signs – Informatory Sings – Indication Signs – Direction Signs, Advance Direction Signs & Place Identification Signs – Overhead Sings – Route Marker Sings – Location, Height& Maintenance of Traffic Sings

UNIT – IV

Traffic Signals: Advantages & Disadvantages of Traffic Signals – Signal Indications – Signal Face – Illustration of the Signals – Number & Location of Signals Faces – Amber Period, Red/Amber Period & Inter Green Period – Fixed Time Signals & Vehicle Actuated Signals – Determination of Optimum Cycle Length & Signal Settings for an Intersection with Fixed Time Signals – Warrants for Signals – Co-ordinated Control of Signals – Signal Approach Dimensions – Area Traffic Control – Delay at Signalized Intersection

UNIT – V

Road Markings: Function – Types of Road Marking – General Principals of Longitudinal Pavement Markings – Material & Color – Centre Lines – Traffic Lane Lines – No Overtaking Zone Markings – Pavement Edge Lines – Carriageway Width Reduction Transition Marking – Obstruction Approach Markings – Stop Lines – Pedestrian Crossings – Cyclist Crossings – Route Direction Arrows – Word Messages – Markings at Approaches to Intersections – Parking Space Limits – Object Markings

Street Lighting: Need for Street Lighting – Definition of Common Terms – Some Laws of Illumination – Mounting Height – Spacing – Lantern Arrangements – Type of Lamps – Lamp Installation of T' Junctions & Cross Roads – Illumination of Traffic Rotaries – Lighting of Bends – Lighting of Dual Carriageways – Lighting of Roads Carrying Only Local Traffic – Lighting Bridges – Tunnel Lighting – Maintenance of Lighting Installation

TEXTBOOKS

1. L.R.Kadiyali and Lal,*Traffic Engineering and Transportation Planning*, Khanna Publications, 9th edition, 1999
2. S.K.Khanna&C.E.G.Justo,*Highway Engineering*,Published by Nemchand& Bros,10th edition, 2012

REFERENCES

1. L.R.Kadiyali and Lal,*Principles and Practice of Highway Engineering Design*, Khanna Publications, 7th edition, 2013
2. R.Srinivasa Kumar,*Text book of Highway Engineering*, Universities Press
3. James H Banks, *Introduction to Transportation Engineering*, Tata McGraw hill Publications, 2nd edition

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(18EE0234) INDUSTRIAL INSTRUMENTATION
(OPEN ELECTIVE-I)

COURSE OBJECTIVES

The objectives of this course:

1. *To Analyse the Common errors that occur in measurement systems, and their classification.*
2. *To understand the characteristics of signals, their representation, and signal modulation techniques.*
3. *To learn the Methods of Data Transmission, Telemetry, and Data acquisition.*
4. *To study working principles of different Signal Analyzers and Digital meters.*
5. *To learn about several types of transducers and their use for measurement of non-electrical quantities.*

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

1. *Identify and explain the types of errors occuring in measurement systems.*
2. *Differentiate among the types of data transmission and modulation techniques.*
3. *Apply digital techniques to measure voltage, frequency and speed.*
4. *Analyse the working principles of different Signal Analyzers and Digitalmeters.*
5. *Understand the operation of several types of transducers.*
6. *Choose suitable Transducers for the measurement of non-electrical quantities.*

UNIT – I

CHARACTERISTICS OF SIGNALS AND THEIR REPRESENTATION: Measuring Systems, Performance Characteristics, Static Characteristics, Dynamic Characteristics; Errors in Measurement Gross Errors, Systematic Errors, Statistical Analysis of Random Errors. Signals and their Representation: Standard Test, Periodic, Aperiodic, Modulated Signal, Sampled Data, Pulse Modulation and Pulse Code Modulation.

UNIT – II

DATA TRANSMISSION, TELEMETRY AND DAS: Methods of Data Transmission– General Telemetry System .Frequency Modulation (FM), Pulse Modulation (PM), Pulse Amplitude Modulation (PAM), Pulse Code Modulation (PCM)Telemetry. Comparison of FM, PM, PAM and PCM. Analog and Digital Data Acquisition Systems –Components of Analog DAS–Types of Multiplexing Systems: Time Division and Frequency Division Multiplexing – Digital DAS–Block Diagram—Modern Digital DAS (Block Diagram)

UNIT – III

SIGNAL ANALYZERS, DIGITAL METERS: Wave Analysers- Frequency Selective Analyzers, Heterodyne, Application of Wave Analyzers-Harmonic Analyzers, Total Harmonic Distortion, Spectrum Analyzers, Basic Spectrum Analyzers, Spectral Displays, Vector Impedance Meter, QMeter. Peak Reading and RMS Voltmeters, Digital Voltmeters-

Successive Approximation, Ramp and Integrating Type- Digital Frequency Meter- Digital Multimeter- Digital Tachometer

UNIT – IV

TRANSDUCERS: Definition of Transducers, Classification of Transducers, Advantages of Electrical Transducers, Characteristics and Choice of Transducers; Principle of Operation of Resistive, Inductive, Capacitive Transducers, LVDT, Strain Gauge and its Principle of Operation, Gauge Factor, Thermistors, Thermocouples, Synchros, Piezo electric Transducers, Photovoltaic, Photo Conductive Cells, Photo Diodes.

UNIT – V

MEASUREMENT OF NON-ELECTRICAL QUANTITIES: Measurement of strain, Gauge Sensitivity, Measurement of Displacement, Velocity, Angular Velocity, Acceleration, Force, Torque, Temperature, Pressure, Flow, Liquid level.

TEXT BOOKS

1. A.K.Sawhney, DhanpatRai & Co., *A course in Electrical and Electronic Measurementsand Instrumentation*, 2012.
2. D.V.S.Murty, *Transducers and Instrumentation*, Prentice Hall of India, 2nd Edition, 2004.

REFERENCES

1. A.Dhelfrick and W.D.Cooper, *Modern Electronic Instrumentation and Measurement technique*, Pearson/Prentice Hall of India., 1990.
2. H.S. Kalsi , *Electronic Instrumentation*, Tata MCGraw-Hill Edition, 2010.
3.T.R.Padmanabhan, *Industrial Instrumentation–Principles and Design*, Springer-Verlag London Limited 2000.

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(18ME0307) NON-CONVENTIONAL ENERGY RESOURCES
(OPEN ELECTIVE-I)

COURSE OBJECTIVES

To make the students understand

1. *The importance of energy, resources of renewable energy, their usage and impact on environment.*
2. *Solar energy, its harnessing technologies, types of solar collectors, measuring devices. & its applications*
3. *Method of exploiting energy from wind and parameters to be considered for the selection of site for wind turbine installation*
4. *The concept of bio energy and its conversion devices*
5. *Different renewable energies such as tidal energy, geothermal energy, fuel cells etc.*

COURSE OUTCOMES (COs)

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

1. *State various sources of Energies, its availability and explain the importance of them by observing the global energy scenario.*
2. *Distinguish the types of solar energy tapping devices and describe the method of harnessing the solar energy.*
3. *Summarize the Wind energy systems and elucidate the impact of it in environmental aspects.*
4. *Describe the Biomass conversion process and list out various bioenergy applications.*
5. *Interpret the knowledge of renewable energies such as tidal energy, OTEC, Fuel cell, etc. for effective construction of Hybrid systems.*
6. *Identify numerous applications renewable energy resources and illustrate its harnessing technologies.*

UNIT-I

Introduction -world energy use – classification of energy's-reserves of energy resources– environmental aspects of energy utilization – need of renewable energy– renewable Energy scenario in Andhra Pradesh, India and around the world.

UNIT-II

Solar thermal conversion - Flat Plate and Concentrating Collectors – Solar direct Thermal Applications– Solar thermal Power Generation

Photo voltaic Conversion: Fundamentals of Solar Photo Voltaic Conversion – Solar Cells – Solar PV Power Generation – Solar PV Applications, Solar Radiation Measurements

UNIT-III

Wind Energy - Types of Wind Energy Systems – Performance – Site Selection – Details of Wind Turbine–Wind Energy Measurements-Safety and Environmental Aspects

UNIT-IV

Bio Energy- Biomass direct combustion – Biomass gasifiers – Biogas plants–Ethanol production – Biodiesel – Cogeneration - Biomass Applications

UNIT-V

Other Sources of Energy - Tidal energy – Wave Energy – Open and Closed OTEC Cycles –Geothermal Energy – Hydrogen and Storage - Fuel Cell Systems – Hybrid Systems.

TEXT BOOKS

1. R.K. Rajput, *Non-conventional Energy Sources and Utilization*, S. Chand Publishers, 2nd Edition, 2014.
2. G. D Rai, *Non-Conventional Energy Sources*, Khanna Publishers, 1st Edition, 2010.
3. Nicholas Jenkins & Janaka Ekanayake, *Renewable Energy Engineering*, Cambridge University Press; 1st Edition, 2017.

REFERENCES

1. Dr. R K Singal, *Non-Conventional Energy Resources*, S.K Kataria & Sons, 4th Edition, 2014.
2. John Twidell & Tony Weir, *Renewable Energy Sources*, Routledge publisher, 3rd Edition, 2015.
3. Sukhatme. S.P, *Solar Energy, Principles of Thermal Collection and Storage*,Tata McGraw Hill Publishing Company Limited, 6th Edition, 1990.

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(18EC0449) INTRODUCTION TO IOT
(OPEN ELECTIVE-I)

COURSE OBJECTIVES

The objectives of this course:

1. To *provide an overview on the ICT ecosystem and enabling environment to foster Internet of Things (including technology, standards, system management and applications) deployments.*
2. *Define the infrastructure for supporting IoT deployments.*
3. *To provide an understanding of the technologies and the standards relating to the Internet of Things.*
4. *Understand various case studies related to IoT domain.*

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

1. *Understand the basic technologies and standards related to IOT*
2. *Illustrate the various real world applications of IOTs*
3. *Understand the differences between IOT and M2M*
4. *Develop the methodology for IOT design*
5. *Configure Raspberry Pi, Understand Sensors, Actuators& get started with python on Raspberry Pi.*
6. *Illustrating the design of IOT in various applications*

UNIT – I

IoT Introduction & Concepts: Introduction to Internet of Things - Physical Design of IoT - Logical Design of IoT - IoT Enabling Technologies - IoT Levels & Deployment Templates.

UNIT – II

Domain Specific IoTs: Home Automation – Cities – Environment – Energy – Retail – Logistics - Agriculture – Industry - Health & Lifestyle.

UNIT – III

IoT and M2M: Introduction – M2M – Difference between IoT an M2M - Software Defined Networking - Network Function Virtualization for IoT.

Developing Internet of Things: IoT Design Methodology – Motivation for using Python

UNIT – IV

IoT Physical Devices & Endpoints: IoT Device – Raspberry Pi Board - Linux on Raspberry Pi – Raspberry Pi Interfaces – Programming raspberry Pi with Python – Other IoT devices.

UNIT – V

Case Studies Illustrating IoT Design: Home Automation – Cities – Environment – Agriculture – Productivity applications.

TEXT BOOKS

1. Vijay Madisetti – Arshdeep Bahga, *Internet of Things a Hands-on Approach,* ArshdeepBahga & Vijay Madisetti ,1st Edition, 2014.
2. Pethuru Raj and Anupama C. Raman, *The Internet of Things: Enabling Technologies, Platforms, and Use Cases*, CRC Press,1stEdition, 2014.

REFERENCES

1. *Raj Kamal, Embedded Systems*, Tata McGraw-Hill Education, 2ndEdition, 2011.
2. Adrian McEwen & Hakim Cassimally, *Designing of Internet of Things,* John Wiley and sons Ltd, 1st Edition, 2014,
3. Daniel Kellmereit - Daniel Obodovski, *The Silent Intelligence: The Internet of Things*,DnD Ventures, 1st Edition,2013.

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(18HS0814) INTELLECTUAL PROPERTY RIGHTS
(OPEN ELECTIVE-I)

COURSE OBJECTIVES

The course should enable the students

1. *Provide an understanding of the concept and significance of intellectual property rights.*
2. *Understand the concept of trademarks, copy rights, patents and the need for their protection.*
3. *To comprehend the concept of competition, unfair competition and the latest developments in the laws pertaining to intellectual property rights.*

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

UNIT- I

INTRODUCTION TO INTELLECTUAL PROPERTY: Introduction, types ofintellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT- II

TRADE MARKS: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter, selecting and evaluating trade mark, trade mark registration processes.

UNIT- III

LAW OF COPY RIGHTS: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

LAW OF PATENTS: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT - IV

TRADE SECRETS: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secret elitigation.

UNFAIR COMPETITION: Misappropriation right of publicity, False advertising.

UNIT -V

NEW DEVELOPMENT OF INTELLECTUAL PROPERTY: new developments in trade mark law; copy right law, patent law, intellectual property audits.

International overview on intellectual property, international - trade mark law, copy right law, international patent law, international development in trade secrets law.

TEXT BOOKS

1. Deborah, E. Bouchoux, *Intellectual property right*, cengage learning
2. Nityananda KV, *Intellectual property rights: Protection and Management.* India, Cengage Learning India Private Limited.

REFERENCES

1. Prabuddha ganguli, *Intellectual property right - Unleashing the knowledge economy,* Tata McGraw Hill Publishing CompanyLtd.
2. Ahuja ,*Law relating to Intellectual Property rights.* India. VK IN: Lexis Nexis
3. Neeraj P & Khushdeep D, *Intellectual Property Rights,* India. PHI learning pvt limited.

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(18CS0524) DATA MINING LAB

COURSE OBJECTIVES

The objectives of the course:

1. Learn to perform data mining tasks using a data mining toolkit (such as open source WEKA)
2. Explain the data sets and data preprocessing
3. Demonstrate the working of algorithms for data mining tasks such association rule mining, classification, clustering and regression
4. Exercise the data mining techniques with varied input values for different parameters

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

1. Explore WEKA tool
2. Perform data preprocessing tasks
3. Demonstrate association rule mining on datasets
4. Implement classification techniques on datasets
5. Implement clustering and regression techniques on datasets
6. Design and implement data mining algorithms

LIST OF EXPERIMENTS:

1. Credit Risk Assessment

Description: The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to makes many loans as possible. Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient. To do the assignment, you first and foremost need some knowledge about the world of credit.You can acquire such knowledge in a number of ways.

a) Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent her knowledge in the form of production rules.
b) Books. Find some training manuals for loan officers or perhaps a suitable textbook on finance. Translate this knowledge from text form to production rule form.
c) Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of a loan applicant.
d) Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to, approve a loan application.

2. The German Credit Data:

Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. credit dataset (original) Excel spreadsheet version of the German credit data (Down load from web). In spite of the fact that the data is German, you should probably make use of it for this assignment. (Unless you really can consult a real loan officer !)

A few notes on the German dataset

- DM stands for Deutsche Mark, the unit of currency, worth about 90cents Canadian (but looks and acts like a quarter).
- Owns telephone. German phone rates are much higher than in Canada so fewer people own telephones.
- Foreign worker. There are millions of these in Germany (many from Turkey). It is very hard to get German citizenship if you were not born of German parents.
- There are 20 attributes used in judging a loan applicant. The goal is the classify the applicant into one of two categories, good or bad.

Sub tasks : (Turn in your answers to the following tasks)

a) List all the categorical (or nominal) attributes and the real-valued attributes separately.

b) What attributes do you think might be crucial in making the credit assessment? Come up with some simple rules in plain English using your selected attributes.

c) One type of model that you can create is a Decision Tree - train a Decision Tree using the complete dataset as the training data. Report the model obtained after training.

d) Suppose you use your above model trained on the complete dataset, and classify credit good/bad for each of the examples in the dataset. What % of examples can you classify correctly ? (This is also called testing on the training set) Why do you think you cannot get 100 % training accuracy ?

e) Is testing on the training set as you did above a good idea ? Why or Why not ?

f) One approach for solving the problem encountered in the previous question is using cross validation ? Describe what is cross validation briefly. Train a Decision Tree again using cross validation and report your results. Does your accuracy increase/decrease ?Why ?

g) Check to see if the data shows a bias against "foreign workers"(attribute 20),or "personal-status" (attribute 9). One way to do this(perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka's GUI Explorer. Did removing these attributes have any significant effect? Discuss.

h) Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem 7. Remember to reload the raff data file to get all the attributes initially before you start selecting the ones you want.)

i) Sometimes, the cost of rejecting an applicant who actually has a good credit (case 1) might be higher than accepting an applicant who has bad credit (case 2). Instead of counting them is classifications equally in both cases, give a higher cost to the first case (say cost 5) and lower cost to the second case. You can do this by using a cost matrix in Weka. Train your Decision Tree again and report the Decision Tree and cross-validation results. Are they significantly different from results obtained in problem 6 (using equal cost)?

j) Do you think it is a good idea to prefer simple decision trees instead of having long complex decision trees How does the complexity of a Decision Tree relate to the bias of the model ?

k) You can make your Decision Trees simpler by pruning the nodes. One approach is to use Reduced Error Pruning - Explain this idea briefly. Try reduced error pruning for training your Decision Trees using cross-validation (you can do this in Weka) and report the Decision Tree you obtain ? Also, report your accuracy using the pruned model. Does your accuracy increase ?

l) (Extra Credit): How can you convert a Decision Trees into "if-then else rules". Make up your own small Decision Tree consisting of 2-3 levels and convert it into a set of rules. There also exist different classifiers that output the model in the form of rules - one such classifier in Weka is rules. PART, train this model and report the set of rules obtained. Sometimes just one attribute can be good enough in making the decision, yes, just one ! Can you predict what attribute that might be in this dataset ? One R classifier uses a single attribute to make decisions (it chooses the attribute based on minimum error). Report the rule obtained by training a one R classifier. Rank the performance of j48, PART and one R.

Task Resources:

Andrew Moore's Data Mining Tutorials (See tutorials on Decision Trees and Cross Validation)

- Decision Trees (Source: Tan, MSU)
- Tom Mitchell's book slides (See slides on Concept Learning and Decision Trees)
- Weka resources:
    1. Introduction to Weka (html version) (download ppt version)
    2. Download Weka
    3. Weka Tutorial
    4. ARFF format

TEXT BOOKS

1. Jiawei Han and Micheline Kamber ,*Data Mining: Concepts and Techniques,* , Elsevier, Second Edition,2010.
2. Prabhu C.S.R., *Data Ware housing: Concepts, Techniques, Products and Applications*, Prentice Hall of India, 2011

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(18CS0525) WEB TECHNOLOGIES LAB

COURSE OBJECTIVES

The objectives of the course:

1. Create web pages using HTML,DHTML and CSS.
2. Develop a servelet program using Java servelets.
3. Develop online application using PHP
4. Implement simple web service using XML

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

1. Create dynamic and interactive web sites using HTML.
2. Design client side scripting using java script and DHTML.
3. Implement servlet program using java servlets.
4. Develop simple online application using servlets.
5. Implement JDBC concepts.
6. Design simple online webpage using PHP.

LIST OF EXPERIMENTS:

1. Create a simple webpage using HTML5 Semantic and Structural Elements
2. Create a webpage using HTML5 Media Elements
3. Add a Cascading Style sheet for designing the web page.
4. Write a Java program which stores the user login information in database in a server, creates user interface for inserting, deleting, retrieving information from the database, accepts user login information and verifies it.
5. Write a Java Servlet Program to display the Current time on the server.
6. To write html and servlet to demonstrate invoking a servlet from a html.
7. Write a Java servlet program to change the Background color of the page by the color selected by the user from the list box.
8. Write a Java servlet to get the personal details about the user(Like name, Address, City, Age, Email id) and check whether the user is Eligible to vote or not.
9. Write a Java servlet Program to create a Cookie and keep it alive on the client for 30 minutes.
10. Write a java servlet program to display the various client information like Connection, Host, Accept-Encoding, and User Agent.
11. To write java servlet programs to conduct online examination and to display student mark list available in a database
12. Write a Java servlet Program to implement the Book Information using JDBC.
13. Write a Java Servlet Program to create a Session and display the various information like Last accessed time, Modified time, Expiration)
14. Design a simple online test web page in PHP.
15. Design simple application for accessing the data using XML

TEXT BOOKS

1. Uttam K Roy, *Web Technologies*, Oxford University Press
2. Steven Holzner, *The Complete Reference PHP*, –Tata McGraw-Hill

REFERENCES

1. Chris Bates, *Web Programming, building internet applications*", Wiley Dreamtech 2nd edition
2. Lee Babin, Nathan A Good, Frank M.Kromann and Jon Stephens,*PHP 5 Recipes A problem Solution Approach*, Apress publisher, 1st Edition 2005.
3. Deitel and Deitel and Nieto, *Internet and World Wide Web - How to Program*, Prentice Hall, 5th Edition, 2011.

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(18CS0526) INTERNSHIP

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(18HS0859) ENGLISH FOR CORPORATE COMMUNICATION SKILLS LAB (NON- CREDIT COURSE)

COURSE OBJECTIVES

The objectives of this course:

1. *To improve the students' fluency in English, through a well-developed vocabulary*
2. *To enable them listening spoken English at normal conversational speed by English speakers*
3. *To respond appropriately in different social-cultural and professional contexts*
4. *To develop drafting skills among the students.*
5. *To develop Inter-personal and Intra-personal Skills*

COURSE OUTCOMES (COs)

On successful completion of this course, the student will be able to

1. *Flair in Writing by using cohesion and coherence.*
2. *Prepare effective job application.*
3. *Present Effective Speaking Abilities.*
4. *Apply various communicative techniques in their professional lives.*
5. *Cope with the employability skills.*
6. *Use effective communicative approaches by preparing job application, report and other kinds of spoken and written correspondences.*

UNIT I
COMMUNICATIVE COMPETENCY

1. Reading Comprehension
2. Listening Comprehension
3. Vocabulary for competitive purpose
4. Spotting Errors

UNIT II
TECHNICAL WRITING

1. Report writing
2. Curriculum vitae
3. Cover Letter
4. E-mail writing

UNIT III
PRESENTATIONAL SKILLS

1. Oral presentation
2. Power point presentation
3. Poster presentation
4. Stage Dynamics

UNIT IV
CORPORATE SKILLS

1. Dress code
2. Telephonic skills
3. Net-etiquettes

UNIT V
GETTING READY FOR JOB

1. Group Discussion
2. Interview skills
3. Psychometric test

Minimum requirements for English for Corporate Communication Skills Lab

1. Computer Assisted Language Learning (CALL) Lab: The Computer Assisted Language Lab for 60 Students with 60 systems one Master Console, LAN facility and English Language Software for self-study by learners.

2. English for Corporate Communication Skills Lab with movable chairs and audio visual aids with a P. A. system, Projector, a Digital stereo audio & video system and Camcorder etc.

System Requirement (Hardware component):

Computer network, LAN with minimum 60 multimedia systems with the following:

Specifications

i) a) Intel(R) core (TM) i3
   b) Speed 3.10 GHZ
   c) RAM – 4 GB
   d) Hard Disk – 320 GB

ii) Headphones with High quality

Software

Walden Info Tech Software

REFERENCES

1. Rizvi, *Effective Tech Communication*, Tata McGraw – Hill Education, 2007.
2. Sanjay Kumar &Pushpalatha, *Communication skills*, Oxford University Press, 2012.
3. *Writing Tutor. Advanced English Learners' Dictionary*, 9th Edition, Oxford University Press, 2015.
4. AnjanaAgarwal, *Powerful Vocabulary Builder*, New Age International Publishers, 2011.
5. Miles Craven, *Listening Extra*, Cambridge University Press, 2008.

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IV B. Tech – I Sem.

(18HS0813) MANAGEMENT SCIENCE

COURSE OBJECTIVES

The objectives of this course:

1. *To understand the basic concepts, principles and processes of management*
2. *To help the students gain an understanding of the functions, responsibilities of managers*
3. *To get an awareness about the latest developments and contemporary issues in the field of management*

COURSE OUTCOMES (COs)

After the completion of the course student would be able to:

1. *Utilize appropriate theoretical frameworks to real life business and managerial problems*
2. *Identify appropriate operational risks and develop appropriate responses to them*
3. *Apply human resource principles to recruit, select and manage employees to achieve organizational goals*
4. *Enact strategy, including contingent plans for the effective management of the organization*
5. *Identify, plan, and implement the projects and evaluate the performance of the projects*
6. *Analyze effective application of latest developments to diagnose and solve organizational problems*

UNIT - I

INTRODUCTION TO MANAGEMENT:

Management-Concept and meaning-Nature-Functions-Management as a science and art and both - Schools of management thought-Taylor‘s scientific theory-Henry Fayol‘s principles-Weber‘s Ideal Bureaucracy - Elton Mayo‘s Human relations-Systems theory- Situational or Contingency theory-Social responsibilities of management.

Organizational structure and design: Features of organizational structure-work specialization- Departmentation -Span of control-Centralization and Decentralization. **Organisational designs**-Line organization-Line & Staff Organization-Functional Organization-Matrix Organization-Project Organization-Committee form of organization.

UNIT- II

OPERATIONS MANAGEMENT:

Principles and Types of Plant Layout-Methods of production (Job, batch and Mass Production), Work Study- Statistical Quality Control**:** *C* chart, *P* chart, (simple Problems) Deming’s contribution to quality. **Material Management:** Objectives-Inventory- Functions, types, inventory classification techniques-EOQ-ABC Analysis-Purchase Procedure and Stores Management- **Marketing Management:** Concept- Meaning - Nature-Functions of Marketing - Marketing Mix- Channels of distribution -Advertisement and sales promotion - Marketing Strategies based on Product Life Cycle.

UNIT - III

HUMAN RESOURCES MANAGEMENT (HRM):

HRM- Definition and meaning – nature-Managerial and Operative functions-Evolution of HRM-Human Resource Planning(HRP)-Employee Recruitment-sources of recruitment-employee selection- process and tests in employee selection- Employee training and development-On- the- job and Off- the- job training methods-Performance Appraisal systems-Concept-Methods of Performance Appraisal-Placement-Employee Induction- Wageand Salary administration-Objectives-Essentials of Wage and Salary Administration- Job Analysis-Process -Job Evaluation-Employee Grievances-techniques of handling Grievances.

UNIT-IV

STRATEGIC MANAGEMENT:

Definition& meaning-Setting of Vision- Mission- Goals- Corporate Planning Process-Environmental Scanning-Steps in Strategy Formulation and Implementation-SWOT Analysis.

Project Management (PERT/CPM): Network Analysis- Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying Critical Path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (Simple problems).

UNIT-V

CONTEMPORARY ISSUES IN MANAGEMENT:

The concept of MIS-Materials Requirement Planning(MRP)-Just-In-Time(JIT)System-Total Quality Management (TQM)- Six Sigma Concept- Supply Chain Management-Enterprise Resource Planning (ERP)- Performance Management- Business Process Outsourcing (BPO), Business Process Re-engineering and Bench Marking -Balanced Score Card-Knowledge Management.

TEXT BOOKS

1. A.R Aryasri, *Management Science,* TMH,2013
2. Stoner, Freeman, Gilbert, *Management*, Pearson Education, New Delhi,2012.

REFERENCES

1. Kotler Philip & Keller Kevin Lane, *Marketing Management* ,PHI,2013.
2. Koontz &Weihrich, *Essentials of Management*, 6/e, TMH, 2005.
3. Thomas N.Duening& John M.Ivancevich, *Management Principles and Guidelines,* Biztantra.
4. KanishkaBedi, *Production and Operations Management*, Oxford University Press,2004.
5. Memoria&S.V.Gauker, *Personnel Management*, Himalaya, 25/e,2005

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IV B. Tech – I Sem.

(18CS0527) MOBILE APPLICATION DEVELOPMENT

COURSE OBJECTIVES

The objectives of this course:

1. To introduce the Android technology and its application.
2. Design & program real working education based mobile application projects.
3. Become familiar with common mobile application technologies and platforms; open files, save files, create and program original material, integrate separate files into a mobile application project, create and edit audio sound effects & music.

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to:

1. Understand Android platform and its environment
2. Understanding the Components of a Screen
3. Illustrate the designing of user interface
4. Understand the various Views like, Picker Views, List views; Pictures and menus with views.
5. Correlate and apply the different types of content providers to develop mobile software applications
6. Illustrate the components and structure of a mobile development frameworks (Android SDK and Eclipse Android Development Tools (ADT))

UNIT - I

The Android Platform: Introduction to the Android platform, required tools, setting up environment, creating Hello world Application; Understanding activities, Linking activities using Intents, Fragments.

UNIT - II

Understanding the Components of a Screen, Adapting to Display Orientation, Managing Changes to Screen Orientation, Utilizing the Action Bar.

UNIT - III

Designing user interface with views: Basic views, Picker Views, List views; Pictures and menus with views.

UNIT - IV

Data Persistence: Saving and loading user preferences, Persisting data to files, creating and using databases.

Content providers: Sharing Data in Android, Using a Content Provider, Creating Own Content Providers

UNIT - V

Messaging: Sending SMS Messages Programmatically, Getting Feedback after Sending a message, Sending SMS Messages Using Intent, Receiving SMS Messages, Caveats and Warnings.

Developing and Publishing Android Applications: Creating Your Own Services, Establishing Communication between a Service and an Activity, Binding Activities to Services, Understanding Threading**;** Preparing for Publishing, Deploying APK Files.

TEXT BOOKS

1. Wei-Meng Lee, *Beginning Android 4 Application Development* , Wrox Publications.
2. J.F.Dimarzio, *Android Programming with Android Studio*, @p2p.wrox.com, 4th Edition

REFERENCES

1. Joseph Annuzzi Jr., Lauren Darcey, Shane Conder, *Introduction to android application development*, 4th edition, Addision Wesley.
2. Jerome Dimarzio, *Android: A programmer's guide*, McGrawHill

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IV B. Tech – I Sem.

(18CS0535) ARTIFICIAL INTELLIGENCE & MACHINE LEARNING
(Professional Elective Course-II)

COURSE OBJECTIVES
The objectives of this course:

1. To understand the various characteristics of Intelligent agents
2. To learn the different search strategies in AI
3. To investigate various Supervised Learning models of machine learning
4. To investigate various Unsupervised Learning models of machine learning
5. To investigate various Reinforcement Learning models of machine learning
6. To expose students to the Dimensionality Reduction

COURSE OUTCOMES (COs)
On successful completion of this course, the student will be able to

1. Understand the basic concepts and characteristics of Artificial Intelligence
2. Analyze various problem solving methods and searching algorithms
3. Understand the basics of machine learning concepts.
4. analyze supervised learning and classification techniques.
5. Apply the concept of unsupervised learning and Clustering for applications.
6. Analyze non parametric methods and infer reinforcement learning models.

UNIT-I
INTRODUCTION: Definition – Future of Artificial Intelligence – Characteristics of Intelligent Agents–Typical Intelligent Agents – Problem Solving Approach to Typical AI problems.

UNIT-II
PROBLEM SOLVING METHODS: Problem solving Methods – Search Strategies-Uninformed – Informed – Heuristics – Local Search Algorithms and Optimization Problems – Searching with Partial Observations – Constraint Satisfaction Problems – Constraint Propagation – Backtracking Search – Game Playing – Optimal Decisions in Games – Alpha – Beta Pruning – Stochastic Games

UNIT-III
INTRODUCTION: What is machine learning?-Examples of machine learning applications-Types of machine learning.

SUPERVISED LEARNING: Classification ,Decision Trees – Univariate Tree –Multivariate Tree – Pruning, Bayesian Decision Theory , Parametric Methods-Maximum Likelihood Estimation -Evaluating an Estimator Bias and Variance -The Bayes' Estimator , Linear Discrimination- Gradient Descent- Logistic Discrimination-Discrimination by Regression, Multilayer Perceptron-Perceptron-Multilayer Perceptrons - Back Propagation Algorithm

UNIT-IV

UNSUPERVISED LEARNING: clustering- Introduction- Mixture Densities- k-Means Clustering- Expectation-Maximization Algorithm- Mixtures of Latent Variable Models- Supervised Learning after Clustering- Hierarchical Clustering

Dimensionality Reduction-Subset Selection-Principal Components Analysis-Factor Analysis-Multidimensional Scaling-Linear Discriminant Analysis

UNIT-V

Nonparametric Methods- Nonparametric Density Estimation- k-Nearest Neighbor Estimator- Nonparametric Classification- Condensed Nearest Neighbor

REINFORCEMENT LEARNING: Introduction- Single State Case:K-Armed Bandit- Elements of Reinforcement Learning- Model-Based Learning- Temporal Difference Learning- Generalization- Partially Observable States

TEXT BOOKS

1. Ethem Alpaydin, *Introduction to Machine Learning*,MIT Press, Second Edition,2010.
2. Tom Markiewicz& Josh Zheng, *Getting started with Artificial Intelligence*, O'Reilly Media, 2017.

REFERENCES

1. Tom M Mitchell, *Machine Learning*, First Edition, McGraw Hill Education, 2013
2. Richard S. Sutton and Andrew G. Barto: *Reinforcement Learning: An Introduction*. MIT Press
3. Jiawei Han and Micheline Kamber, *Data Mining Concepts and Techniques*, Third Edition, Elsevier, 2012.

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IV B. Tech – I Sem.

(18CS0536) CLOUD COMPUTING
(Professional Elective Course-II)

COURSE OBJECTIVES

The objectives of this course:

1. Cloud computing has evolved as a very important computing model, which enables information, software, and shared resources to be provisioned over the network as services in an on-demand manner.
2. This course provides an insight into what is cloud computing and the various services cloud is capable.

COURSE OUTCOMES (COs)

On successful completion of this course, the student will be able to

1. Understand the basics of system modeling and apply suitable virtualization concept
2. Understanding the cloud computing paradigms
3. Understand various service providers in cloud computing
4. Understanding Scientific Applications for Cloud Environment.
5. Design and implement a novel cloud computing applications
6. Understand the mobile cloud computing concepts

UNIT –I

Systems Modeling, Clustering and Virtualization, Distributed System Models and Enabling Technologies, Computer Clusters for Scalable Parallel Computing, Virtual Machines and Virtualization of Clusters and Data Centers.

UNIT – II

Foundations: Introduction to Cloud Computing, Migration into a Cloud, Enriching the 'Integration as a Service' Paradigm for the Cloud Era, The Enterprise Cloud Computing Paradigm.

UNIT –III

Infrastructure as a Service (IAAS) & Platform and Software as a Service (PAAS / SAAS), Virtual machines provisioning and Migration services, On the Management of Virtual machines for Cloud Infrastructures, Enhancing Cloud Computing Environments using acluster as a Service, Secure Distributed Data Storage in Cloud Computing.
Aneka, Comet Cloud, T-Systems, Workflow Engine for Clouds, Understanding Scientific Applications for Cloud Environments.

UNIT –IV

Monitoring, Management and Applications: An Architecture for Federated Cloud Computing, SLA Management in Cloud Computing, Performance Prediction for HPC on Clouds, Best Practices in Architecting Cloud Applications in the AWS cloud, Building Content Delivery networks using Clouds, Resource Cloud Mashups.

UNIT – V

Mobile Cloud Computing: Definition of Mobile Cloud Computing, Architecture of Mobile Cloud Computing, Benefits of Mobile Cloud Computing, Mobile Cloud Computing Challenges.

TEXT BOOKS

1. Rajkumar Buyya, James Broberg and AndzejM. Goseinski, *Cloud Computing: Principles and Paradigms,* 2011 , Wiley.
2. Kai Hwang, Geoffery C.Fox, Jack J.Dongarra, *Distributed and Cloud Computing*, 2012, Elsevier.
3. Kailash Jayaswal, Jagannath Kallakurchi, Donald J. Houde, Dr. Deven Shah,*Cloud Computing Black Book Dreamtech* Publication, Kogent Learning Solutions

REFERENCES

1. Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, *Cloud Computing : A Practical Approach*, Tata McGraw Hill, rp2011.
2. GautamShroff,*Enterprise Cloud Computing*, Cambridge, University Press, 2010.
3. John W.Rittinghouse, James F.Ransome,*Cloud Computing: Implementation, Management and Security*, CRC Press, rp2012.
4. George Reese, *Cloud Application Architectures: Building Applications and Infrastructure in the Cloud*, O'Reilly, SPD, rp2011.
5. Tim Mather, SubraKumaraswamy, ShahedLatif, *Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance*, O'Reilly, SPD, rp2011.

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IV B. Tech – I Sem.

(18CS0537) INFORMATION RETRIEVAL SYSTEM
(Professional Elective Course-II)

COURSE OBJECTIVES

The objectives of this course:

1. To learn the different models for information storage and retrieval
2. To learn about the various retrieval utilities
3. To understand indexing and querying in information retrieval systems
4. To expose the students to the notions of structured and semi structured data

COURSE OUTCOMES (COs)

On successful completion of this course, the student will be able to

1. Identify appropriate models to store and retrieve textual documents.
2. Describe the various retrieval utilities for improving search.
3. Understanding of indexing and compressing documents to improve space and time
4. Efficiency.
5. Possess the skill to formulate SQL like queries for unstructured data
6. Apply indexing and querying in information retrieval systems.
7. Understand Semi-structured search using a relational schema.

UNIT -I

Introduction to Information Retrieval

Retrieval Strategies: Definition, Motivation, Information Retrieval vs Data Retrieval, Objectives, Functional Overview, Relationship to DBMS, Digital libraries andData Warehouses, Vector space model,

Probabilistic retrieval strategies: Simple term weights, Non binary independence model, Language Models .

UNIT- II

Retrieval Utilities: Relevance feedback, Clustering, N-grams, Regression analysis, Thesauri.

UNIT - III

Retrieval Utilities: Semantic networks, Parsing.

Cross-Language Information Retrieval: Introduction, Crossing the language barrier.

UNIT- IV

Efficiency: Inverted index, Query processing, Signature files, Duplicate document detection

UNIT -V

Integrating Structured Data and Text: A Historical progression, Information retrieval as a relational application, Semi-structured search using a relational schema.

Distributed Information Retrieval: A Theoretical model of distributed retrieval, Web search.

TEXT BOOKS

1. David A. Grossman, Ophir Frieder, *Information Retrieval – Algorithms and Heuristics*, 2nd Edition, 2012, Springer, (Distributed by Universities Press)
2. Kowalski, Gerald, Mark T Maybury: *Information Retrieval Systems: Theory and Implementation*, Kluwer Academic Press, 1997.

REFERENCES

1. Yates,*Modern Information Retrieval Systems*, Pearson Education
2. Gerald J Kowalski, Mark T Maybury, *Information Storage and Retrieval Systems*, Springer, 2000
3. Soumen Chakrabarti , *Mining the Web : Discovering Knowledge from Hypertext Data*, Morgan-Kaufmann Publishers, 2002
4. Christopher D. Manning, Prabhakar Raghavan, Hinrich Schütze, *An Introduction to Information Retrieval*, Cambridge University Press, Cambridge, England, 2009

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IV B. Tech – I Sem.

(18CS0538) BIG DATA ANALYTICS
(Professional Elective Course-III)

COURSE OBJECTIVES

The objectives of this course:

1. Understand the Big Data Platform and its Use cases
2. Provide an overview of Apache Hadoop
3. Provide HDFS Concepts and Interfacing with HDFS
4. Understand Map Reduce Jobs
5. Provide hands on Hodoop Eco System

COURSE OUTCOMES (COs)

On successful completion of course, the students can able to:

1. Understand the basics of Big Data and Hadoop concepts
2. Understand the Hadoop Distributed File System and analyze Access and Process Data on Distributed File System
3. Access and Process Data on Distributed File System
4. Manage Job Execution in Hadoop Environment and understand Map Reduce Types and Formats
5. Develop Big Data Solutions using Hadoop Eco System
6. Understand and implement Hive and Hbase.

UNIT -I

Introduction To Big Data And Hadoop: Types of Digital Data, Introduction to Big Data, Big Data Analytics, History of Hadoop, Apache Hadoop, Analysing Data with Unix tools, Analysing Data with Hadoop, Hadoop Streaming, Hadoop Echo System, IBM Big Data Strategy, Introduction to Infosphere BigInsights and Big Sheets.

UNIT - II

HDFS(Hadoop Distributed File System): The Design of HDFS, HDFS Concepts, Command Line Interface, Hadoop file system interfaces, Data flow, Data Ingest with Flume and Scoop and Hadoop archives, Hadoop I/O: Compression, Serialization, Avro and File-Based Data structures.

UNIT - III

Map Reduce: Anatomy of a Map Reduce Job Run, Failures, Job Scheduling, Shuffle and Sort, Task Execution, Map Reduce Types and Formats, Map Reduce Features.

Unit - IV

Hadoop Eco System-Pig : Introduction to PIG, Execution Modes of Pig, Comparison of Pig with Databases, Grunt, Pig Latin, User Defined Functions, Data Processing operators.

UNIT - V

Hive : Hive Shell, Hive Services, Hive Metastore, Comparison with Traditional Databases, HiveQL, Tables, Querying Data and User Defined Functions.
Hbase : HBasics, Concepts, Clients, Example, Hbase Versus RDBMS.
Big SQL : Introduction

TEXT BOOKS

1. Tom White, *Hadoop: The Definitive Guide*, Third Edit on, O'reily Media, 2012.
2. Seema Acharya, Subhasini Chellappan, *Big Data Analytics*, Wiley 2015.

REFERENCES

1. Michael Berthold, David J. Hand, *Intelligent Data Analysis*, Springer, 2007.
2. Jay Liebowitz, *Big Data and Business Analytics*, Auerbach Publications, CRC press (2013)
3. Anand Rajaraman and Jef rey David Ulman, *Mining of Massive Datasets*, Cambridge University Press, 2012.
4. Bill Franks, *Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics*, John Wiley & sons, 2012.
5. Michael Mineli, Michele Chambers, Ambiga Dhiraj, *Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses*, Wiley Publications, 2013.
6. ArvindSathi, *Big Data Analytics: Disruptive Technologies for Changing the Game*, MC Press, 2012.
7. Paul Zikopoulos ,Dirk DeRoos , Krishnan Parasuraman , Thomas Deutsch , James Giles , David Corigan , *Harness the Power of Big Data The IBM Big Data Platform* , Tata McGraw Hill Publications, 2012.

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IV B. Tech – I Sem.

(18CS0539) HUMAN COMPUTER INTERACTION
(Professional Elective Course-III)

COURSE OBJECTIVES

The objectives of this course:

1. Gain an overview of Human-Computer Interaction (HCI), with an understanding of user interface Design
2. Become familiar with the vocabulary associated with sensory and cognitive systems as relevant to task performance by humans
3. Be able to apply models from cognitive psychology to predicting user performance in various human computer interaction tasks and recognize the limits of human performance as they apply to computer operation
4. Be familiar with a variety of both conventional and non-traditional user interface Paradigms

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to:

1. Prioritize innovative ways of interacting with computers
2. Illustrate the disabled by designing on traditional ways of interacting
3. Use cognitive psychology in the design of devices for interaction
4. Apply conventional and nontraditional user interface Paradigms
5. Describe how testing is applied in computer interaction
6. Understand different software tools used in computer interaction

UNIT - I

Introduction: Importance of user Interface: Definition, Importance of Good Design, Benefits of Good Design, A Brief History of Screen Design.

The Graphical User Interface: Popularity of Graphics, the Concept of Direct Manipulation, Graphical System, Characteristics.

Web User – Interface Popularity, Characteristics- Principles of User Interface

UNIT - II

Design process – Understanding how people interact with computers, importance of human characteristics human consideration, Human interaction speeds, and understanding business functions.

Screen Designing: Design goals – Screen meaning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation informationsimply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface design

UNIT - III

System menus: Structures of Menus, Functions of Menus, Content of Menus, Kinds of Graphical menus

Windows: Window characteristics, Components of a window, Window presentation styles, Types of windows, Windom management

Controls: Characteristics of device based controls, Selecting the proper device based

controls, Operable controls, Text Entry/Read-only controls, Selection controls, Combination Entry/selection controls, Selecting the proper controls

UNIT - IV

Graphics: Icons, Multimedia, Color-what is it, Color uses, Color and Human vision, Choosing colors

Testing: The purpose and importance of usability testing, Scope of testing, Prototypes, Kinds of Tests, Developing and conducting the test.

UNIT - V

Software tools – Specification methods, interface – Building Tools.

Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

TEXT BOOK

1. Wilbert O Galitz, *The essential guide to user interface design,* 2nd edition, 2013, Wiley.

REFERENCES

1. Ben Shneidermann, *Designing the user interface,* 3rd Edition, Pearson Education Asia.
2. D.R.Olsen, *Human –Computer Interaction,* Cengage Learning.
3. I.Scott Mackenzie, *Human – Computer Interaction,* Elsevier Publishers.
4. Prece, Rogers, Sharps, *Interaction Design,* Wiley Dreamtech.
5. SorenLauesen,*User Interface Design,* Pearson Education.
6. Smith - Atakan, *Human –Computer Interaction,* Cengage Learning
7. Alan Dix, Janet Fincay, Gre Goryd, Abowd, Russell Bealg, *Human – Computer Interaction*., Pearson.

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IV B. Tech – I Sem.

(18CS0540) INFORMATION SECURITY
(Professional Elective Course-III)

COURSE OBJECTIVES
The objectives of this course:
1. Extensive, thorough and significant understanding of the concepts, issues, principles and theories of computer network security
2. Identifying the suitable points for applying security features for network traffic
3. Understanding the various cryptographic algorithms and implementation of the same at software level
4. Understanding the various attacks, security mechanisms and services

COURSE OUTCOMES (COs)
On successful completion of this course, student will be able to:
1. Understand the Computer Security concepts, Classical Encryption Techniques and encryption algorithms
2. Understand Number theory and analyze Public-key Cryptography algorithms
3. Infer various Applications of Cryptographic Hash functions
4. Understand the Message Authentication Requirements
5. Understand Remote User Authentication Principles
6. Illustrate the concepts of Transport layer security and network layer security.

UNIT-I
Introduction: Computer Security concepts, The OSI Security Architecture, Security attacks, Security services and Security mechanisms, A model for Network Security.
Classical Encryption Techniques- symmetric cipher model, substitution ciphers, transposition ciphers.
Modern Block Ciphers: Block ciphers principles, Data encryption standard (DES), block cipher modes of operations, AES.

UNIT-II
Introduction to Number Theory – Integer Arithmetic, Modular Arithmetic, Matrices, Algebraic Structures, Primes, Primality Testing, Factorization, Chinese remainder Theorem, Exponentiation and Logarithm.
Public-key Cryptography - Principles of public-key cryptography, RSA Algorithm, Diffie Hellman Key Exchange

UNIT-III
Cryptographic Hash Functions: Applications of Cryptographic Hash functions, Hash functions based on Cipher Block Chaining, Secure All Hash Algorithm (SHA)
Message Authentication Codes: Message authentication Requirements, Message authentication functions, HMAC, MACs based on Block Ciphers, Authenticated Encryption, Digital Signatures-RSA with SHA & DSS

UNIT-IV
Key Management and Distribution: Symmetric key distribution using Symmetric Encryption, Symmetric key distribution using Asymmetric, Distribution of Public keys, X.509 Certificates.

User Authentication: Remote user Authentication Principles, Remote user Authentication using Symmetric Encryption, Remote user Authentication using Asymmetric Encryption, Electronic mail security: Pretty Good Privacy (PGP), S/MIME.

UNIT-V

Security at the Transport Layer(SSL and TLS) : SSL Architecture, SSL Message Formats, Transport Layer Security, HTTPS, SSH

Security at the Network Llayer (IPSec): Two modes, Two Security Protocols, Security Association, Security Policy, Internet Key Exchange.

System Security: Description of the system, users, Trust and Trusted Systems, Malicious Programs, worms, viruses, Intrusion Detection System(IDS), Firewalls

TEXT BOOKS

1. Behrouz A. Frouzan and Debdeep Mukhopadhyay, *Cryptography and Network Security*, Mc Graw Hill Education, 2nd edition, 2013.
2. William Stallings, *Cryptography and Network Security: Principals and Practice*, Pearson Education , Fifth Edition, 2013.

REFERENCES

1. Bernard Menezes , *Network Security and Cryptography*, Cengage Learning.
2. C.K. Shymala, N. Harini and Dr. T.R. Padmanabhan, *Cryptography and Security*, Wiley-India.
3. Bruce Schiener, *Applied Cryptography*, 2nd edition, John Wiley & Sons.

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IV B. Tech – I Sem.

(18CS0541) DATA SCIENCE
(Professional Elective Course-IV)

COURSE OBJECTIVES

The objectives of this course:

1. Understand the fundamentals of 'R' programming.
2. Learn how to carry out a range of commonly used statistical methods including regression. classification, clustering.
3. Explore data-sets to create testable hypotheses and identify appropriate statistical tests.
4. To introduce the tools, technologies & programming languages which is used in day to day analytics cycle.
5. To discuss models in time series and text analysis.

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to:

1. Understand the basics of R and Illustrate appropriate statistical tests using R
2. Discuss in depth of association rules and their applicability to various problem
3. domains
4. Analyze various Regression techniques and their applicability to various problem domains
5. Understand various Classification techniques and their applicability to various problem domains
6. Illustrate the various clustering algorithms and various models in time series
7. Demonstrate on different models in text analysis

UNIT-I

Introduction to R: Data Science, R Graphical User Interfaces, Data Import and Export, attribute and Data Types, Descriptive Statistics,

Exploratory Data Analysis: Visualization Before Analysis, Dirty Data, Visualizing a Single Variable, Examining Multiple Variables, Data Exploration Versus Presentation

UNIT-II

Statistical Methods for Evaluation: Hypothesis Testing, Difference of Means, Wilcoxon Rank-Sum Test, Type I and Type II Errors, Power and Sample Size, ANOVA.

Association Rules: Overview, Apriori Algorithm, Evaluation of Candidate Rules - Applications of Association Rules ,An Example: Transactions in a Grocery Store, Validation and Testing, Diagnostics

UNIT-III

Regression: Linear Regression, Logistic Regression, Reasons to Choose and Cautions, Additional Regression Models

Classification: Decision Trees, Na'ive Bayes, Diagnostics of Classifiers, Additional Classification Methods

UNIT-IV

Clustering: Overview of Clustering, K-means, Additional Algorithms

Time Series Analysis: Overview of Time Series Analysis, ARIMA Model, Additional Methods

UNIT-V

Text Analysis: Text Analysis Steps, Collecting Raw Text, Representing Text,Term Frequency-Inverse Document Frequency (TFIDF), Categorizing Documents by Topics, Determining Sentiments – Gaining Insights.

TEXT BOOKS

1. David Dietrich, Barry Heller & Beibei Yang, *Data Science and Big Data Analytics: Discovering, Analyzing.*

REFERENCES

1. Dr. Mark Gardener, *Beginning R the statistical programming language,* John Wiley &Sons, Inc. 2012.
2. Richard Cotton, *Learning R: A Step-by-Step Function Guide to Data Analysis*.
3. Peng, R. D., & Matsui. E, *The Art of Data Science. A Guide for Anyone Who Works with Data*, SkybrudeConsulting, 2015

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IV B. Tech – I Sem.

(18CS0542) CYBER SECURITY
(Professional Elective Course-IV)

COURSE OBJECTIVES

The objectives of this course:

1. To understand the fundamentals of cybercrime and the cyber offenses.
2. To learn the concepts of cyber threats and cyber security.
3. To familiarize various cyber threats, attacks, vulnerabilities, defensive mechanisms, security policies and practices.

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to:

1. Understand the fundamentals of cybercrimes
2. Analyze the cyber offenses and Botnets
3. Infer the cyber threats, attacks, vulnerabilities and its defensive mechanism.
4. Design suitable security policies for the given requirements.
5. Understand the Tools and Methods Used in Cybercrime.
6. Analyze the industry practices and tools to be on par with the recent trends.

UNIT- I

Introduction to Cybercrime: Introduction, Cybercrime, and Information Security, Who are Cybercriminals, Classifications of Cybercrimes, And Cybercrime: The legal Perspectives and Indian Perspective, Cybercrime and the Indian ITA 2000, A Global Perspective on Cybercrimes.

UNIT - II

Cyber Offenses: How Criminals Plan Them: Introduction, How Criminals plan the Attacks, Social Engineering, Cyber stalking, Cyber cafe and Cybercrimes,
Botnets: The Fuel for Cybercrime, Attack Vector, Cloud Computing.

UNIT - III

Cybercrime: Mobile and Wireless Devices: Introduction, Proliferation of Mobile and Wireless Devices, Trends in Mobility, Credit card Frauds in Mobile and Wireless Computing Era, Security Challenges Posed by Mobile Devices, Registry Settings for Mobile Devices, Authentication service Security,
Attacks on Mobile/Cell Phones, Mobile Devices: Security Implications for Organizations, Organizational Measures for Handling Mobile, Organizational Security Policies and Measures in Mobile Computing Era, Laptops.

UNIT - IV

Tools and Methods Used in Cybercrime: Introduction, Proxy Servers and Anonymizers, Phishing, Password Cracking, Keyloggers and Spywares, Virus and Worms, Trojan Horse and Backdoors, Steganography, DoS and DDoS attacks, SQL Injection, Buffer Overflow.
Phishing and Identity Theft: Introduction, Phishing, Identity Theft (ID Theft)

UNIT - V

Cyber Security: Organizational Implications Introduction, Cost of Cybercrimes and IPR issues, Web threats for Organizations, Security and Privacy Implications,

Social media marketing: Security Risks and Perils for Organizations, Social Computing and the associated challenges for Organizations.

TEXT BOOK

1. Nina Godbole and Sunil Belapure, *Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives*, Wiley INDIA.

REFERENCES

1. James Graham, Richard Howard and Ryan Otson, *Cyber Security Essentials,* CRC Press.
2. Chwan-Hwa(john) Wu,J.David Irwin, *Introduction to Cyber Security* , CRC Press T&F Group

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IV B. Tech – I Sem.

(18CS0543) SOFT COMPUTING
(Professional Elective Course-IV)

COURSE OBJECTIVES

The objectives of this course:

1. To learn the basic concepts of Soft Computing
2. To become familiar with various techniques like neural networks, genetic algorithms and fuzzy systems
3. To apply soft computing techniques to solve problems

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to:

1. Understand the basics of Soft Computing and apply suitable soft computing techniques for various applications
2. Understand and analyze various artificial neural network models
3. Understand the fuzzy sets and classical sets concepts
4. Analyze and develop fuzzy rule base and approximate reasoning in fuzzy logic
5. Understand the various operations in Genetic Algorithm
6. Understand the usage of hybrid systems.

UNIT- I
INTRODUCTION TO SOFT COMPUTING

Introduction-Artificial Intelligence-Artificial Neural Networks-Fuzzy Systems-Genetic Algorithm and Evolutionary Programming-Swarm Intelligent Systems-Classification of ANNs-McCulloch and Pitts Neuron Model-Learning Rules: Hebbian and Delta-Perceptron Network-Adaline Network-Madaline Network.

UNIT- II
ARTIFICIAL NEURAL NETWORKS

Back propagation Neural Networks -Kohonen Neural Network -Learning Vector Quantization -Hamming Neural Network -Hopfield Neural Network-Bi-directional Associative Memory -Adaptive Resonance Theory Neural Networks-Support Vector Machines -Spike Neuron Models.

UNIT- III
FUZZY SYSTEMS

Introduction to Fuzzy Logic, Classical Sets and Fuzzy Sets -Classical Relations and Fuzzy Relations -Membership Functions -Defuzzification -Fuzzy Arithmetic and Fuzzy Measures -Fuzzy Rule Base and Approximate Reasoning -Introduction to Fuzzy Decision Making.

UNIT -IV
GENETIC ALGORITHMS

Basic Concepts-Working Principles -Encoding-Fitness Function -Reproduction -Inheritance Operators -Cross Over -Inversion and Deletion -Mutation Operator -Bit-wise Operators -Convergence of Genetic Algorithm.

UNIT- V

HYBRID SYSTEMS

Hybrid Systems -Neural Networks, Fuzzy Logic and Genetic -GA Based Weight Determination -LR-Type Fuzzy Numbers -Fuzzy Neuron -Fuzzy BP Architecture -Learning in Fuzzy BP-Inference by Fuzzy BP -Fuzzy ArtMap: A Brief Introduction -Soft Computing Tools -GA in Fuzzy Logic Controller Design -Fuzzy Logic Controller

TEXT BOOKS

1. 1.N.P.Padhy, S.P.Simon, *Soft Computing with MATLAB Programming*, Oxford University Press, 2015.
2. 2.S.N.Sivanandam , S.N.Deepa, *Principles of Soft Computing*, Wiley India Pvt. Ltd., 2nd Edition, 2011.
3. 3.S.Rajasekaran, G.A.Vijayalakshmi Pai, *Neural Networks, Fuzzy Logic and Genetic Algorithm, Synthesis and Applications*, PHI Learning Pvt. Ltd., 2017.

REFERENCES

1. Jyh-Shing Roger Jang, Chuen-Tsai Sun, Eiji Mizutani, *Neuro-Fuzzy and Soft Computing*, Prentice-Hall of India, 2002.
2. Kwang H.Lee, *First course on Fuzzy Theory and Applications*, Springer, 2005.
3. George J. Klir and Bo Yuan, *Fuzzy Sets and Fuzzy Logic-Theory and Applications*, Prentice Hall, 1996.
4. James A. Freeman and David M. Skapura, *Neural Networks Algorithms, Applications, and Programming Techniques*, Addison Wesley, 2003.

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IV B. Tech – I Sem.

(18CE0146) PROJECT PLANNING AND CONTROL
(Open Elective-II)

COURSE OBJECTIVES

1. *To describe various elements of an engineering project and to draw the network*
2. *To perform PERT & CPM calculations and to identify the critical path*
3. *To perform various operations on the network*

COURSE OUTCOMES (COs)

After the successful completion of the course the student able to

1. *Differentiate various tools for planning and controlling the project*
2. *Construct the network for a project*
3. *Perform PERT computations and evaluate the critical path*
4. *Perform CPM computations and identify the critical path*
5. *Optimize time and cost for a project*
6. *Work with network during the progress of a project by updating the network and allocating the resource*

UNIT – I

Project Management: Project planning – Project scheduling – Project controlling – Project monitoring and control – Project monitoring and information cell – Decision making in project management – Project life cycle

Basic Techniques of Project Management: Bar charts – Steps for the construction of a bar chart – Limitations of bar charts – Milestone charts – Velocity diagrams – Development of Network – CPM/PERT Networks – Advantages of network over milestone chart

UNIT – II

Elements of Network: Event – Activity – Dummy – Network rules – Graphical guidelines for network – Common partial situations in network – Numbering the events – Cycles

Development of Network: Planning for network construction – Modes of network construction – Steps in development of network – Work breakdown structure – Hierarchies

UNIT – III

PERT: Time Estimates: Uncertainties: Use of PERT – Time estimates – Frequency distribution – Mean, variance and standard deviation – Probability distribution – Beta distribution – Expected time

PERT: Time Computations & Network Analysis: Earliest expected time – Formulation for T_E – Latest allowable occurrence time – Formulation for T_L – Combined tabular computations for T_E and T_L – Slack – Critical path – Probability of meeting scheduled date

UNIT – IV

CPM: Network Analysis: CPM Process – CPM Network – Activity time estimate – Earliest event time – Latest allowable occurrence time – Combined tabular computations for T_E and T_L – Start and finish times of activity – Float – Critical activities and critical path

UNIT – V

CPM: Cost Model: Project cost – Indirect project cost – Direct project cost – Slope of direct cost curve – Total project cost and optimum duration – Contracting the network for cost optimization – Steps in time cost optimization

CPM: Updating: Updating process – Data required for updating – Steps in the process updating – When to update

Resources Allocation: Resources usage profiles: histograms – Resources smoothing – Resources levelling

TEXT BOOKS

1. Dr.B.C. Punmia, K.K. Khandelwal, *Project Planning and Control with PERT AND CPM*, Laxmi Publications (P) Ltd., 4th Edition, Reprint 2006
2. Dr.P.N. Modi, Sanjeev Modi and Rajeev Modi, *Program Evolution and Review Technique and Critical Path Method*, Standard Book House, 5th Edition, 2012

REFERENCES

1. L.S. Srinath, *PERT and CPM Principles and Applications,* Affiliated East-West Press (Pvt.) Ltd.
2. S.K. Bhattacharjee, *Fundamentals of PERT/CPM and Project Management*, Khanna Publishers
3. Kumar Neeraj Jha, *Construction Project Management: Theory and Practice,* Pearson, 2rd edition, 2015

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IV B. Tech – I Sem.

(18EE0236) SOLAR PHOTOVOLTAIC SYSTEMS
(Open Elective-II)

COURSE OBJECTIVES

The objectives of this course:

1. *To develop a comprehensive technological understanding in solar PV system components*
2. *To provide in-depth understanding of design parameters to help design and simulate the performance of a solar PV power plant*
3. *To pertain knowledge about planning, project implementation and operation of solar PV power generation*

COURSE OUTCOMES (COs)

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

1. *Understand of renewable and non-renewable sources of energy*
2. *Gain knowledge about working principle of various solar energy systems*
3. *Analyse the solar power PV power generation*
4. *Applying the knowledge on to installation and integration of PV modules for different applications*
5. *Understand the operation of different solar collectors in the market*
6. *Understand the solar thermal energy storage systems*

UNIT-I

Introduction

Sources of renewable energy; global potential for solar electrical energy systems. Solar radiation. Extra terrestrial and terrestrial solar spectrum; clear sky direct-beam radiation; total clear sky insulation on a collecting surface; radiation on the collector in tracking systems; calculation of average monthly insolation from measured data

UNIT-II

PV cells and modules

Solar Cell and its function, Solar Technologies, Solar Cell Parameters, Efficiency of Solar Cell, Solar PV Module, Rating of Solar PV Module, PV Module Parameters, Efficiency ofPV Module, Measuring Module Parameters

UNIT-III

Solar Photovoltaic Module Array

Connection of PV Module in Series and Parallel, Estimation and Measurement of PV Module Power, Selection of PV Module.

UNIT-IV

Solar PV System Design and Integration

Solar Radiation Energy Measurements, Estimating Energy requirement, Types of Solar PV System, Design methodology for SPV system, Design of Off Grid Solar Power Plant, Case studies of 3KWp Off grid Solar PV Power Plant, Design and Development of Solar Street Light and Solar Lantern, Off Grid Solar power Plant.

UNIT-V

Solar collectors and Solar energy storage

Different types of solar collectors, Flat plate and concentrated type collectors, Fundamental Terminologies of thermal storage, Sensible heat storage materials, Latent heat storage materials, Solar thermo-chemical energy storage systems, Advantages and disadvantages of solar thermal storage, application of thermal storage

TEXT BOOKS

1. Chetansingh, solanki *Solar Photovoltaic* PHI, Learning private ltd., New dehli- 2018
2. G.D Rai, *Non-conventional Sources of Energ,y* Khanna Publishers, Delhi, 2012

REFERENCES

1. Chetan Singh Solanki, *Renewable Energy Technologies; A Practical Guide for Beginners,* PHI School Books (2008)
2. Kothari D.P. and Signal K.C, *Renewable Energy Sources and Emerging Technologies*, New Arrivals –PHI; 2 Edition (2011)

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IV B. Tech – I Sem.

(18ME0353) COMPUTER AIDED PROCESS PLANNING
(Open Elective-II)

COURSE OBJECTIVES

The objectives of this course is to

1. *Provide the student with an understanding of the importance of process planning role in manufacturing.*
2. *Classify the various methods of CAPP*
3. *Understand the importance of product development through CIMS, shop floor control, Computer Integrated Manufacturing and Automation*
4. *Understands about NC, CNC and DNC systems.*
5. *Know about capacity Planning, Adaptive control machining systems, FMS and MRP's*

COURSE OUTCOMES

On successful completion of this course, the student will be able to

1. *Know the importance of process planning role in manufacturing*
2. *Describe the various methods of CAPP*
3. *Recognize the importance of product development through CIMS, shop floor control, Computer Integrated Manufacturing and Automation*
4. *Gain the knowledge about NC, CNC and DNC systems.*
5. *Identify about capacity Planning, Adaptive control machining systems*
6. *Familiar in FMS and MRP I and MRP II*

UNIT- I

Introduction to Process Planning: Role of process planning in the manufacturing cycle- Information requirement for process planning system - Merits of conventional process planning over CAPP - Structure of automated process planning system, features recognition, methods.

UNIT- II

Generative CAPP System: Importance - Generative CAPP system - Automation of logical decisions - Knowledge based systems - Inference Engine, implementation, benefits.

Retrieval CAPP System: Significance - Retrieval CAPP system, structure, relative advantages and disadvantages- implementation and applications.

UNIT- III

Implementation Techniques for CAPP: MIPLAN system - The Bottom-up approach - The Top-Down approach - Computer programming languages for CAPP- Criteria for selecting a CAPP system - Benefits of CAPP - MRP - I, MRP - II and benefits.

UNIT- IV

Computer Integrated Production Planning: Capacity planning- shop floor control- MRP-I, MRP-II- CIMS benefits.

Computer Integrated Manufacturing System (CIMS): Introduction to CIMS, Automation strategies, Automation and CAD/CAM, Scope of CIM- Computer controls in NC- NC, CNC and DNC systems, components, block diagram, applications- Part programming- Group technology, benefits.

UNIT- V

Flexible Manufacturing systems (FMS): Components of FMS, workstation, Material handling system and computer control system, FMS Layout configurations and benefits of FMS.

Adaptive control machining systems: Introduction to adaptive control machining systems, application- approaches, adaptive control optimization system, adaptive control constraint system, applications to machining processes, computer process monitoring and computer process control.

TEXT BOOKS

1. Mikel P.Groover *Automation, Production systems and Computer Integrated Manufacturing Systems*, Pearson Higher Education, Inc., 4th Edition, 2015.
2. Dr. Sadhu Singh, *Computer Aided Design and Manufacturing*, Khanna Publishers, 2009.

REFERENCES

1. Gideon Halevi and Roland D. Weill, “Principles of Process Planning", A logical approach, Chapman & Hall, 1995.
2. Chang T C and Richard A Wysk, “An Introduction to automated process planning systems”, Prentice Hall, 1985.
3. H.P. Wang and J.K. Li, “Computer Aided Process Planning”, Elsevier Science and Technology Publishers, 1st edition, 1991.

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IV B. Tech – I Sem.

(18EC0450) MATLAB PROGRAMMING
(Open Elective-II)

COURSE OBJECTIVES

The objectives of this course:

1. *Understand the MATLAB Desktop, Command window and the Graph Window*
2. *Be able to do simple and complex calculation using MATLAB*
3. *Understand the mathematical concepts upon which numerical methods*
4. *Understand the tools that are essential in solving engineering problems*

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

1. *Analyze and visualize data effectively by using MATLAB.*
2. *Apply numeric techniques and computer simulations to solve engineering-related problems.*
3. *Apply a top-down, modular, and systematic approach to design, write, test, and debug sequential MATLAB programs to achieve computational objectives.*
4. *Design and document computer programs and analyses in a careful and complete manner so as to effectively communicate results, to facilitate evaluation anddebugging by another programmer, and to anticipate and resolve user errors.*
5. *Demonstrate understanding and use of fundamental data structures (classes).*
6. *Create and control simple plot and user-interface graphics objects in MATLAB.*

UNIT-I

INTRODUCTION TO MATLAB: MATLAB Interactive Sessions, Menus and the toolbar, computing with MATLAB, Script files and the Editor Debugger, MATLAB Help System, Programming in MATLAB.

UNIT-II

ARRAYS: Arrays, Multidimensional Arrays, Element by Element Operations, Polynomial Operations Using Arrays, Cell Arrays, Structure Arrays.

UNIT-III

FUNCTIONS & FILES: Elementary Mathematical Functions, User Defined Functions, Advanced Function Programming, Working with Data Files.

UNIT-IV

PROGRAMMING TECHNIQUES: Program Design and Development, Relational Operators and Logical Variables, Logical Operators and Functions, Conditional Statements, Loops, the Switch Structure, Debugging MATLAB Programs.

PLOTTING: XY- plotting functions, Subplots and Overlay plots, Special Plot types, Interactive plotting, Function Discovery, Regression, 3-D plots.

UNIT-V

LINEAR ALGEBRAIC EQUATIONS: Elementary Solution Methods, Matrix Methods for Linear Equations, Cramer Method, Undetermined Systems, Order Systems.

TEXT BOOKS

1. *G. H. Golub and C. F. Van Loan,* Matrix Computations, 3rd Ed., Johns Hopkins University Press, 1996.
2. *B. N. Datta,* Numerical Linear Algebra and Applications, Brooks/Cole, 1994 (out of print)

REFERENCES

1. William J Palm, *Introduction to MATLAB for Engineers*, 3rd edition, Mc GRAW HIL.
2. L. Elden, *Matrix Methods in Data Mining and Pattern Recognition*, SIAM Press, 2007.
3. Amos Gilat, *MATLAB: An Introduction with Applications*,4th edition, WILEY.

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IV B. Tech – I Sem.

(18HS0815) ENTREPRENEURSHIP DEVELOPMENT
(Open Elective-II)

COURSE OBJECTIVES

The objectives of this course:

1. *To acquire necessary skills and knowledge required for organizing and carrying out entrepreneurial activities,*
2. *To develop the ability of analyzing and understanding business situations in which entrepreneurs act*
3. *To develop the ability of analyzing various aspects of entrepreneurship – especially of taking over the risk, and the specificities as well as the pattern of entrepreneurship development*

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to

1. *The ability to discern distinct entrepreneurial traits and identify the successful elements of successful entrepreneurial ventures*
2. *Consider the legal and financial conditions for starting a venture and to assess the opportunities and constraints for new ventures*
3. *Design strategies for the successful implementation of ideas*
4. *To comprehend the evaluation of business opportunity from the prospective of an investor*
5. *Identify the most suitable sources of finance for start-ups*
6. *To write and execute their own business plan*

UNIT-I

Introduction to Entrepreneurship - Concept of Entrepreneur‘s, Enterprise and Entrepreneurship; Characteristics, Qualities, Functions of entrepreneur and Advantages of Entrepreneurship; Role of entrepreneurship in Economic development, Challenges faced by entrepreneurs, Entrepreneurial scenario in India and Abroad; Elements of Social Entrepreneurship, Types of Entrepreneurs, Entrepreneurship vs. Intrapreneurship.

UNIT-II

Small Business and its Importance - Introduction, Need, Classification of Micro, Small andMediumEnterprises(MSMEs),RoleofMSMEs,ProblemsofMSMEs,StepsforStarting MSMEs, The role of government in supporting MSMEs inIndia.

Forms of Business Organization: Evaluation of Form of Business organization: Sole Proprietorship, Partnership, Joint Hindu Family, Joint Stock Company and Co-operative Society. Special forms of business ownership: Licensing, Franchising and Leasing.

UNIT-III

Innovation and Idea Generation in Entrepreneurship - Concept of Invention and Innovation, types of innovation, Sources of Innovation, Importance of Innovation in Entrepreneurship. Sources of new ideas, Methods of generating ideas and Opportunity recognition and idea generation in entrepreneurship. Intellectual Property Rights (IPRs): Patents, trademarks, copyrights, and trade secrets. E-commerce and Business Start-ups, Sources of information for Start-up Entrepreneurs in India. Problems of Start-ups without IPRs.

UNIT-IV

Entrepreneurial Motivation - Concept of Motivation and Factors influencing the entrepreneurs; Motivational Theories-Maslow's Need Hierarchy Theory, McClelland's Acquired Need Theory. Entrepreneurship Development Programs (EDPs) - Need and Role of EDPs. Opportunities for entrepreneurship in present scenario. Successful entrepreneurs

Financing of Enterprises - Source of financing - Debt capital, seed capital, venture capital, Loans available for starting ventures in India, Role of government agencies in small business financing. Role of consultancy organizations.

UNIT-V

Project Planning and Feasibility Study - Meaning of Project, Project Life Cycle, and Stages of Planning Process. Project Planning and Feasibility, Project proposal and report preparation.

TEXT BOOKS

1. Robert D Hisrich, Mathew J.Manimala, Michael PPeters, Dean A.Shepherd,*Entrepreneurship*, 8/e, McGraw HillEducation.
2. VasanthDesai,*The Dynamics of Entrepreneurial Development and Management*, Himalaya Publishing House,Mumbai.

REFERENCES

1. S.S. Khanka, S. Chand ,*Entrepreneurial Development*, , CompanyLimited.,
2. H. Nandan ,*Fundamentals of Entrepreneurship*,PHI.
3. Bholanath Dutta, *Entrepreneurship Management* – text and cases, ExcelBooks.
4. Holt,*Entrepreneurship* – New venture Creation, PHI.
5. Ramachandran,*Entrepreneurial Development*, Tata McGraw Hill, NewDelhi.

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IV B. Tech – I Sem.

(18CS0528) MOBILE APPLICATION DEVELOPMENT LAB

COURSE OBJECTIVES

The objectives of this course:

1. Know the components and structure of mobile application development frameworksfor Android and windows OS based mobiles.
2. Understand how to work with various mobile application development frameworks.
3. Learn the basic and important design concepts and issues of development of mobile applications.
4. Understand the capabilities and limitations of mobile devices.

COURSE OUTCOMES (COs)

On successful completion of this course, student will be able to:

1. Develop mobile applications using GUI and Layouts
2. Create mobile applications Even Listeners
3. Write mobile applications using Database
4. Demonstrate mobile applications using RSS feed, SMS
5. Illustrate mobile applications using Multithreading and GPS
6. Analyze and discover own mobile app for simple needs

LIST OF EXPERIMENTS:

1. Develop an application that uses GUI components, Font and Colors.
2. Develop an application that uses Layout Managers and event listeners.
3. Develop a native calculator application.
4. Write an application that draws basic graphical primitives on the screen.
5. Develop an application that makes use of database.
6. Develop an application that makes use of RSS Feed.
7. Implement an application that implements Multithreading.
8. Develop a native application that uses GPS location information.
9. Implement an application that writes data to the SD card.
10. Implement an application that creates an alert upon receiving a message.
11. Write a mobile application that creates alarm clock.

TEXT BOOKS

1. Wei-Meng Lee, *Beginning Android 4 Application Development* , Wrox Publications.
2. J.F.Dimarzio, *Android Programming with Android Studio*, @p2p.wrox.com, 4th Edition

REFERENCES

1. Joseph Annuzzi Jr., Lauren Darcey, Shane Conder, *Introduction to android application development*, 4th edition, Addision Wesley.
2. Jerome Dimarzio, *Android: A programmer's guide*, McGrawHill

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IV B. Tech – I Sem.

(18CS0529) MACHINE LEARNING LAB

COURSE OBJECTIVES

The objectives of this course:

1. Make use of Data sets in implementing the machine learning algorithms
2. Implement the machine learning concepts and algorithms in any suitable language of choice.

COURSE OUTCOMES (COs)

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

1. Implement the decision tree classification Algorithm in Machine Learning using Python
2. Implementing the Back propagation algorithm and classification using multilayer perceptron.
3. Implement the Naive Byes Classifier in machine learning using python
4. Apply EM algorithm to cluster a set of data stored in a .CSV file
5. Implement Principle Component Analysis algorithm
6. Implement the K-nearest neighbor and non-parametric locally weighted algorithms

LIST OF EXPERIMENTS:

1. Write a program to demonstrate the working of the decision tree algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.
2. Write a program for implementing the Back propagation algorithm and test the same using appropriate data sets.
3. Write a program for implementing the classification using Multilayer perceptron.
4. Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.
5. Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.
6. Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.
7. Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.
8. Write a program to implement Principle Component Analysis for Dimensionality Reduction.
9. Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.

10. Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.

TEXT BOOK

1. Ethem Alpaydin, *Introduction to Machine Learning,* MIT Press, Second Edition,2010

REFERENCES

1. Tom M Mitchell, *Machine Learning*, First Edition, McGraw Hill Education, 2013
2. Richard S. Sutton and Andrew G. *Barto: Reinforcement Learning: An Introduction*. MIT Press
3. Jiawei Han and Micheline Kamber, *Data Mining Concepts and Techniques*, Third Edition, Elsevier, 2012.

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IV B. Tech – I Sem.

(18CS0530) PROJECT PHASE-I

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IV B. Tech – II Sem.

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IV B. Tech – II Sem.

MOOC-II

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(18CS0534) PROJECT PHASE-II

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IV B. Tech – II Sem.

(18CS0545) COMPREHENSIVE VIVA VOCE

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