PACEINSTITUTEOFTECHNOLOGY&SCIENCES,ONGOLE–532272

(AUTONOMOUS)

R-18 REGULATIONS SYLLABUS & COURSESTRUCTURE

INFORMATION TECHNOLOGY

I YEAR I SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18MCT01	Induction Program	3 weeks			0	-	-
2	P18HST01	English-I	3	0	0	3	40	60
3	P18BST01	Mathematics-I	3	0	0	3	40	60
4	P18BST03	Applied Physics	3	0	0	3	40	60
5	P18EST03	C-Programming for Problem Solving	3	0	0	3	40	60
6	P18EST02	Engineering Graphics	1	0	3	2.5	40	60
7	P18HSL01	English language communication skills Lab-I	0	0	3	1.5	40	60
8	P18BSL01	Applied Physics Lab	0	0	3	1.5	40	60
9	P18ESL03	C-Programming for Problem solving Lab	0	0	3	1.5	40	60
10	P18ESL02	Engineering Workshop	0	0	3	1.5	40	60
Total Periods			**13**	**0**	**15**	**20.5**	**360**	**540**

I YEAR II SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18HST02	English-II	3	0	0	3	40	60
2	P18BST02	Mathematics – II (Probability& Statistics)	3	0	0	3	40	60
3	P18BST05	Applied Chemistry	3	0	0	3	40	60
4	P18EST01	Basic Electrical and Electronics Engineering	3	0	0	3	40	60
5	P18EST05	Python Programming	3	0	0	3	40	60
6	P18BSL03	Applied Chemistry Lab	0	0	3	1.5	40	60
7	P18ESL01	Basic Electrical and Electronics Engineering Lab	0	0	3	1.5	40	60
8	P18ESL04	Python Programming Lab	0	0	3	1.5	40	60
Total Periods			**15**	**0**	**9**	**19.5**	**320**	**480**

II YEAR I SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	**P18CST03**	MFCS	3	1	0	4	40	60
2	**P18CST02**	Data Structures	3	1	0	4	40	60
3	P18ITT01	Object Oriented Programming Through C++	3	0	0	3	40	60
4	P18ECT19	Digital Electronics	3	0	0	3	40	60
5	P18BST07	Mathematics-III	3	0	0	3	40	60
6	P18CSL02	Data Structures Lab	0	0	3	1.5	40	60
7	P18ITL01	Object Oriented programming, Through C++ Lab	0	0	3	1.5	40	60
8	P18MCT02	Environmental Sciences	3	0	0	0	40	60
Total Periods			**18**	**2**	**6**	**20**	**320**	**480**

II YEAR II SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	**P18CST01**	Java Programming	3	1	0	4	40	60
2	**P18ITT02**	Computer Organization	3	0	0	3	40	60
3	**P18ITT03**	Software Engineering	3	0	0	3	40	60
4	**P18CST06**	Database Management Systems	3	0	0	3	40	60
5	**P18CSL03**	Free Open Source Software	0	0	3	2	40	60
6	P18ITOX	*Open Elective – I*	2	0	0	2	40	60
7	**P18CSL01**	Java Programming Lab	0	0	3	1.5	40	60
8	**P18CSL05**	Database Management Systems Lab	0	0	3	1.5	40	60
9	P18MCT05	Indian Constitution	3	0	0	0	40	60
Total Periods			**17**	**1**	**9**	**20**	**360**	**540**

S.No	***Subject Code***	***Offered ByDept.***	***OpenElective–I***
1	P18ITO01	HSMC	Managerial Economics and Financial Analysis
2	*P18ECO02*	*ECE*	*IntroductiontoSimulation Software*
3	P18ITO03	ME	Engineering Mechanics
4	P18ITO04	CSE/IT	Statistics with R

III YEAR I SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18CST08	Computer Networks	3	0	0	3	40	60
2	P18ITT04	Design & Analysis of Algorithms	3	1	0	3	40	60
3	P18CST09	Operating Systems	3	0	0	3	40	60
4	P18ITT05	Data Science	3	0	0	3	40	60
5	P18ITEX	Professional Elective – I	3	0	0	3	40	60
6	P18ITOX	*Open Elective-II*	2	0	0	2	40	60
7	P18ITL06	Data Science with R Lab	0	0	3	1.5	40	60
8	P18ITL07	Computer Networks Lab	0	0	3	1.5	40	60
9	P18MCT08	Design Thinking for Innovation	2	0	0	2	40	60
10	PITI01	Internship	0	0	0	2		
Total Periods			**19**	**1**	**06**	**24**	**360**	**540**

Professional Elective – I		
S.No	**Course Code**	**COURSE**
1	P18ITE01	Advanced Data Structures (T1)
2	*P18ITE04*	*Software Testing (T2)*
3	*P18ITE01*	*Principles of programming Languages(T3)*
4	P18CSE03	Computer Graphics (T4)

S.No	***Subject Code***	***Offered ByDept.***	***OpenElective–II***
1	P18ITO05	BS&H	FuzzySets and Logic
2	*P18MBO03*	*HSMC*	*Professional ethics*
3	P18ITO07	ECE	Data Communications
4	P18ITO08	CSE/IT	IT systemsManagement

III YEAR II SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18CST12	Web Technologies	3	1	0	3	40	60
2	P18ITT07	Cryptography and Network Security	3	0	0	3	40	60
3	P18CST10	Artificial Intelligence & Machine Learning	3	0	0	4	40	60
4	P18ITEX	Professional Elective-II	3	0	0	3	40	60
5	P18ITOX	*Open Elective –III*	2	0	0	2	40	60
6	P18ITT06	Theory of Automata and Compiler Design	3	0	0	3	40	60
7	P18CSL09	Web Technologies Lab	0	0	3	1.5	40	60
8	P18CSL07	Artificial Intelligence & Machine Learning Lab	0	0	3	1.5	40	60
9	P18ITM01	Mini Project	0	0	6	2	40	60
Total Periods			**17**	**1**	**12**	**23**	**360**	**540**

Professional Elective – II		
S.No	**Course Code**	**COURSE**
1	P18CSE08	Data Mining & Warehousing(T1)
2	P18CSE06	Distributed Database (T2)
3	*P18ITE05*	*Unified Modeling Language (T3)*
4	P18CSE07	Middleware Technologies (T4)

S.No	***Subject Code***	***Offered ByDept.***	***OpenElective–III***
1	P18MBO04	HSMC	Management Science
2	P18ITO10	ECE	Embedded Systems
3	P18ITO11	ECE	Microprocessors & Micro Controllers
4	P18ITO12	CSE/IT	Database Systems

IV YEAR I SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18ITT08	Web Scripting languages	3	0	0	3	40	60
2	P18ITT09	Big Data Technologies	3	0	0	3	40	60
3	P18ITEX	Professional Elective-III	3	0	0	3	40	60
4	P18ITEX	Professional Elective-IV	3	0	0	3	40	60
5	P18ITOX	*Open Elective-IV*	2	0	0	2	40	60
6	P18ITL02	Scripting languages Lab	0	0	3	1.5	40	60
7	P18CSL08	Software Lab-I(Hadoop &Bigdata Lab)	0	0	3	1.5	40	60
8	P18ITL03	Android Application Development Lab	0	0	3	2	40	60
9	P18MCT14	Employability skills	0	0	2	0	40	60
Total Periods			**14**	**0**	**11**	**19**	**360**	**540**

Professional Elective – III		
S.No	**Course Code**	**COURSE**
1	P18CSE09	Distributed Systems (T1)
2	P18CSE11	Mobile and Adhoc Networks (T2)
3	*P18ITE11*	*Multimedia and Application Development (T3)*
4	P18CSE12	Image Processing(T4)

Professional Elective – IV		
S.No	**Course Code**	**COURSE**
1	P18CSE14	Internet of Things (T1)
2	*P18ITE14*	*Software Project Management (T2)*
3	P18CSE15	Soft Computing Techniques(T3)
4	P18CSE16	Cloud Computing (T4)

S.No	*Subject Code*	*Offered ByDept.*	*OpenElective–IV*
1	P18ITO13	HSMC	EntrepreneurialDevelopment
2	P18ITO14	MECH	FundamentalsofROBOTICS
3	P18ITO15	ECE	Introductionto WirelessNetworks
4	*P18CSO06*	*CSE/IT*	*Distributed Databases*

IV YEAR II SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18ITEX	Professional Elective-V	3	0	0	4	40	60
2	P18ITEX	Professional Elective-VI	3	0	0	4	40	60
3	P18ITP01	Project	0	0	12	6	80	120
Total Periods			**6**	**0**	**12**	**14**	**160**	**240**

Professional Elective – V		
S.No	**Course Code**	**COURSE**
1	*P18ITE17*	*User Interface Design(T1)*
2	P18CSE18	Information Retrieval Systems (T2)
3	P18CSE17	E – Commerce(T3)
4	P18ITE06	Cyber Security(T4)

Professional Elective – VI		
S.No	**Course Code**	**COURSE**
1	P18CSE21	Mobile Computing(T1)
2	P18CSE23	Block Chain Technology(T2)
3	*P18ITE21*	*Human Computer Interaction (T3)*
4	P18ITE07	Design patterns(T4)

B. Tech- I YearI Semester **Course structure**

L	T	P	C
3	0	0	3

English-I

(Common to allBranches)

Internal Marks: 40

CourseCode:P18HST01 **External Marks: 60**

Course Prerequisite: The students should have basic knowledge of English grammar and LSRW skills.

Course Objectives:

1. To enable the engineering students to develop their basic communication skills in English for academic and socialpurposes.
2. To equip the students with appropriate oral and written communicationskills.
3. To inculcate the skills of listening, reading and criticalthinking.
4. To integrate English Language learning with employability skills andtraining.
5. To enhance the students' proficiency in reading skills enabling them meet the academic demands of their course

Course Outcomes:

On completion of this course, the student is able to:

1. Use English Language effectively in spoken and writtenforms
2. Interpret the contextual meaning ofwords
3. Comprehend the given texts and respond appropriately
4. Recall and reproduce the theme in a givencontext
5. Communicate confidently in formal and informalcontexts

UNIT– I (9 Lectures)

The Happy Prince – Oscar Wilde

a. Vocabulary: Synonyms and Antonyms (http://www.magickeys.com/books/riddles/words.html)

b. Grammar: Prepositions, Sentence structure &Types ofsentences

c. Writing: Note Making and NoteTaking

UNIT– II (8 Lectures)

Technology with a Human Face – E.F.Schumacher

a. Vocabulary: One word substitutes &Idioms

b. Grammar: Subject–verb Agreement (Concord), Question tags and Modal Auxiliaries

c. Writing: InformationTransfer

UNIT–III (9 Lectures)

Presidential Address – APJ Abdul Kalam

a. Vocabulary: Word formation, Root Words
(www.englishhints.com,www.enchantedlearning.com,
www.learnenglish.de/grammar/prefixtext.html)
b. Grammar: Parts of Speech,Punctuation
c. Writing: ParagraphWriting

UNIT-IV (9 Lectures)

The Road Not Taken – Robert Frost
a. Vocabulary: Prefixes, Suffixes and Affixes
(http://www.magickeys.com/books/riddles/words.html)
b. Grammar:Articles
c. Writing: LetterWriting

UNIT–V (10 Lectures)

Good Manners – J.C Hill
a. Vocabulary: Homonyms, Homophones and Homographs
(http://www.pinnacle.edu.in/campusfiles/1826_campusFile_1.pdf)
b. Grammar:Tenses
c. Writing: E- mailWriting

Text books:

1. New Horizons – PearsonPublishers
2. Fluency in English", A Course Book for Engg. Students, Published by Orient Black Swan, Hyderabad, 2016print.
3. "Technical Communication- Principles and Practice", Third Edition. New Delhi: Oxford Universitypress.

Reference Books:

1. Meenakshi raman, Sangeetha, Sharma Fundamentals of technical communication, Pg:
   119-153 Oxford University press, 2015
2. Rutherford,Andhrea.J,Communicationskillsfortechnology.Pearson,New Delhi.2001
3. Raymond Murphy, Murphy's English Grammar, Cambridge University Press 2004
4. Meenakshi raman, Sangeetha, Sharma,Technical communication: EnglishSkills for
   Engineers, Oxford University press, 2009
5. Michael Swan, Practical English Usage, Oxford University press,1996

Web References:

1. www.englishhints.com
2. www.enchantedlearning.com
3. www.learnenglish.de/grammar/prefixtext.html
4. http://www.magickeys.com/books/riddles/words.html
5. http://www.pinnacle.edu.in/campusfiles/1826_campusFile_1.pdf
6. http://www.yourdictionary.com
7. http://www.learnenglish.com
8. http://www.cambridge.org
9. http://www.eslcafe.com
10. http://www.eslgames.com
11. http://www.penguin.co.uk
12. http://www.edufind.com/english/practice

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B. Tech- I YearI Semester **Course structure**

L	T	P	C
3	0	0	3

MATHEMATICS-I
(Differential equations and Laplace Transforms)

(Common to All Branches)

Internal Marks:40

Coursecode:P18BST01 **External marks:60**

Course Prerequisite: The basic knowledge of Matrices, Trigonometry, Differentiation and Integration.

Course Objectives:

1. To learn the methods solving the differential equations of first order withtheir applications.
2. To learn the methods of solving differential equations of second and higher order with their applications.
3. To learn to find the Laplace transform of different functions and obtainedthe solution of Design.
4. To understand the concepts PartialDifferential.

Course Outcomes: After learning the contents of this paper the student must be able to

1. Solve first order differential equations and theirapplications.
2. Usage of higher order differential equations that are applied to real world problems.
3. Find the Laplace transform of derivatives, integrals and periodicfunctions.
4. Use the method of Laplace transforms to solve systems of linearfirst-order differentialequations.
5. Calculate total derivative, Jacobian, Maxima and minima of functions oftwo variables.

UNIT-I: (11Lectures)

Differential equations of first order and first degree:

Linear-Bernoulli-Exact-Reducible to exact.

Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories.

UNIT-II: (9Lectures)

Linear differential equations of higher order:

Non-homogeneous equations of higher order with constant coefficientswith RHS term ofthetype e^{ax} ,sin ax, cos ax, polynomialsinx, e^{ax} V(x), xV(x)- Method of Variation ofparameters.

Applications: LCRcircuit.

UNIT-III: Laplace Transforms: (10 Lectures)

Laplace transforms of standard functions– First shifting Theorem, Change of scale property, Multiplication by t^n, division by t, Transforms of derivatives and integrals – Second shifting theorem– Laplace transform of Periodicfunctions.

UNIT IV: InverseLaplaceTransforms: (8 Lectures)

Inverse Laplace transforms – Convolutiontheorem.

Application of Laplace transforms to ordinary differential equations of first and secondorder.

UNIT V:PartialDifferentiation: (10 Lectures)

Introduction- Homogeneous function-Euler's theorem-Total derivative-Chain rule-Generalized Mean value theorem for single variable (without proof)-Taylor's and Mc Laurent's series expansion of functions of two variables– Functional dependence-Jacobian.

Applications: Maxima and Minima of functions of two variableswithout constraints and Lagrange's method (withconstraints).

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rd Edition, KhannaPublishers.
2. N.P.Bali, Engineering Mathematics, LakshmiPublications.

Reference Books:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley-India
2. Micheael Greenberg, Advanced Engineering Mathematics, 9th edition,Pearson edn
3. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRCPress
4. Peter O'neil, Advanced Engineering Mathematics, CengageLearning.
5. Srimanta Pal, Subodh C.Bhunia, Engineering Mathematics, Oxford University Press.
6. Dass H.K., Rajnish Verma. Er., Higher Engineering Mathematics, S. Chand Co. Pvt. Ltd,Delhi.

Web References:

1. http://tutorial.math.lamar.edu/Classes/DE/DE.aspx
2. http://mathworld.wolfram.com/topics
3. http://www.nptel.ac.in/course.php

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B.Tech I Year -I Semester

L	T	P	C
3	0	0	3

C - Programming for Problem Solving

(Common to all Branches)

CourseCode:P18EST03 **Internal Marks: 40**

External Marks:60

Course Prerequisite: Nil

Course Objectives:

1. To impart adequate knowledge on the need of programming languages and problem solving techniques.
2. To impart problem solvingskills.
3. To enable student to write programs in C and to solve theproblems.

Course Outcomes:

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

1. Design algorithms and flowchart / Pseudo code for a givenproblem.
2. Design programs involving decision structures andloops.
3. Implement different operations on arrays and solve problems usingfunctions.
4. Understand pointers and strings.
5. Implement structures, unions and file operations in C programming for a given applicationproblem.

Unit-I: (8 Lectures)

Introduction to Programming: Computer hardware, Bits and Bytes, programming languages, application and system software, the software development process.

Idea of algorithm: steps to solve logical and numerical problems. Representation of algorithm: flowchart/pseudo code with examples, from algorithms to programs.

Unit-II: (9Lectures)

Introduction to C: Overview of C, Constants, Variables and Data Types, Operators and Expressions, Managing Input and Output. Decision Making - Branching and Looping. Enumerated Data type, Renaming Data type with typedef, TypeCasting.

UNIT-III (12Lectures)

Arrays: Definition, Declaration, Initialization, Assignment, Processing array, Passing array to a function, Two and multi dimensionalarray.

Functions: Defining a function, Accessing a function, Passing argument to functions, Function prototypes, Nested function call, Storage classes.

UNIT-IV (10Lectures)

Pointers: Definition, initialization, operations on pointers, functions and pointers, arrays and pointers, pointers to pointers, dynamic memoryallocation.

Strings: C Strings, String Input / Output functions, arrays of strings, string manipulation functions.

UNIT-V (9Lectures)

Structures: Definition, declaration, initialization, accessing members, array of structures, arrays within structure, functions and structures, pointers to structures, nested structures, unions.

File Handling: Types, operations on files, modes, file I/O functions, Random Access Functions.

Text Books:

1. Byron S Gottfried, ―Programming with C, Schaums Outlines, Second Edition, Tata McGraw-Hill,2006.
2. Problem Solving and Program Design in C, 4th edition, by jeri R. Hanlyand Elli B.Koffman.
3. Balagurusamy. 2011. C Programming. Tata Mc Graw Hills, New Delhi,India.

Reference Books:

1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall ofIndia.
2. Yashavant P. Kanetkar. ―Let Us C, BPB Publications,2011.

Web References:

1. https://www.studytonight.com/c/
2. https://www.cprogramming.com/tutorial/c-tutorial.html
3. https://www.javatpoint.com/c-programming-language-tutorial
4. https://www.tutorialspoint.com/cprogramming/

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B.Tech. I YearI Semester **CourseStructure**

L	T	P	C
3	0	0	3

APPLIED PHYSICS

(Common to ECE, CSE & IT)

Internal Marks:40

Coursecode:P18BST03 **External Marks:60**

Course Prerequisites

The basics of analytical and conceptual understanding of physics.

Course Objectives

1. To study the wave nature of light through Interference anddiffraction.
2. To learn the basic principles of Lasers and fiberoptics.
3. To express the physics of electrostatics and electromagnetic wave concepts through Maxwell'sequations.
4. To study the basic concepts of Quantummechanics.
5. Aware of limits of classical free electron theory and apply band theory of solids.
6. Acquire the knowledge of semiconductor physics.

Course Outcomes

1	Understanding the basic concepts of optics and how to apply them for engineering applications.
2	AcquiretheknowledgeoffundamentalsofLasersandfiberopticsenablesthe students to develop Laser devices to apply them in various systems like communications, Industries and medicine.
3	Set students to be exposed to Electrostatics,Maxwell's equations, electromagnetic waves and fundamental concepts of quantum mechanics.
4	Enable to learn the fundamental concepts of free electron theory and band theory ofsolids.
5	Develop knowledge of band theory of solids for fundamentals of Semiconductor physics enables the students to apply the knowledge to various systems like communications, solar cell, photo cells and soon.

UNIT-I

Wave Optics (10lectures)

Interference: Introduction, Superposition of waves, Interference of light by wave front splitting and amplitude splitting, interference in thin films, Newton'srings.

Diffraction: Introduction, differences between interference and diffraction, difference between Fraunhoffer and Fresnel diffraction, Fraunhoffer diffraction at single slit, Diffraction grating (N-slits qualitative), diffraction at circular aperture, resolving power of microscope, and telescope.

UNIT-II

LASERS ANDFIBEROPTICS (9 lectures)

Lasers: Introduction, Characteristics of laser, Absorption, spontaneous emission, stimulated emission, Einstein's coefficients, Pumping, Types of Lasers: Ruby laser, He-Ne laser.

Fiber optics: Introduction, Total internal reflection-wave propagation in optical fiber, Acceptance angle, numerical aperture.

UNIT-III (9lectures)

Electrostatics, Maxwell's Equations And ElectromagneticWaves

Electrostatics: Coulombs law, electric field, electric field intensity, electric flux Density, electrostatic potential, divergence of electric field, Laplace's and Poisson's equations for electrostatic potential, Gauss theorem inelectrostatics.

Maxwell's equations and electromagnetic waves: Gauss theorem in magneto statics, Faraday's law of electromagnetic induction, Ampere's law, displacement current, Maxwell's equations in vacuum, electromagnetic wave equation in dielectric medium, velocity of propagation of electromagnetic wave, poynting vector and poynting theorem.

UNIT-IV (12lectures)

Quantum Mechanics, Free Electron Theory And Band Theory

Quantum Mechanics: Introduction to quantum physics, de-Broglie's hypothesis and properties of matter waves, Schrodinger's time independent wave equation, Particle in one dimensional box, physical significance of wave function.

Free electron theory: Free electron theory of metals assumptions and failures, Fermi Dirac distribution function- Fermi level, density of states.

Band theory of solids: Introduction, Bloch's theorem, Kronig penny model(qualitative), E-K diagram, Brillouin's zones, classification of solids into metals, semiconductors and insulators, effective mass of electron and concept ofhole

UNIT-V (8lectures)

Semiconductor Physics

Semiconductor physics: Introduction**,** Intrinsic and Extrinsic semiconductors. carrier concentration in intrinsic semiconductors, carrier concentration in N-type and P-type semiconductors, Dependence of Fermi energy on carrier-concentration and temperature, diffusion and drift, Hall effect and its applications, mechanism in LED, solar cell and photo conductor

Text Books:

1. A Textbook of Engineering Physics by Dr. M. N. Avadhanulu, Dr. P.G. Kshirsagar - S.Chand.
2. Optics by Ajoy Ghatak, Tata McGraw-Hill Publishing companylimited
3. Lasers and nonlinear optics by BB Laud, New age InternationalPublishers
4. Introduction to Electrodynamics by David Griffiths, Cambridge University Press

5. Introduction to Quantum physics by Eisberg andResnick.
6. Solid state physics by AJDekker.

Reference Books:

1. Applied physics by Palanisamy (Scitechpublications)
2. Optics by Eugene Hecht, PearsonEducation.
3. Principle of Lasers byO.Svelto
4. Electricity, magnetism and light by W.Saslow
5. Introduction to Quantum mechanics by D.J.Griffiths. Cambridge University Press
6. Quantum mechanics by RichardRobinett.
7. Quantum Chemistry by DanielMcQuarrie
8. Semiconductor Optoelectronics by J. Singh, Physics and Technology, Mc Graw-Hillinc
9. Engineering Physics by B.K. Pandey, S. Chaturvedi - CengageLearing.
10. Physics by Halliday andResnick

Web References:

1. http://jntuk-coeerd.in/
2. http://www.youtube.com
3. http://en.wikipedia.org
4. http://nptel.ac.in/syllabus/122106027/

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B.Tech I YearISemester **CourseStructure**

L	T	P	C
1	0	3	2.5

ENGINEERINGGRAPHICS

(Common to EEE,ECE,CSE,IT Branches)

Internal Marks: 40

CourseCode:P18EST02 **External Marks:**

60Course Prerequisite:Nil

Course objectives:

1. To introduce the students to the "universal language of Engineers" for effective communication through drafting exercises.
2. To enable the students to acquire requisite knowledge, techniques and attitude required for advanced study of engineeringdrawing.
3. To enable the students to construct the layout development of basic solids for practicalsituations.
4. To enable the students to gain the ability to convert the Isometric views in to Orthographicviews.
5. To enable the students to gain the ability to convert the Orthographic views in to Isometricviews.

Course Outcomes:

After completion of the course the student will be able to

1. Gain the knowledge of various Geometrical Elements used in Engineering Practice.
2. Understand concepts of all 2 D elements like polygons, ConicSections.
3. Understand concepts of 3 D Objects like various Prisms, Cylinders, Pyramids and Cones.
4. Draw and represent the Projections of variousobjects.
5. Convert the 3 D views in to 2 D views and viceversa.

UNIT-I: (12Lectures)

Introduction To Engineering Graphics

Introduction to Drawing instruments and their uses, construction of regular polygons, Conic sections- ellipse, parabola, hyperbola using general method, Scales- Diagonal scale, Vernier scale.

UNIT-II: (12Lectures)

Projections Of Points & Lines

Principle of orthographic projection-Method of Projection – First and third angle projection methods- Projections of Points –Projection of straight lines- parallel to one plane and inclined to the other plane.

UNIT-III: (16Lectures)

Projections of Lines &Planes

Projections of straight lines inclined to both the planes, determination of true lengths, angle of inclinations andtraces.

Projections of Planes: Projections of plane figures: triangle, square, rectangle, pentagon and hexagon, circle with surfaces inclined to both the referenceplanes.

UNIT-IV: (12Lectures)

Projections of Solids & Surface Development

Projections of Solids: Projections of regular solids with the axis inclined to only one reference plane.

Development of surfaces for basic solids- prisms, pyramids, cylinder and cone.

UNIT–V: (12 Lectures)

Projections Of Pictorial Views

Conversion of isometric views into orthographic views and conversion of orthographic views in to isometric views.

Text Book:

1. Engineering Drawing by N.D. Bhatt &V.M. Panchal, Charotar Publications, 2014.
2. Engineering Drawing by Basant Agrawal and C.M. Agrawal ,McGrawHill Education Pvt. Limited, 2013.
3. Engineering Drawing by Prof.K.L.Narayana & Prof. R.K.Kannaiah,Scitech Publications, 2010.

Reference Book:

1. Engineering Graphics with AutoCAD 2002 by James D. Bethune, PHI,2011.
2. Engineering Graphics. P I Varghese Tata McGraw Hill Education Pvt. Ltd,2010.
3. Engineering drawing – P.J. Shah .S.Chand Publishers,2010.
4. Engineering Drawing- Johle/Tata Macgraw Hill Book Publishers,2010.
5. Engineering Drawing – M.B. Shah and B.C. Rana, Pearson,2009.

Web References:

1. https://lecturenotes.in/subject/436/engineering-drawing-ed.
2. web.iitd.ac.in/~achawla/public_html/201/lectures/sp46.pdf.
3. https://www.smartzworld.com/notes/engineering-drawing-pdf-1st-year-notes-ppts
4. https://www.researchgate.net/305754529_A_Textbook_of_Engineering_Drawing
5. www.academia.edu/32510080/N_d_bhatt_engineering_drawing_pdf

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B.Tech. I YearI Semester **Course Structure**

L	T	P	C
0	0	3	1.5

English Language CommunicationSkillsLab

(Common to EEE,ME,ECE,CSE,IT,AME Branches)

Internal Marks: 40

CourseCode:P18HSL01 **External Marks: 60**

Course Prerequisite:

1. Basic knowledge of Englishgrammar
2. Basic understanding of English vocabulary.
3. Ability to speak simple sentences.
4. Have interest to learn thelanguage

Course Objectives

1. To facilitate computer assisted multimedia instructions enabling individualized and independent language learning.
2. To sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm.
3. To bring about a consistence accent and intelligibility in students' pronunciation of English by providing an opportunity for practice inspeaking.
4. To improve the fluency of students in spoken English and neutralize their mother tongue influence.
5. To train students to use language appropriately for public speaking, group discussion andinterviews.

Course Outcomes

1. Better understanding of nuances of English language through audiovisual experience and group activities.
2. Neutralization of accent for intelligibility.
3. Speaking skills with clarity and confidence which in turn enhances their employabilityskills.
4. Better understanding of the production of sounds oflanguage.
5. Suitable body language foremployability.

Scope:

The curriculum of the **ELCS Lab** is designed to focus on the production and practice of sounds of language and to familiarize the students with the use of English in everyday situations and contexts.

EXERCISE – I (3 Sessions)

- **A.** Ice – Breaking Activity, Greeting, Introducing and takingleave
- **B.** Introduction to Phonetics

  Vowel sounds – Pure Vowels & Diphthongs

  Consonant sounds

EXERCISE – II (2 Sessions)

- **A.** JAM Session, Situational Dialogues, Giving Directions &Narration
- **B.** Structure of Syllables - Plural markers & Past tenseMarkers
- EXERCISE–III (2 Sessions)
- **A.** Role play, Giving Information and AskingInformation
- **B.** Word Stress & Listening Comprehension – Listening for GeneralDetails

EXERCISE–IV (2 Sessions)

- **A.** Describing objects, events, places etc. & Presentation Skills – Extempore, Public Speaking.
- **B.** Consonant Cluster, Rules of 'r' pronunciation and Neutralization ofMother TongueInfluence

EXERCISE–V (3 Sessions)

- **A.** Interview Skills & GroupDiscussion
- **B.** Intonation & Listening Comprehension – Listening for SpecificDetails

Textbooks:

1. Strengthen your Communication Skills - Maruthi Publication, Hyderabad2013
2. A textbook of English Phonetics for Indian Students byT. Balasubramanian (Macmillan)

Reference Books:

1. INFOTECH English (MaruthiPublications).
2. Personality Development and Soft Skills (Oxford University Press, NewDelhi)
3. Suresh Kumar, E. & Sreehari, P. 2009. A Handbook for English Language Laboratories. New Delhi:Foundation
4. Speaking English Effectively 2nd Edition by Krishna Mohan and N. P. Singh, 2011. Macmillan Publishers India Ltd. Delhi.
5. Sasi Kumar, V & Dhamija, P.V. How to Prepare for Group Discussion and Interviews. Tata McGrawHill
6. Hancock, M. 2009. English Pronunciation in Use. Intermediate. Cambridge:CUP
7. Spoken English: A Manual of Speech and Phonetics by R. K. Bansal & J. B. Harrison. 2013. Orient Blackswan. Hyderabad
8. Hewings, M. 2009. English Pronunciation in Use. Advanced. Cambridge:CUP
9. Marks, J. 2009. English Pronunciation in Use. Elementary. Cambridge:CUP
10. Nambiar, K.C. 2011. Speaking Accurately. A Course in International Communication. New Delhi :Foundation
11. Soundararaj, Francis. 2012. Basics of Communication in English. New Delhi: Macmillan
12. Spoken English (CIEFL) in 3 volumes with 6 cassettes, OUP.
13. English Pronouncing Dictionary Daniel Jones Current Edition withCD.

Web References:

1. http://www.cambridge.org
2. http://www.edufind.com/english/practice
3. http://www.learnenglish.com
4. http://www.penguin.co.uk

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B.Tech. I YearI Semester **L T P C**
0 0 3 1.5

C - Programming for Problem Solving Lab
(Common to all Branches)

CourseCode: **P18ESL03** **Internal Marks: 40**
External Marks:60

Course Prerequisite: Nil

Course Objectives:

1. To understand the various steps in programdevelopment.
2. To understand the basic concepts in C ProgrammingLanguage.
3. To understand different modules that includes conditional and loopingexpressions.
4. To understand how to write modular and readable CPrograms.
5. To write programs in C to solve problems using arrays, structures andfiles.

EXPERIMENT WISE PROGRAMS

Experiment-1

a) Write a simple C program to Print "Hello World"
b) Write a simple C Program to Calculate Area and Circumference ofCircle
c) Write a simple C program to implement basic arithmetic operations - sum, difference, product, quotient and remainder of givennumbers.

Experiment-2

Write C programs to demonstrate the following operators

a) Assignment Operator.
b) Relational and LogicalOperator.
c) Increment and decrementoperator.
d) Bitwise operators.
e) Ternary operator.

Experiment-3

a) Write a C programs - to find the largest and smallest of 2 numbers(if – else),to find the largest and smallest of 3 numbers(Nested if – else), roots of quadratic equation(else – ifladder).
b) The total distance travelled by vehicle in't' seconds is givenby distance=ut+1/2at2 where 'u' and 'a' are the initial velocity and acceleration. Write a c program to find the distance travelled at regular intervals of time given the Values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'.
c) Write a c program, which takes two integer operands and one operator from the user, performs the operation and the prints the result. (consider the operators +,-,*,/,% and use switchstatement).

Experiment-4

a) Write a C program to find the sum of individual digits of a positiveinteger
b) A Fibonacci Sequence is defined as follows: the first and second terms in the sequence are 0 and 1.Subsequent terms are found by adding the preceding two terms in the sequence .Write a c program to generate the first n terms of the sequence.
c) Write a c program to generate all the prime numbers between 1 and n, wheren is a value supplied by the user.

Experiment-5

a) Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression:
$1+x+x^2+x^3+.....+x^n$.
b) Write a C program to generate Pascal's triangle.
c) Write a C program to construct a pyramid ofnumbers

Experiment-6

a) Write a c program to find both the largest and smallest number in a list of integers.
b) Write a c program that uses functions to perform thefollowing:
   i) Addition of TwoMatrices.
   ii) Multiplication of TwoMatrices.

Experiment-7

a) Write a programs that use both recursive and non-recursivefunctions
b) To find the factorial of a giveninteger.
c) To find the GCD of two givenintegers.

Experiment-8

a) Write a c program that uses functions to perform the followingoperations:
i) To insert a sub-string in given main string from a givenposition.
ii) To delete n Characters from a given position in a givenstring.
b) Write a C program to determine if the given string is a palindrome ornot.

Experiment-9

a) Write a C program that displays the position or index in the string S Where the string T begins, or - 1 if S doesn't containT.
b) Write a C program to count the lines, words and characters in a given text.

Experiment-10

a) Write a program to print the details of a student like(Name, Rollno, marks) using nested structures.
b) Write a C Program to Calculate Difference Between Two Time Period.

Experiment-11

a) Write a C program that uses functions to perform the followingoperations:

i) Reading a complexnumber
ii) Writing a complexnumber
iii) Addition of two complex numbers
iv) Multiplication of two complexnumbers

(Note: represent complex number using a structure.)

Experiment-12

a) Write a C program which copies one file to another and display the contents of a file
b) Write a C program to reverse the first n characters in afile.
c) Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the thirdfile)

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B.Tech. I YearI Semester **CourseStructure**

L	T	P	C
0	0	3	1.5

APPLIED PHYSICSLAB

(Common to ECE, CSE &IT)

Internal Marks:40

Coursecode:P18BSL01 **External Marks:60**

Course Prerequisites:

The basics of analytical and conceptual understanding of physics.

Course Objective:

1 Deploy scientific method of experiments in thelaboratory.
2 Develop the procedures and observational skills for appropriate useof simpleand complex apparatus.
3 Enable analytical techniques, statistical analysis and graphicalanalysis.
4 Reinforce ideas and concepts covered in lecture host ofexperiments.
5. Train to find the radius of curvature of a Plano-convex lens forming Newton's rings.

Course Outcomes:

1 Apply the phenomenon of interference and diffraction of lightwaves.
2 Implement the concept of resonance in LCR circuit andSonometer.
3 Analyze the SHM to determine its dependent properties.
4 Evaluate the behavior of electronic components and itscharacteristics.

List of Experiments

(Any eight of the following to be done)

1 Determination of Radius of Curvature of Plano - Convex lens by forming Newton's Rings.
2 Determination of Wavelengths of various spectral lines usingdiffraction grating with the normal incidence method.
3 Determination of wavelength of laserradiation.
4 Determination of Refractive index of a givenprism..
5 Study of magnetic field along the axis of a current carrying coil and to verify Stewart-Gee'smethod.
6 Determination of energy gap of PN junctionDiode.
7 Determinationof hall coefficient and carrier concentration using Hall effect
8 Study of V-I characteristics of Zenerdiode.
9 Study of V-I characteristics of PN junctiondiode.
10 Determination of frequency of a vibrating bar or electrical tuning fork using Melde'sapparatus.
11 Determination of acceleration due to gravity using compoundpendulum
12 Verification of laws of transverse waves bySonometer.
13 Determination of Velocity of sound by volumeresonator.
14 Determination of rigidity modulus by TorsionalPendulum.

Text Books:

1. Madhusudhanrao, "Engineering Physics lab manual" Ist edition,Scietech Publication, 2015.
2. RamaraoSri,ChoudaryNityanandandPrasadDaruka,LabManualof Engineering physics 5th ed, Excell books, 2010.
3. Physics lab manual, department of physics, PACE Institute of Technology and Sciences.

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B. Tech- I YearI Semester **Coursestructure**

ENGINEERING WORKSHOP

(Common to EEE,ECE,CSE,IT branches)

L	T	P	C
0	0	3	1.5

Internal Marks:40

CourseCode:P18ESL02 **External Marks:**

60Course Pre-requisite:Nil

Course Objectives:

1. To provide hands on experience about use of different engineering materials, tools, equipment and processes those are common in the engineeringfield.
2. Toprovidethestudentshandsonexperiencetomakedifferentjointsin carpentry with hand tools like jack plane, various chisels & hand saws.
3. To provide the students hands on experience to make different joints in Sheet metal work with hand tools like snips, stacks, nylon malletsetc.
4. Toprovidethestudentshandsonexperiencetomakedifferentconnectionsin house wiring with hand tools like cutting pliers ,tester ,lamps& lamp holders etc.
5. To develop a right attitude, team working, precision and safety at workplace.

Course Outcomes:

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

1. Identify and use marking out tools, hand tools, measuring equipment and to work to prescribedtolerances.
2. Familiarize with the basics of tools and equipment used inCarpentry.
3. Fabricate various basic components using Sheetmetal.
4. Apply basic electrical engineering knowledge for house wiringpractice.
5. Gain the hands on experience to form different models in Blacksmithy.

LIST OF EXPERIMENTS:

Minimum two experiments should be conducted from each trade

1 Carpentry **(6Lectures)**

a Cross-Lap joint
b Dove tail joint
c T - Lapjoint
d Mortise &Tenonjoint

2 Fitting **(6Lectures)**

a Square fit
b V -Fit
c Half round fit
d Dovetailfit

3 TinSmithy (6 Lectures)

a Rectangular Tray
b Cylinder
c Square box withoutlid
d funnel

4 BlackSmithy (6 Lectures)

a Round rod to Square
b S-Hook
c Round Rod to FlatRing
d Round Rod to Square headed bolt

5 Housewiring (6 Lectures)

a One lamp controlled by one switch
b Parallel and Seriesconnections
c Fluorescent lamp fitting
d Stair casewiring

Reference Books:

1 Work shop Manual / P.Kannaiah/ K.L.Narayana/ SciTech Publishers,2015.
2 Engineering Practices Lab Manual, Jeyapoovan, SaravanaPandian, Vikas publishers, 2009.
3 Dictionary of Mechanical Engineering, GHF Nayler, Jaico PublishingHouse, 2003.

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B.Tech. I YearII Semester **Course Structure**

L T PC

3 0 0 3

English-II

(Common to all Branches)

Internal Marks: 40

CourseCode:P18HST02 **External Marks: 60**

Course Prerequisite: The students should have basic knowledge of English grammar and LSRW skills.

Course Objectives:

1. To enable the engineering students to develop their basic communication skills in English for academic and socialpurposes.
2. To equip the students with appropriate oral and written communicationskills.
3. To inculcate the skills of listening, reading and criticalthinking.
4. To integrate English Language learning with employability skills andtraining.
5. To enhance the students' proficiency in reading skills enabling them meet the academic demands of their course

Course Outcomes:

On completion of this course, the student is able to:

1. Use English Language effectively in spoken and writtenforms
2. Interpret the contextual meaning of words
3. Comprehend the given texts and respond appropriately
4. Recall and reproduce the theme in a givencontext
5. Communicate confidently in formal and informalcontexts

UNIT– I (8 Lectures)

My Struggle for an Education – Booker T. Washington

a. Vocabulary:Collocations

b. Grammar: Finite verbs, Non- finite verbs, Gerund, Transitive andIntransitive Verbs

c. Writing: PrecisWriting

UNIT– II (9 Lectures)

In London – M.K.Gandhi

a. Vocabulary: Commonly confusedwords

b. Grammar: Active voice and Passivevoice

c. Writing: Technical ReportWriting

UNIT–III (10 Lectures)

Principles of Good Writing – L A Hill

a. Vocabulary: Commonly MisspeltWords

b. Grammar: Direct & IndirectSpeech

c. Writing: EssayWriting

UNIT-IV (9Lectures)

The Secret of Work – Swami Vivekanada

a. Vocabulary: Technicalvocabulary

b. Grammar: Degrees ofComparison

c. Writing:Curriculumvitae,CoverLetterandResumeWriting.(Functional, Chronological and standardResumes)

UNIT–V (9 Lectures)

Oh Father Dear Father – Raj Kinger

a. Vocabulary: Phrasalverbs

b. Grammar: Simple, Compound and ComplexSentences

c. Writing: HintsDevelopment

Textbooks:

1. Board of Editors, "Sure Outcomes"– Orient Blackswan, Hyderabad,2013
2. "Panorama" – Oxford University Press, New Delhi,2016
3. "Fluency in English", A Course Book for Engg. Students, Published by Orient Black Swan, Hyderabad, 2016print.
4. "Technical Communication- Principles and Practice", Third Edition. New Delhi:Oxford Universitypress.

Reference Books:

1. Murphy, "English Grammar with CD", Cambridge University Press, New Delhi, 2004.
2. Rizvi Asheaf M, "Effective Technical Communication", Tata McGraw Hill, New Delhi,2008.
3. Baradwaj Kumkum, Professional Communication", I.K. International- Principles and Practice". Third Edition. New Delhi: Oxford University Press.2015.
4. Trailblazers – Board of Editors – Orient Blackswan NewDelhi.

Web References:

1. www.englishhints.com,www.enchantedlearning.com, www.learnenglish.de/grammar/prefixtext.html
2. http://www.magickeys.com/books/riddles/words.html
3. http://www.pinnacle.edu.in/campusfiles/1826_campusFile_1.pdf
4. http://www.yourdictionary.com
5. http://www.learnenglish.com
6. http://www.cambridge.org
7. http://www.eslcafe.com
8. http://www.eslgames.com
9. http://www.penguin.co.uk
10. http://www.edufind.com/english/practice

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B. Tech- I YearII Semester **Course structure**

L T PC

3 0 0 3

MATHEMATICS-II
(Linear algebra and Vector calculus)
(Common to All Branches)

Internal Marks: 40

Coursecode:P18BST02 **External marks: 60**

Course Prerequisite: Mathematics-I(P18BST01)

Course Objectives: To learn

1. The subject gives the knowledge about matrices and applications to solvelinear equations.
2. The course intends to provide an overview of Eigen values and Eigenvectors which occur in Physical and engineering problems.
3. To integration over theregions.
4. The concepts of vectordifferentiation.
5. Line integral, Surface and volume integrals, Vector integraltheorems.

Course Outcomes: After learning the contents of this paper the student must be able to

1. Apply this knowledge to solve linear equations.
2. Eigen values and Eigen vectors of a given matrix and solve simultaneouslinear equations.
3. Determine double integral over a region and triple integral over avolume.
4. Analyze the Vector differentiation in variousdomains.
5. Evaluate the line, surface and volume integrals and converting them from oneto another.

UNIT I: Linear systemsofequations: (10 Lectures)

Rank-Echelon form-Normal form – Solution of linear systems – Gauss elimination – Gauss Jordon- Gauss Jacobi and Gauss Seidalmethods.

Applications: Finding the current in electrical circuits.

UNIT II: Eigen values - Eigen vectors andQuadraticforms: (10 Lectures)

Eigen values - Eigen vectors– Properties – Cayley-Hamilton theorem - Inverse and powers of a matrix by using Cayley-Hamilton theorem-Diagonalization-Quadratic forms-Reduction of quadratic form to canonical form – Rank - Positive, negative and semi definite - Index – Signature.

UNIT III:Multipleintegrals: (9 Lectures)

Double and triple integrals – Change of variables – Change of order of integration.

Applications: Finding Areas, surface areas andVolumes.

UNIT IV:Vector Differentiation: (10 Lectures)

Gradient-Directional derivative, Divergence- Solenoidal vector, Curl –Irrotational Vector, Vector identities.

Applications: Equation of continuity, potential surfaces.

UNIT V:VectorIntegration: (9 Lectures)

Line integral – Work done – Potential function – Area- Surface and volumeintegrals Vector integral theorems: Greens, Stokes and Gauss Divergence theorems (without proof) and relatedproblems.

Applications: Work done, Force.

Text Books:

1. B.S.Grewal, Higher Engineering Mathematics, 43rd Edition, KhannaPublishers.
2. N.P.Bali, Engineering Mathematics, LakshmiPublications.

Reference Books:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition,Wiley-India
2. Micheael Greenberg, Advanced Engineering Mathematics, 9th edition, Pearsonedn
3. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press
4. Peter O'neil, Advanced Engineering Mathematics, Cengage Learning.
5. Srimanta Pal, Subodh C.Bhunia, Engineering Mathematics, Oxford University Press.
6. Dass H.K., Rajnish Verma. Er., Higher Engineering Mathematics, S. Chand Co. Pvt. Ltd,Delhi.

Web References:

1. http://tutorial.math.lamar.edu/Classes/DE/DE.aspx
2. http://mathworld.wolfram.com/topics
3. http://www.nptel.ac.in/course.php

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B.Tech I Year -II Semester **Coursestructure**

L	T	P	C
3	0	0	3

PYTHON PROGRAMMING

(Common to EEE,ME,ECE,CSE,IT,AME Branches)

CourseCode:P18EST04 **Internal Marks: 40**

External Marks:60

Course Prerequisite: **Nil**

Course Objectives:

1. To read and write simple Pythonprograms.
2. To develop Python programs with conditionals andloops.
3. To define Python functions and apply OOPconcept.
4. To use Python data structures –- lists, tuples,dictionaries.
5. To develop GUI applications inPython.

Course Outcomes:

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

1. Understand the basics of pythonprogramming.
2. Understand control flow and implement various data structures provided by python.
3. Implement packages, methods andfunctions.
4. Develop real-world applications using oops and exceptionhandling.
5. Build GUI Applications inPython.

UNIT-I (9Lectures)

Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL(Shell), Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation.

UNIT-II (10Lectures)

Types, Operators and Expressions: Types - Integers, Strings, Booleans, Expressions and order of evaluations, Control Flow- if, if-elif-else, for, while, break, continue, pass.

Data Structures Lists - Operations, Slicing, Methods; Tuples, Sets, Dictionaries, Sequences, Comprehensions.

UNITIII (11Lectures)

Functions - Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful Functions(Function Returning Values), Scope of the Variables in a Function - Global and Local Variables.

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

Python packages: Introduction to PIP, Installing Packages via PIP, Using Python Packages

UNITIV (9Lectures)

Object Oriented Programming OOP in Python: Classes, 'self variable', Methods, Constructor Method, Inheritance, Overriding Methods, Data hiding.

Error and Exceptions: Difference between an error and Exception, Handling Exception, try except block, Raising Exceptions, User Defined Exceptions.

UNITV (9 Lectures)

Brief Tour of the Standard Library & Files - Operating System Interface - String Pattern Matching, Mathematics, Internet Access, Dates and Times, Data Compression, Multithreading, GUI Programming, Turtle Graphics, file operations.

Text Books

1. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist'', 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 (http://greenteapress.com/wp/thinkpython/).
2. Guido van Rossum and Fred L. Drake Jr, "An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd.,2011.

Reference Books

1. John V Guttag, "Introduction to Computation and Programming Using Python'', Revised and expanded Edition, MIT Press ,2013
2. Kenneth A. Lambert, "Fundamentals of Python: First Programs",CENGAGE Learning, 2012.
3. Robert Sedgewick, Kevin Wayne, Robert Dondero, "Introduction to Programming in Python: AnInter-disciplinary Approach, Pearson India Education Services Pvt. Ltd., 2016.
4. Charles Dierbach, "Introduction to Computer Science using Python:A Computational Problem Solving Focus, Wiley India Edition, 2013.

Web References:

1. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/
2. https://www.codecademy.com/learn/learn-python
3. https://www.codementor.io/collections/learn-python-bwbc63ulz
4. http://www.diveintopython3.net/
5. https://www.python.org/3/
6. https://www.learnpython.org

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B.Tech I YearIISemester **CourseStructure**

L	T	P	C
3	0	0	3

APPLIED CHEMISTRY
(for ECE,CSE,IT Branches)

Internal Marks: 40

CourseCode:P18BST05 **External Marks: 60**

Course Prerequisite: Basic Chemistry at Intermediate or equivalentlevel.

Course Objectives

1. In this course. Student will learn the concepts and applications of chemistry in engineering.
2. It aims at strengthening the students with the fundamental concepts of chemistry. Plastics are nowadays used in household appliances; also they are used as composites (FRP) in aerospaceindustries.
3. It enables the students to know analysis of Advanced materials and used in diverse fields.
4. It makes the students to effectively use of electro chemistry, battery technology, and corrosion science in engineeringapplications
5. It enables the students to Spectroscopic techniques and applications.

Course Outcomes:

After completion of course student will be able to

1. The advantages and limitations of plastic materials and their use in design would be understood.
2. Analyze the different types of electrodes and batteries for technological applications.
3. To understand the 3D structure of the organicmolecules.
4. Analyze the structure of the chemicalcompounds.
5. The students would aware of materials like nanomaterials, liquid crystals, green chemistry.

UNITI: **(10 Lectures)**

High Polymers And Plastics

Polymerization: Introduction, classification, types of polymerization, Stereo regular polymers, Methods of polymerization (emulsion and suspension), Physical and mechanical properties.

Plastics as engineering materials: Advantages and limitations, Thermoplastics and Thermosetting plastics, Compounding and fabrication (4/5 techniques), Preparation, properties and applications of poly ethene, PVC, Bakelite and Teflon.

Elastomers: Natural rubber, compounding and vulcanization, Synthetic rubbers : Buna S, Buna N, Thiokol- preparation ,properties and applications, applications of elastomers. Composite materials & Fiber reinforced plastics, Conducting polymers.

UNITII: (10 Lectures)

Electrochemistry And Corrosion

Introduction, Single electrode potential**,** EMF, Galvanic cell, Nernst equation and applications. Reference Electrodes-SHE, calomel electrode. Electro chemical series and uses of this series, Concentration cells

Batteries: Introduction, Types: Dry Cell, Ni-Cd Cells, Pb-acid storage cells, Li ion cells.

Corrosion: Causes Theories of Corrosion (chemical and Electro chemical), types-galvanic, differential aeration, stress corrosion, corrosion control methods– material selection and designing aspects, Cathode protection – sacrificial anodic protection and impressed current cathode. Galvanizing, Tinning, Electroplating of Copper andelectro less plating ofnickel.

UNITIII: (10 Lectures)

Stereochemistry

Representations of 3 dimensional structures, structural isomers and stereoisomers, configurations and symmetry and chirality, enantiomers, diastereomers, optical activity, absolute configurations and conformational analysis. Isomerism in transitional metal compounds.

UNIT-IV: (10Lectures)

Spectroscopic Techniques And Organic Synthesis Of Drug Molecule

Principles of spectroscopy and selection rules. Electronic spectroscopy. Vibrational and rotational spectroscopy. Basic concepts of Nuclear magnetic resonance spectroscopy, chemical shift. Introduction to Magnetic resonance imaging.

Synthesis of commonly used drug molecules- Ibuprofen, Aspirin, Paracetamol.

UNIT-V: (8 Lectures)

Chemistry of Advanced Materials

Nano materials:- Introduction – Sol-gel method & chemical reduction method of preparation – Characterization by BET method and TEM methods - Carbon nanotubes and fullerenes: Types, preparation, properties and applications.

Liquid crystals: - Introduction, Types, Applications.

Super conductors: Introduction, Type-I &Type-II super conductors, properties and applications.

Green Chemistry: - Principles, 3or 4 methods of synthesis with examples and applications.

TextBooks:

1. Engineering Chemistry by Jain and Jain; Dhanpat Rai Publication &Co.
2. Engineering Chemistry by Shikha Agarwal; Cambridge UniversityPress.
3. Physical chemistry by K.Bahl andTuli
4. Elementary organic spectroscopy by Y.R. Sharma, S.Chandpublications
5. Spectroscopic techniques by H.Kaur. Pragati Prakashanpublications

Reference Books:

1. Engineering Chemistry of Wiley India Pvt. Ltd., Vairam and others.
2. Engineering Chemistry by Prasanth Rath, CengageLearning.
3. A text book of engineering Chemistry by S. S. Dara; S. Chand &CoLtd., Latest Edition
4. Applied Chemistry by H.D. Gesser, SpringerPublishers
5. Text book of Nano-science and nanotechnology by B.S. Murthy, P. Shankarand others.

Web References:

1. http://jntuk-coeerd.in/
2. http://en.wikipedia.org/wiki/title
3. http://nptel.ac.in/coures/105106/.com
4. https://en.wikipedia.org/wiki/Electrochemistry
5. https://www.youtube.com/watch?v=WLyaZbT97EI&list=PLzW3l18TEXrpqo3jRarGr9ao-61tB2184
6. http://encyclopedia.che.engin.umich.edu/Pages/Polymers/PolymerProduction/PolymerProduction.html
7. http://encyclopedia.che.engin.umich.edu/Pages/ProcessParameters/Spectrometers/Spectrometers.html

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B.Tech. I YearII Semester **CourseStructure**

L	T	P	C
0	0	3	3

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to ECE,CSE,IT)

Internal Marks: 40

CourseCode:P18EST01 **External Marks: 60**

Course Prerequisite:Physics.

Course Objective:

1. To study the concepts of passive elements, and understand the applications of network theorems for analysis of electricalnetworks.
2. To study the concept of magnetic coupledcircuit.
3. To understand the Principle and operation of Various ElectricalMachines.
4. To study the operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs.
5. To learn the operation of PNP, NPN transistors and variousamplifiers.

Course Outcomes:

After completion of this course, the student is able to:

1. Able to solve various electrical networks in presence of active and passive elements and by using principles of networktheorems.
2. Able to solve magnetic circuit with various dotconventions.
3. Able to understand the principle of operation and construction details of DC machines, Transformers, Alternators,3-phase Inductionmotor.
4. Able to analyze the operation of half wave, full wave bridge rectifiers andOP-AMPs.
5. Able to analyze operation of PNP, NPN transistors and CEamplifiers

UNIT– I **(10Lectures)**

Electrical Circuits

Basic definitions – Types of network elements- Types of sources - Ohm's Law - Kirchhoff's Laws –Inductive networks - Capacitive networks – Series - Parallel circuits- Star-delta and delta-star transformations - Source transformation - nodal analysis and mesh analysis - Super position theorem.

UNIT– II **(9Lectures)**

Ac Circuit Analysis

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. Three phase balanced circuits, voltage and current relations in star and delta connections.

UNIT–III (9 Lectures)

Magnetic Circuits And Transformers

Basic definition of Magnetic quantities - Faraday's laws of electromagnetic induction- Analogy between electrical and magnetic circuits. Concept of self and mutual inductance. Principle of operation and construction of single phase transformers–EMF equation – Applications.

UNIT-IV (11Lectures)

Rotating Machines

Construction and Principle of operation of DC Machines EMF equation – Torque equation –Speed control of DC Shunt Motor- power losses and efficiency - Principle of operation and construction of 3-phase Inductionmotor - Principle of operation and construction of alternators.

UNIT–V (9Lectures)

Introduction To Semiconductor Devices

PN junction diode - Diode applications -Half wave -Full wave rectifiers – Characteristics of Operational Amplifiers - Types of Transistors - PNP and NPN junction transistors, transistor as an amplifier- Frequency response of CE Amplifier.

Textbooks:

1. EngineeringCircuitAnalysisbyWilliamHaytandJackE.Kemmerley, McGraw Hill Company,6 thEdition
2. Electrical Technology by Surinder Pal Bali, PearsonPublications.
3. Electronic Devices and Circuits, R.L. Boylestad and Louis Nashelsky,9thEdition, PEI/PHI 2006.
4. Electronic Devices and Circuits – J. Millman, C.C. Halkias, TataMc-Graw Hill

Reference Books:

1. Electrical Circuit Theory and Technology by John Bird, Routledge Taylor &FrancisGroup
2. Electrical Machines by D. P.Kothari, I .J .Nagarth, Mc Graw HillPublications, 4th Edition
3. Electrical Machines by R.K.Rajput, Lakshmi publications, 5thEdition.
4. Basic Electrical Engineering by M.S.Naidu and S.Kamakshiah, TMH Publications
5. Electronic Devices and Circuits by David A. Bell, Oxford UniversityPress
6. Electronic Devices and Circuits – Salivahanan, Kumar, Vallavaraj, TATA MC Graw Hill, Second Edition

Web References:

1. https://embeddedengineers.files.wordpress.com/2015/09/electronic-devices-and-circuits-by-salivahanan.pdf
2. https://electricalanswers.files.wordpress.com/2014/09/a-textbook-of-electrical-technology-volume-i-basic-electrical-engineering-b-l-theraja.pdf

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I Year -IISemester **L T P C**
0 0 3 1.5

PYTHON PROGRAMMING LAB
(Common to EEE,ME,ECE,CSE,IT,AME Branches)

CourseCode:P18ESL04 **Internal Marks: 40**
External Marks:60

Course Outcomes:

1. Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries inPython.
2. Express different Decision Making statements andFunctions.
3. Interpret Object oriented programming inPython.
4. Understand File handlingoperations.
5. Design GUIApplications.

Exercise1 - Basics

a) Running instructions in Interactive interpreter and a Python Script
b) Write a program to purpose fully raise Indentation Error and Correctit

Exercise 2 - Operations

a) Write a program to compute distance between two points taking input from the user (PythagoreanTheorem).
b) Writeaprogramadd.pythattakes2numbersascommandlineargumentsand prints its sum.

Exercise 3 – Control Flow

a) Write a Program for checking whether the given number is a even number or not.
b) Usingaforloop,writeaprogramthatprintsoutthedecimalequivalentsof 1/2,1/3,1/4,...,1/10.
c) Write a program using a for loop that loops over a sequence. What is sequence?
d) Writeaprogramusingawhileloopthatakstheuserforanumber,and prints a count down from that number to zero.

Exercise 4 – Control Flow-Continued

a) Find the sum of all the primes below two million. Each new term in the Fibonacci sequence is generated by adding the previous two terms. By starting with 1 and 2, the first 10 terms will be:
   1, 2, 3, 5, 8, 13, 21, 34, 55, 89, ...
b) By considering the terms in the Fibonacci sequence whose values do not exceed four million, find the sum of the even-valuedterms.

Exercise 5 - DS

a) Write a program to count the numbers of characters in the string and store them in a dictionary datastructure.
b) Writeaprogramtousesplitandjoinmethodsinthestringandtraceabirth day with a dictionary data structure.

Exercise 6- DS-Continued

a) Write a program combine_lists that combines these lists into adictionary.
b) Write a program to count frequency of characters in a given file. Can you use characterfrequency to tell whether the given file is a Python program file, C program file or a textfile?

Exercise 7 - Files

a) Write a program to print each line of a file in reverseorder.
b) Write a program to compute the number of characters, words and lines in afile.

Exercise 8 - Functions

a) Write a function dups to find all duplicates in thelist.
b) Write a function unique to find all the unique elements of alist.

Exercise 9 - Functions –Problem Solving

a) Write a function cumulative_product to compute cumulative product of a list of numbers.
b) Write a function reverse to reverse a list. Without using the reversefunction.
c) Write function to compute gcd, lcm of two numbers. Each function shouldn't exceed oneline.

Exercise 10 – Multi - D Lists

a) Write a program to perform addition of two squarematrices.
b) Write a program to perform multiplication of two squarematrices.

Exercise 11 - OOP

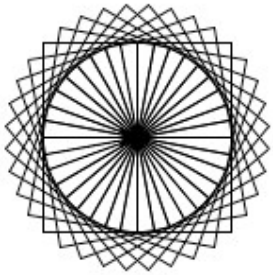
Class variables and instance variable and illustration of the self variable

i)Robot.

ii)ATM Machine.

Exercise - 12 GUI, Graphics

a) Write a GUI for an Expression Calculator usingtk.
b) Write a program to implement the following figures usingturtle



B.Tech I YearIISemester **Course Structure**

L	T	P	C
0	0	3	1.5

APPLIED/ENGINEERING CHEMISTRY LAB

(Common to ECE,CSE,IT)

Internal Marks: 40

CourseCode:P18BSL03 **External Marks: 60**

Course Prerequisite: Basic Chemistry at Intermediate or equivalentlevel.

Course Objectives:

The purpose of this course to provide students with practical knowledge of quantitative analysis of materials by classical and instrumental methods for developing experimental skills in building technical competence.

Course Outcomes:

After completion of this course, the students should be able to

1. Carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for goodresults.
2. Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurateresults.

List Of Experiments:

Introduction to chemistry laboratory – Molarity, Normality, Primary, Secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis etc.

Volumetric Analysis:

1. Estimation of Na_2CO_3 using standard HClsolution
2. Estimation of Mohr's salt using potassium dichromate ($K_2Cr_2O_7$)solution
3. Estimation of $CuSO_4$ using sodium thio sulphate ($Na_2S_2O_3$)solution.

Water Analysis:

4. Determination of hardness of water sample by EDTAmethod
5. Determination of alkalinity of watersample
6. Determination of free chlorine in bleachingpowder

Instrumental Titrations:

7. Conduct metric Titrations between strong acid and strongbase.
8. Conduct metric Titrations between strong acid and weakbase.
9. Potentio metric Titration between Ferrous iron and potassiumdichromate ($K_2Cr_2O_7$)solution

Food Analysis & Separation Of Compounds:

10. Estimation ofVitamin-c
11. Thin layer chromatography

Preparation Of Polymeric Resin:

12. Preparation of phenol formaldehyderesin
13. Preparation of urea formaldehyderesin

Lab Manual: Engineering/Applied Chemistry Lab Manual, Dept. of Chemistry, Pace Institute of Technology and Science, Vallur, Prakasam Dist., Andhra Pradesh, India.

Reference Books:

1. Dr. Jyotsna Cherukuris (2012) Laboratory Manual of engineeringchemistry-II,
2. VGS Techno Series 3. Chemistry Practical Manual, LorvenPublications

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B.Tech. I YearII Semester **Course Structure**

L	T	P	C
0	0	3	1.5

BASIC ELECTRICAL & ELECTRONICS ENGINEERING LAB

(Common to ECE,CSE,IT)

Internal Marks: 40

CourseCode:P18ESL01 **External Marks: 60**

Course Prerequisite:None

Course Objective:

1. To verify and demonstrate on safety precautions and Kirchhofflaws.
2. To demonstrate various protective devices and construction of transformer and rotating machines.
3. To verify superposition theorem and control of dc shunt motor usingspeed control methods.
4. To analyze the characteristics of PN junction diode &transistor
5. To analyze the characteristics of CE amplifier and Half & Full waverectifiers.
6. To analyze the characteristics of OP –Amp and CEamplifier

Course Outcomes:

After completion of this course, the student is able to:

1. Get an exposure on safety precautions and verify Kirchhofflaws.
2. Get an exposure on construction of transformer and various protectivedevices.
3. Verify superposition theorem and control the speed of DC shunt motor using speed controlmethods.
4. Analyze the characteristics of CE amplifier and Half & Full waverectifiers.
5. Analyze the characteristics of OP –Amp and CEamplifier

Any Ten from the following experiments are required to be conducted as compulsory experiments:

1. Basic safety precautions. Introduction and use of measuring instruments – voltmeter,ammeter,multi-meter,oscilloscope.Real-liferesistors,capacitors and inductors.
2. Verification of Kirchhofflaws.
3. Demonstration of construction of Transformer and Rotatingmachines.
4. Demonstration on various protectivedevices.
5. Verification of superpositiontheorem
6. Speed control of D.C. Shunt motorby
   - ♣ Armature Voltage control b) Field flux control method
7. PN junction diode characteristics
   a. Forwardbias
   b. Reverse bias (Cut in voltage and resistancecalculations)
8. Transistor CE characteristics (Input andoutput)
9. CE AmplifierCharacteristics
10. Half Wave rectifier and Full Wave Rectifier withoutfilters

11. Frequency Response of CEAmplifier.
12. Op-Amp Characteristics

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IIYEAR I SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18CST03	MathematicalFoundations OfComputerScience	3	1	0	4	40	60
2	P18CST02	DataStructures	3	0	0	3	40	60
3	P18ITT01	Object OrientedProgrammingThroughC++	3	0	0	3	40	60
4	P18ECT19	DigitalElectronics	3	0	0	3	40	60
5	P18BST07	Mathematics-III	3	1	0	4	40	60
6	P18CSL02	DataStructuresLab	0	0	3	1.5	40	60
7	P18ITL01	Object Orientedprogramming,ThroughC++ Lab	0	0	3	1.5	40	60
8	P18MCT02	EnvironmentalSciences	2	0	0	0	0	100
TotalPeriods			**18**	**2**	**6**	**20**	**280**	**520**

B.TechIIYearISemester **CourseStructure**

L	T	P	C
3	1	0	4

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE(IT)

SubjectCode:P18CST03 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites:

AnunderstandingofMathematicsingeneralissufficient.

CourseObjectives:

1. Toexplainwithexamplesthebasicterminologyoffunctions,relations,andsets.
2. Toperformtheoperationsassociatedwithsets,functions,andrelations.
3. Torelatepracticalexamplestotheappropriateset,function,orrelationmodel,andinterprettheassociated operations and terminology incontext.
4. Todescribethe importanceand limitationsof predicatelogic.
5. Torelatetheideasofmathematicalinductiontorecursionandrecursivelydefinedstructures.
6. TouseGraph Theoryforsolvingproblems.

CourseOutcomes:

1. Ability to illustrate by examples the basicterminology of functions, relations, and setsanddemonstrate knowledgeof their associated operations.
2. Ability to demonstrate in practical applications the use of basic counting principles ofpermutations,combinations,inclusion/exclusionprincipleandthepigeonholemethodology.
3. Abilitytorepresentand ApplyGraphtheoryinsolvingcomputerscienceproblems.

UNIT–I (12Lectures)

Mathematical Logic: Statements and notations, Connectives, Well formed formulas, TruthTables, tautology, equivalence implication, Normal forms, Quantifiers, universal quantifiers.Predicates: Predicative logic, Free&Bound variables, Rules ofinference, Consistency,proofof contradiction, AutomaticTheorem Proving.

UNIT-II (13Lectures)

Relations: Basic Structures, Sets, Properties of Binary Relations, equivalence, transitiveclosure, compatibility and partial ordering relations, Lattices, Hasse diagram. Functions:InverseFunctionCompositionof functions,recursiveFunctions, Latticeandits Properties

UNIT-III (13Lectures)

ElementaryCombinatorics: Basisofcounting,Combinations&Permutations,withrepetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems,the principles of Inclusion – Exclusion. Pigeon hole principles and its application. Algebraicstructures: Algebraic systems Examples and general properties, Semi groups and monads,groupssub groups' homomorphism, Isomorphism.

UNIT-IV (11Lectures)

Discrete Probability and Advanced Counting Techniques: An Introduction to DiscreteProbability,ProbabilityTheory,Baye's Theorem, ExpectedValue andVariance

AdvancedCountingTechniques: RecurrenceRelations,SolvingLinearRecurrenceRelations,Divide-and-ConquerAlgorithmsandRecurrenceRelations,GeneratingFunctions,Inclusion-Exclusion, ApplicationsofInclusion-Exclusion

UNIT-V (11Lectures)

Graphs: Graphs and Graph Models, Graph Terminology and Special Types of Graphs,Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths,Shortest-PathProblems, Planar Graphs,Graph Coloring.

Trees: IntroductiontoTrees,ApplicationsofTrees,TreeTraversal,SpanningTrees,Minimum Spanning Trees

TextBooks:

1. DiscreteMathematicsanditsApplicationswithCombinatoricsandGraphTheory-KennethH Rosen, 7th Edition, TMH.2007.
2. ElementsofDISCRETEMATHEMATICS-AcomputerOrientedApproach-CLLiu,DPMohapatra. Third Edition, Tata McGraw Hill.2008.
3. Discrete MathematicsforComputerScientistsandMathematicians, J.L.Mott,A.Kandel, T.P.Baker,PHI, 2008.

ReferencesBooks:

1. DiscreteMathematicalStructureswithApplicationstoComputerScience-J.P.TremblayandR. Manohar, TMH, 2008.
2. DiscreteMathematics-RichardJohnsonbaugh,7thEdn.,PearsonEducation,2009.
3. Discrete Mathematics with Graph Theory- Edgar G. Goodaire, Michael M.Parmenter.2/e,2002.
4. DiscreteandCombinatorialMathematics-anappliedintroduction:Ralph.P.Grimald,5th edition,Pearson Education, 2004.

WebReferences:

1. www.tutorialspoint.com
2. www.lecturenotes.in
3. www.nptel.ac.in

B.TechIIYearISemester **CourseStructure**

L	T	P	C
3	1	0	3

DATASTRUCTURES

(IT)

SubjectCode:P18CST02 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites:C-Programming

CourseObjectives:

1. Comprehensiveknowledgeofdatastructuresandabilitytoimplementthesameinsoftwareapplications.
2. Exposuretoalgorithmic complexities,recursivealgorithms,searchingtechniques.
3. Exposureto sorting technique,Applying stack techniquesfor logical operations.
4. Applyingqueuetechniquesforlogicaloperations,Exposuretolistrepresentationmodelsinvarious types of applications.
5. Implementationoftreeinvariousforms,Advancedunderstandingofothervariantsoftreesand theiroperations.
6. Orientationongraphs,representationofgraphs,graphtraversals,spanningtreesGraphs.

CourseOutcomes:

1. Attheend ofthis course,thestudents willbeable to
2. Studentwillbeabletochooseappropriatedatastructureasappliedtospecifiedproblemdefinition.
3. Implement appropriatesorting/searchingtechniqueforgivenproblem
4. Implementoperationslikesearching,insertion,anddeletion,traversingmechanismetc.onvarious data structures.
5. StudentswillbeableimplementLinearandNon-Lineardatastructures

UNIT-I (13Lectures)

Data Structure, Recursion &**Searching:** Preliminaries of algorithm, Algorithm analysisandcomplexity. **Data Structure:**Definition, types ofdata structures.

Recursion: Definition, Design Methodology and Implementation of recursive algorithms,Types of recursion (Linear, binary and Tail), recursive algorithms for factorial function,GCDComputation, Fibonacci sequence,TowersofHanoi

Searching: ListSearches usingLinearSearch,BinarySearch,FibonacciSearch

UNIT-II (11Lectures)

SortingTechniques: BasicConcepts,Sortingby:Insertion(InsertionSort),Selection(heap sort), Exchange (Bubble sort, Quick Sort), distribution (Radix sort) and merging(Mergesort)Algorithms.

Stacks: Basic Stack operations, Representation of a stack using arrays, Stack Applications:Reversinglist,Infix to postfix transformation.

UNIT-III (12Lectures)

Queues: Introduction,RepresentationofaQueueusingarrays,QueueOperations,Applicationsof queues- Round Robin Algorithm,CircularQueues, PriorityQueues.

Linked List: Introduction, single linked list, representation of a linked list in memory,Operations on a single linked list, Reversing a single linked list, applications: single linkedlistto represent polynomialexpressions, Circularlinkedlist,Doublelinkedlist.

UNIT-IV (13Lectures)

Trees: Basic tree concepts, Binary Trees: Properties, Representation of Binary Trees usingarrays,operations on aBinary tree, Binary TreeTraversals (recursive).

Advanced Tree Concepts: Binary search tree, Basic concepts, BST operations: Searching,insertion, deletion, Balanced search trees-AVL Trees-Definition and Examples only, B-Trees Definition and Examples only, Red-Black Trees-Definitions and Examples only (Nooperations)

UNIT-V (11Lectures)

Graphs: Basic concepts, Graph Representations- Adjacency matrix, Adjacency lists, Graphalgorithms:GraphTraversals(BFS&DFS),applications:Dijkstra'sshortestpath,Transitiv eclosure, MinimumSpanning Treeusing Prim's &Kruskal's Algorithm.

TextBooks:

1. DataStructures,Richard F,Gilberg,Forouzan,2/e,Cengage,2007.
2. DataStructuresandAlgorithms,G.A.V.Pai,TMH,2008.

ReferenceBooks:

1. DataStructurewithC,SeymourLipschutz,TMH,2010.
2. ClassicDataStructures,Debasis,Samanta,2/e,PHI,2009.
3. FundamentalsofDataStructureinC,Horowitz,Sahni,AndersonFreed,2/e,UniversityPress,20 13.

WebReferences:

1. www.nptel.ac.in
2. www.udemy.com

B.TechIIYearISemester **CourseStructure**

L	T	P	C
3	0	0	3

OBJECTORIENTEDPROGRAMMINGTHROUGHC++

(IT)

SubjectCode:P18ITT01 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites:C-Programming

CourseObjectives:

1. Togetaclearunderstandingofobject-oriented concepts.
2. TounderstandobjectorientedprogrammingthroughC++.

CourseOutcomes:

1. GainthebasicknowledgeonObjectOrientedconcepts.
2. AbilitytodevelopapplicationsusingObjectOrientedProgrammingConcepts.
3. Abilitytoimplementfeaturesofobjectorientedprogrammingtosolverealworldproblems.

UNIT-I (10Lectures)

Introduction to Object Oriented Programming: Need for Object Oriented Programming - Characteristics of Object Oriented Languages – Comparison of C and C++ - Structures:Structures-Enumerations–Functions:SimpleFunctions–PassingArgumentstoFunctions –ReturningValuesfromFunctions–ReferenceArguments-OverloadedFunctions–Recursion – Inline Functions –Default Arguments – Scope and Storage Class – Returning byReference– const Function Arguments.

UNIT-II (9Lectures)

Objects and Classes: A Simple Class – C++ Objects as Physical Objects – C++ Objects asData types - Constructors – Objects as Function Arguments - Copy Constructor – Structuresand Classes – Classes, Objects and Memory - Static class data – Constant Member functionsand constant objects - Arrays and Strings: Array Fundamentals – Arrays as Class MemberData– Array ofObjects– C-Strings – TheStandardC++String Class.

UNIT-III (9Lectures)

Operator Overloading: Overloading Unary Operators – Overloading Binary Operators - DataConversion – explicit and mutable keywords – Inheritance: Derived Class and Base Class –Derived Class Constructors – Overriding Member Functions – Which Function is Used –ClassHierarchies–PublicandPrivateInheritance–LevelsofInheritance-MultipleInheritance– Ambiguity– Containership: Classes within classes.

UNIT-IV (9Lectures)

Pointers: Address and Pointers – The Address of Operator - Pointers and Arrays – Pointersand Functions – Pointers and C-type Strings – Memory Management – Pointers to

Objects –PointerstoPointers-VirtualFunctions:VirtualFunctions-FriendFunctions–StaticFunctions–AssignmentandCopyInitialization–Thethispointer–DynamicTypeInformation.

UNIT-V (8Lectures)

Streams:Stream Classes– StreamErrors—Overloading ExtractionandInsertion Operators - Templates and Exceptions: Function Templates – Class Templates – Exception Handling-TypesofExceptions,ThrowingExceptions,ExceptionClasses.MultipleThrowsandCatches,Uncaught Exceptions-Nested Try-CatchBlocks.

TextBooks:

1. C++:TheCompleteReference–SchildtH,4thEd,TMH, 1994.
2. TheC++ProgrammingLanguage– StroustrupB,4/e,Addison-Wesley, 1997.
3. C++:Howtoprogram-Deitel&Deitel,10/e,Pearson,2017.

ReferenceBooks:

1. TeachYourselfC++,Al Stevens,5/e,Wiley,1997.
2. AStructuredApproachusingC++,Farouzan& Gilberg,Cengage India,2012.
3. ObjectOrientedProgrammingwith C++,RSSalaria, KhannaPublicaions,2009.
4. ObjectOrientedProgramming WithC++, EBalagurusamy,6/e, TMH,2013.
5. C++Programming,BlackBook,StevenHolzner,dreamtech,2000.
6. ObjectOrientedProgrammingin TurboC++,Robert Lafore,Galgotia,2003.
7. ObjectOrientedProgrammingwithANSIandTurboC++,AshokKamthane,Pearson,2006.
8. TheCompeteReferenceC++,HerbertSchlitz, TMH,2017.

WebReferences:

1. www.cplusplus.com
2. www.stroustrup.com

B.TechIIYearISemester **CourseStructure**

L	T	P	C
3	0	0	3

DIGITALELECTRONICS

(IT)

SubjectCode:P18ECT19 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: Nil

CourseObjectives:

1. Able to perform the conversion among different number systems; Familiar with basiclogic gates -- AND, OR & NOT, XOR, XNOR; independently or work in team to buildsimplelogic circuits using basic.
2. Understand Boolean algebra and basic properties of Boolean algebra; able to simplifysimpleBoolean functions by usingthe basic Boolean properties.
3. Able to design simple combinational logics using basic gates. Able to optimize simplelogicusing Karnaugh maps, understand "don't care".
4. Familiar with basic sequential logic components: SR Latch, D Flip-Flop and their usageandable to analyzesequential logic circuits.
5. Understanddifferentmemoriesandabletodesigndifferentprogrammingtables.

CourseOutcomes:

1. Studentswillbe awareofvariousnumbersystemsandconversion ofnumber systems.
2. StudentswillbeawareoftheoryofBooleanalgebra&theunderlyingfeaturesofvariouslogicgates.
3. Studentswillbeawareof designingmappingmethod upto6-variables.
4. StudentswillbeabletousetheconceptsofBooleanalgebrafortheanalysis&designofvariouscombination logicand sequentialcircuits.
5. Studentswillbeawareof differentmemoriesandtheirprogrammingtables.

UNIT-I (9Lectures)

Number Systems and Signed Binary Numbers : Number System, Types of NumberSystems, Number base Conversions from one radix to another radix, Representation ofSignedBinaryNumbers,2’scomplement arithmetic,1’scomplementarithmetic.

UNIT-II (9Lectures)

Booleanalgebra : Logic gates, Laws of Boolean algebra, Principle ofDuality, PrincipleofComplements,ReducingBooleanExpressions,BooleanFunctions,CanonicalandStandardForms, M-Notations: Minterms and Maxterms,

UNIT-III (11Lectures)

Gate level Minimization : Map Method, Two-Variable K-Map, Three-Variable K-Map,Four Variable K-Maps. Products of Sum Simplification, Sum of Products Simplification,Don't– CareConditions, Implementationusing NANDand NOR.

UNIT-IV (8Lectures)

CombinationalLogicDesign:Introduction,DesignProcedure,Adders,Subtractors,BinaryAdder–Subtractor, Decoders, Encoders, Multiplexers.

UNIT-V (8Lectures)

Programmable Logic Devices : Classification of memories,PROM,PAL,PLA – basicStructures, programming tables of PROM, PAL, PLA, Realization of BooleanfunctionwithPLDs,Merits& demeritsofPROM,PAL,PLA.Comparison ofPROM,PAL,PLA.

TextBooks:

1. DigitalDesign,M.MorrisMano,MichaelDCiletti, 5/e,PEA,2006.
2. FundamentalsofLogicDesign,5/e,Roth,Cengage,2003.

ReferenceBooks:

1. SwitchingTheoryandLogicDesign, A.AnandKumar,PHI,2008.
2. DigitalElectronicsand LogicDesign,Dr. Sanjay Sharma,S.K. Kataria&Sons,2013.
3. ModernDigitalElectronics,R.P.Jain,TMH,2009.

WebReferences:

1. www.geeksforgeeks.org
2. www.learn.sparkfun.com

B.TechIIYearISemester **CourseStructure**

L	T	P	C
3	1	0	4

MATHEMATICS-III

(IT)

SubjectCode:P18BST07 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: Mathematics-I,Mathematics-II

CourseObjectives:

1. Thecourseisdesignedtoequip**S:**thestudentswiththenecessarymathematicalskillsandtechniques that are essential for an engineeringcourse.
2. TheFourierseriesofaperiodicfunctionanditsapplicationtothesolutionofpartialdifferentialequations.
3. TocalculatetheFouriertransformorinversetransformofcommonfunctionsincludingDelta,Unit-Step.
4. LearntofindSolutionofOnedimensionalWave,Heat equation

CourseOutcomes:

Afterlearning thecontents ofthis paperthestudentmust beable to

1. Calculatearootofalgebraicandtranscendentalequations.Explainrelationbetweenthefinitedifferenceoperators.
2. SolveordinarydifferentialequationsnumericallyusingEuler'sandRKmethod.
3. AnalyzethespectralcharacteristicsofsignalsusingFourieranalysis.Classifysystemsbasedon theirpropertiesand determinethereresponse
4. FindFourierseriesand Fouriertransformsfor certainfunctions.
5. Identify/classifyandsolvethedifferenttypesofpartialdifferentialequations.

UNIT-I (8Lectures)

Solution of Algebraic and Transcendental Equations and Interpolation: Introduction-Bisectionmethod – Method of falseposition– Newton-Raphson method.

Interpolation: Introduction- Forward differences- Backward differences. Newton's formulaforinterpolation-Lagrange's interpolation formula.

UNIT-II (10Lectures)

NumericalIntegrationandsolutionofOrdinaryDifferentialequationsTrapezoidalrule-Simpson's 1/3rd and 3/8th rule Solution of ordinary differential equations by Taylor'sseries-Euler'smethod–Modified Euler'smethod, Runge-Kutta methodof fourthorder.

UNIT-III (9Lectures)

Fourierseries: Introduction-DeterminationofFouriercoefficients–evenandoddfunctions–changeof interval– Half-rangesineandcosine series.

UNIT-IV (8Lectures)

Fourier Transforms: Fourier integral theorem (only statement) – Fourier sine and cosineintegrals - sine and cosine transforms – properties – inverse transforms – Finite FourierTransforms.

UNIT-V (10Lectures)

First order Partial differential equations: Formation of partial differential equations byelimination of arbitrary constants and arbitrary functions –solutions of first order linear(Lagrange)equationandnonlinear(standardtypes)equations.MethodofseparationofVariables-Solution of OnedimensionalWave,Heat equation.

TextBooks:

1. B.S.Grewal, Higher Engineering Mathematics, 43rd Edition, Khanna Publishers,2015.
2. N.P.Bali,EngineeringMathematics,LakshmiPublications,2011.

ReferenceBooks:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, Wiley-India,2011.
2. Micheael Greenberg, Advanced Engineering Mathematics, 9th edition, Pearsonedn,2002.
3. Dean G. Duffy, Advanced engineering mathematics with MATLAB, CRC Press,2010.
4. PeterO'neil,Advanced EngineeringMathematics,CengageLearning,2016.
5. Srimanta Pal, Subodh C.Bhunia, Engineering Mathematics, Oxford UniversityPress,2015.

WebReferences:

1. www.tutorial.math.lamar.edu
2. www.mathworld.wolfram.com
3. www.nptel.ac.in

B.TechIIYearISemester **CourseStructure**

L	T	P	C
0	0	3	1.5

DATASTRUCTURESLAB

(IT)

SubjectCode:P18CSL02 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: C-Programming

CourseObjectives:

1. To choose the appropriate data structure and algorithm design method for a specifiedapplication.
2. To solve problems using data structures such as linear lists, stacks, queues, hash tables,binarytrees,heapsbinarysearchtrees,andgraphsandwritingprogramsforthesesolutions .

CourseOutcomes:

Afterlearning thecontents ofthis paperthestudentmust beable to

1. Analyzeworst-caserunningtimesofalgorithmsusingasymptoticanalysisandimplementvarious data structures likelinked lists.
2. Understandandimplement stacksandqueuesusingarraysandlinkedlists.
3. Analyzeandimplementvarioussearchingandsortingalgorithms.
4. Designandimplementappropriatehashfunctionandcollision-resolutionalgorithms

Exercise1:

Writerecursiveprogramforthe following

a) WriterecursiveC programforcalculationofFactorialof aninteger
b) WriterecursiveC programforcalculation ofGCD (n, m)
c) WriterecursiveprogramwhichcomputesthenthFibonaccinumber
d) Write recursive C program for Towers of Hanoi : N disks are to be transferred frompegS to peg Dwith Peg Ias the intermediatepeg.

Exercise2:

a) WriterecursiveCprogramforfunctionstoperformLinearsearchforaKeyvalueinagiven list.
b) WriterecursiveCprogramforfunctionstoperformBinarysearchforaKeyvalueinagiven list.
c) Writerecursive Cprogram forfunctionstoperform Fibonaccisearchfora Keyvaluein agiven list.

Exercise3:

a) WriteCprogramthatimplementBubblesort,tosortagivenlistofintegersinascendingorder
b) WriteCprogramthatimplementQuicksort,tosortagivenlistofintegersinascendingorder
c) WriteCprogramthatimplementInsertionsort,tosortagivenlistofintegersinascendingorde r

Exercise4:

a) WriteCprogramthatimplementheapsort,tosortagivenlistofintegersinascendingorder
b) WriteCprogramthatimplementradixsort,tosortagivenlistofintegersinascendingorder
c) WriteCprogramthatimplementmergesort,tosortagivenlistofintegersinascendingorder

Exercise5:

a) WriteCprogramthatimplementstack(itsoperations)usingarrays
b) WriteCprogram thatimplementstack (itsoperations)using Linkedlist

Exercise6:

a) Write a C program that uses Stack operations to Convert infix expression into postfixexpression
b) WriteCprogramthatimplement Queue(itsoperations)usingarrays
c) WriteC programthat implement Queue(its operations) usinglinked lists

Exercise7:

a) WriteaCprogram that usesfunctions tocreate asinglylinked list
b) Write a C program that uses functions to perform insertion operation on a singlylinked list
c) WriteaCprogramthatusesfunctionstoperformdeletionoperationonasinglylinked list

Exercise8:

a) WriteaCprogram toCreate aBinary Treeof integers
b) WritearecursiveCprogramfortraversingabinarytreeinpreorder,inorderandpostorder.

Exercise9:

WriteaC programforBST operations(insertion,deletion)

Exercise10:

a) WriteaCprogramforfindingminimumspanningtreeinagraphbyusingPrim'salgorithm.
b) Write a C program for finding minimum spanning tree in a graph by using Kruskal'salgorithm.

B.TechIIYearISemester **CourseStructure**

L	T	P	C
0	0	3	1.5

OBJECTORIENTEDPROGRAMMINGTHROUGHC++ LAB

(IT)

SubjectCode:P18ITL01 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: C-Programming

CourseObjective:

1.Togetaclearunderstandingandtosolveproblemsusing Object-Orientedprogrammingparadigms.

CourseOutcomes:

1. Abilitytoeffectivelyusecompilersincludeslibraryfunctions,debuggersandtroubleshooting.
2. Implementdatastructure algorithms throughC++.

Exercise1

a) Writeaprogramtofindthesumofgivennon-negativeintegernumbersusingarecursive function.
b) Writeaprogramtofindthefactorialofthegivennumberusingtherecursivefunction.
c) WriteafunctioninC++togenerateaFibonacciseriesofnnumbers,wherenisdefinedby aprogrammer.

Exercise2

a) WriteaC++Programtodemonstrateparameter passing methods.
b) Writeaprogram inC++tosolveageneral quadraticequation.ax2+bx+c=0

Exercise3

WriteaC++program to perform the following

a) MatrixAddition
b) MatrixSubtraction
c) MatrixMultiplication
d) Transposeof aMatrix.

Exercise4

a) WriteaC++Programto demonstratefunctionoverloading.
b) WriteaC++Programtodemonstrateoverloadthe followingoperators.

i. Arrowoperator
ii. Functioncalloperator
iii. InsertionOperator(<<)
iv. ExtractionOperator

Exercise5

Writeaprogramtoperformthefollowingarithmeticoperationsofacomplexnumberusingaclass.

a) Additionoftwocomplexnumbers
b) substationoftwocomplexnumbers
c) Multiplicationoftowcomplexnumbers
d) Divisionoftowcomplexnumbers

Exercise6

a) WriteaC++Programtodemonstratetemplatefunctions.
b) WriteaC++Programtodemonstratetemplateclass

Exercise7

a) WriteaC++program toimplement thefollowing
   i. Singleinheritance
   ii. Multipleinheritances
   iii. Multi-Levelinheritance
   iv. Hybrid-inheritance.
b) WriteaC++programtodemonstrateconstructoranddestructor callingsequence.

Exercise8

WriteaC++programtodemonstratetheusageofC++ExceptionHandlingmechanism.

Exercise9

WriteaC++program todemonstrate runtimepolymorphism

Exercise10

Write a C++ program to demonstrate
followinga)Thispointer
b) Staticdatamember
c) Staticmemberfunction.

Exercise11

WriteaC++programtodemonstrate following
a) Friendfunction
b) Friendmemberfunction
c) Friendclass

Exercise-12

Implementstackandqueuedatastructuresusingtemplates.

B.TechIIYearISemester **CourseStructure**

L	T	P	C
3	0	0	0

ENVIRONMENTALSCIENCE

(IT)

SubjectCode:P18MCT02

CoursePrerequisites:

Basicknowledgeaboutsciencesupto intermediateorequivalent level.

CourseObjectives:

1. Overallunderstandingofthenaturalresources
2. Basicunderstanding oftheecosystemandits diversity
3. Acquaintanceonvariousenvironmentalchallengesinducedduetounplannedanthropogenicactivities
4. Anunderstandingoftheenvironmentalimpactofdevelopmentalactivities
5. Awarenessonthesocialissues,environmental legislationand globaltreaties

CourseOutcomes:

Attheend ofthecourse,thestudents willbeable toacquire

1. The concepts of the ecosystem and its function in the environment. The need forprotecting the producers and consumers in various ecosystems and their role in thefoodweb
2. Thenaturalresourcesandtheirimportanceforthesustenanceofthelifeandrecognizethe need to conservethe natural resources
3. Various attributes of the pollution and their impacts and measures toreduce orcontrolthepollution along with wastemanagement practices
4. ThebiodiversityofIndiaandthethreatstobiodiversity,andconservationpracticestoprotect thebiodiversity
5. Social issues both rural and urban environment and the possible means to combat thechallengesandenvironmentalassessmentstagesinvolvedinEIAandtheenvironmental audit.

UNIT-I (9Lectures)

Multidisciplinary Nature Of Environmental Studies: Definition, Scope and Importance– Need for Public Awareness. Renewable energy Resources, Solar energy-solar cells, solarbatteries, wind energy, wind mills, ocean energy, tidal energy and nonrenewable energyresources:LPG,watergas,producergas.Worldfoodproblems,degradationandSoilerosion - overgrazing, effects of modern agriculture, fertilizer-pesticide problems, waterloggingand salinity.

UNIT-II (9Lectures)

Ecosystems: Conceptofanecosystem.–Structure,Componentsandfunctionofanecosystem – Producers, consumers and decomposers – Energy flow in the ecosystem –Ecological succession – Ecological pyramids - Food chains, food webs and Introduction,types,characteristicfeatures,structureandfunctionofthefollowingecosystem:a.For

estecosystem.b.Grasslandecosystemc.Desertecosystemd.Aquatic–RiverandLakeEcosystems.

UNIT-III (9Lectures)

BiodiversityAndItsConservation: Introduction,Definition:genetic,speciesandecosystemdiversity–Bio-geographicalclassificationofIndia–Valueofbiodiversity:consumptiveuse,Productiveuse,social,ethicalandaestheticvalues–Biodiversityatglobal,Nationalandlocallevels–Indiaasamega-diversitynation–Hot-spotsofbiodiversity – Threats to biodiversity: habitat loss, poaching of wildlife, Endangered andendemic species of India – Conservation of biodiversity: In-situ and Ex-situ conservation ofbiodiversity.

UNIT-IV (9Lectures)

EnvironmentalPollution: Definition, Cause, Effects and Control measures of : a. AirPollution, b. Water pollution, c. Soil pollution, d. Marine pollution, e. Noise pollution, f.Nuclearhazards.

Solid Waste Management: Causes, effects and control measures of urban and industrialwastes– **Disastermanagement:** floods,earthquake, cycloneand landslides.

UNIT-V (9Lectures)

Social Issues And The Environment: From unsustainable to sustainable development – Urbanproblemsrelatedtoenergy–Waterconservation,rainwaterharvestingandwatershedmanagement–Environmentalethics:Issuesandpossiblesolutions–Climatechange, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.CaseStudiesPopulationgrowth–Impactsonsociety,variationamongnations.EnvironmentalImpact Assessment(EIA) andEnvironmental Protection Acts.

TextBooks:

1. TextbookofEnvironmentalStudiesforUndergraduateCoursesbyErachBharuchaforUniversityGrants Commission, Universities Press, 2005.
2. EnvironmentalStudiesbyBennyJoseph, TataMcGrawHillCo, NewDelhi,2008.

ReferenceBooks:

1. EnvironmentalScience&EngineeringbyDr.A.Ravikrishnan,HitechPublishingCompany Pvt. Ltd. 2013.
2. Perspectives in Environmental Studies, Second edition, Anubha Koushik and C.P.Koushik,New AgeInternational (P)Limited, Publishers, 2004.

WebReferences:

1. www.tutorialspoint.com/
2. www.sophia.org/

DepartmentofInformationTechnology

IIYEARII SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18CST01	JavaProgramming	3	1	0	4	40	60
2	P18ITT02	ComputerOrganization	3	0	0	3	40	60
3	P18ITT03	SoftwareEngineering	3	0	0	3	40	60
4	P18CST06	DatabaseManagement Systems	3	0	0	3	40	60
5	P18CSL03	Freeopensources oftware	1	0	2	2	40	60
6	P18ITOX	*OpenElective–I*	2	0	0	2	40	60
7	P18CSL01	JavaProgrammingLab	0	0	3	1.5	40	60
8	P18CSL05	DatabaseManagement SystemsLab	0	0	3	1.5	40	60
9	P18MCT05	IndianConstitution	3	0	0	0	40	60
TotalPeriods			**18**	**1**	**8**	**20**	**360**	**540**

S.No	**Subject Code**	**Offered ByDept.**	**OpenElective–I**
1	P18MBO01	HSMC	ManagerialEconomicsandFinancialAnalysis
2	P18ECO02	ECE	IntroductiontoSimulationSoftware
3	P18EST05	ME	EngineeringMechanics
4	P18ITO04	CSE/IT	StatisticswithR

B.TechIIYearIISemester **CourseStructure**

L	T	P	C
3	1	0	4

JAVAPROGRAMMING

(IT)

SubjectCode:P18CST01 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: C++-ProgrammingandObject-OrientedProgramming

CourseObjectives:

1. To understand Object Oriented Programming concepts and basic characteristics ofJava
2. Tounderstandtheprinciplesofpackages,inheritanceandinterfaces
3. ToImplementexceptionsanduse I/Ostreams
4. TodesignandbuildsimpleGraphicalUser Interfaceapplication.

CourseOutcomes:

Aftercompletion ofthecourse,students willbeableto:

1. ImplementOOPS conceptsinJavaprograms
2. DevelopJavaprogramswiththeconceptsofinheritance andinterfaces
3. DesignaJava applicationsusingexceptionsandI/Ostreams
4. DesigninteractiveJavaapplicationusingswings

UNITI (9Lectures)

OOPS-Fundamentals- Object Oriented Programming concepts - Abstraction - objects andclasses - Encapsulation- Inheritance -Polymorphism- OOP in Java - Characteristics of Java-Java Source File -Structure- Compilation- Data Types - Variables and Arrays - Operators -ControlStatements-Classes – Objects -Methods.

UNITII (8Lectures)

OOPS-Inheritance-Inheritance-constructors-polymorphism-Accessspecifier-Staticmembers-Packages-Abstract classes-Interfaces and Inner classes-object cloning - ArrayLists -Strings.

UNITIII (10Lectures)

ExceptionHandling-Exceptionhandling-try-catch,throw,throws,finallyblock,userdefinedexception-built-inexceptions-StackTraceElements-Input-OutputBasics-Streams

- Byte streams and Character streams - Reading and Writing Console - Reading and WritingFiles.

UNITIV (9Lectures)

Concurrent Programming-Multi-threaded programming - thread life cycle-interruptingthreads-threadstates-threadpriorities-threadsynchronization-Inter-threadcommunication, daemon threads, thread groups-java Applets- Applet class, Applet structure,AnExampleApplet Program, Applet LifeCycle.

UNITV (9Lectures)

Graphics Programming- Graphics programming - Frame - Components- java.awt package,Container class, Layouts, Basics of event handling - event handlers -AWT event hierarchy -Swing Components- Text Fields, Text Areas - Buttons- Check Boxes – Radio Buttons -Lists-choices-Scrollbars-Windows -Menus -DialogBoxes.

TextBooks:

1. JavaThecompletereference,8thEdition,HerbertSchildt,McGrawHillEducation,2011.
2. CoreJava Volume-IFundamentals,9th edition,CayS. Horstmann,Gary Cornell, PrenticeHall,2013.

ReferenceBooks:

1. Java2Blackbook,StevenHolzner, Dreamtechpress,2011.
2. TheJAVAprogramminglanguage,Thirdedition,K.ArnoldandJ.Gosling,PearsonEducation,2000.
3. AnintroductiontoObject-orientedprogrammingwithJava,FourthEdition,C.ThomasWu,Tata McGraw-Hill Publishing company Ltd., 2006.

WebReferences:

1. www.tutorialspoint.com
2. www.beginnersbook.com
3. www.w3schools.com
4. www.udemy.com

B.TechIIYearIISemester **CourseStructure**

L	T	P	C
3	0	0	3

COMPUTERORGANIZATION

(IT)

SubjectCode:P18ITT02 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: DigitalElectronics

CourseObjectives:

1. Understandthearchitectureofamoderncomputerwithitsvariousprocessing UNITs.AlsothePerformancemeasurement ofthecomputersystem.
2. Tounderstandvariousdatatransfertechniquesindigital computer.
3. Inadditiontothisthememorymanagementsystemof computer.

CourseOutcomes:

1. Abilitytounderstandbasicstructureof computer.
2. Abilitytoperformcomputerarithmeticoperations.
3. Abilitytounderstandcontrol UNIToperations.
4. Abilityto design memoryorganization that usesbanks fordifferentword sizeoperations.
5. Abilitytounderstandtheconcept of cachemappingtechniques.
6. Abilitytounderstandtheconceptof I/Oorganization.

UNIT–I (8Lectures)

BasicStructureOfComputers: FunctionalUNIT,BasicOperationalconcepts,Busstructures,System Software,Performance, Thehistoryofcomputer development.

UNIT– II (10Lectures)

MachineInstructionAndPrograms: Instruction and Instruction Sequencing: RegisterTransferNotation,AssemblyLanguageNotation,BasicInstructionTypes,AddressingModes,BasicInput/outputOperations,TheroleofStacksandQueuesincomputerprogrammingequation.

Type Of Instructions: Component of Instructions: Logic Instructions, shift and RotateInstructionsArithmeticandLogicInstructions,BranchInstructions,Input/outputOperations.

UNIT–III (9 Lectures)

ComputerArithmetic: Additionandsubtraction,multiplicationAlgorithms,DivisionAlgorithms, Floating – point Arithmetic operations. Decimal Arithmetic UNIT, DecimalArithmeticoperations.

MicroProgrammedControl: Controlmemory,Addresssequencing,microprogramexample,design ofcontrolUNIT.

UNIT–IV (9Lectures)

The Memory Systems: Basic memory circuits, Memory System Consideration, Read-OnlyMemory: ROM, PROM, EPROM, EEPROM, Flash Memory, Cache Memories:

MappingFunctions,Interleaving

SecondaryStorage: MagneticHardDisks,OpticalDisks.

UNIT–V (9Lectures)

Input/OutputOrganization: AccessingI/ODevices,Interrupts:InterruptHardware,Enabling and DisablingInterrupts,Handling Multiple Devices, DirectMemory Access,Buses: Synchronous Bus, Asynchronous Bus, Interface Circuits, Standard I/O Interface:PeripheralComponentInterconnect(PCI)Bus,Universal Serial Bus(USB)

TextBooks :

1. ComputerSystemArchitecture,M.MorisMano,3rdEdition,Pearson/PHI,2007.
2. Computer Organization, Carl Hamacher, Zvonks Vranesic, SafeaZaky, 5th Edition,McGraw Hill, 2002.

ReferenceBooks:

1. ComputerOrganizationandArchitecture–WilliamStallingsSixthEdition,Pearson/PHI,2007.
2. StructuredComputerOrganization–AndrewS.Tanenbaum,4thEditionPHI/Pearson,2005.
3. FundamentalsorComputerOrganizationandDesign,-SivaraamaDandamudiSpringerInt.Edition, 2005.

WebsitesReferences:

1. www.tutorialspoint.com
2. www.studytonight.com

B.TechIIYearIISemester **CourseStructure**

L	T	P	C
3	0	0	3

SOFTWAREENGINEERING

(IT)

SubjectCode:P18ITT03 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: Nil

CourseObjectives:

1. Tomakethestudentslearnaboutthebasicconceptsonsoftwareengineeringmethodsandpractices and theirappropriateapplication in softwareindustry.
2. To developanunderstandingofsoftwareprocessmodelsandSoftwareDevelopmentLifeCycle.
3. Toprovide anideaonsoftwaretestingtechniques.
4. Toteachanunderstandingroleofthedifferentaspectsof SoftwareProjectManagement.

CourseOutcomes:

Atthe end ofthecoursestudent able to

1. Identify,formulate,andsolvesoftwareengineeringproblems.
2. Elicit,analyzeandspecifysoftwarerequirementswithvariousstakeholdersofasoftwaredevelopmentproject.
3. Participateindesign,development,deployment andmaintenanceofamediumscalesoftwaredevelopment project.
4. Conveytechnicalmaterialthroughoralpresentationandinteractionwithan audience.
5. Evaluatetheimpactofpotentialsolutionstosoftwareengineeringproblemsinaglobalsociety,using the knowledgeof models, tools, and techniques.

UNIT-I (10Lectures)

IntroductiontoSoftwareEngineering: Theevolvingroleofsoftware,SoftwareCharacteristics, Changing Nature of Software, Software myths.**AGenericviewofProcess:**Softwareengineering-Alayeredtechnology,aProcessframework,TheCapabilityMaturityModelIntegration(CMMI),Processassessment,Productand Process.

UNIT-II (8Lectures)

Process models: The waterfall model, Incremental process models, Evolutionary processmodels,theunified process.

Software Requirements: User requirements, System requirements, Functional and non-functionalrequirements, theSoftwareRequirementsDocument (SRS).

UNIT-III (10Lectures)

RequirementsEngineeringProcess: Feasibilitystudies,Requirementselicitationandanalysis,Requirements validation, Requirements management.

Project planning and estimation: Project Planning Activities, Software Metrics andMeasurements, Project Size Estimation, Effort Estimation Techniques: COCOMO,PERT/CPMmethod.

UNIT-IV (8Lectures)

DesignEngineering: DesignprocessandDesignquality,Designconcepts,SoftwareArchitecture,Architectural Styles andPatterns.

Object-Oriented Design: Objects and object classes, An Object-Oriented design process,Designevolution

UNIT-V (9Lectures)

Testing Strategies: A strategic approach to software testing, test strategies for conventionalsoftware, Validation testing, System testing, the art of Debugging, Black-Box and White-Box testing.

Quality Management : Quality concepts, Software quality assurance, Software Reviews,StatisticalSoftwarequality Assurance, Softwarereliability, TheISO 9000 Qualitystandards.

TextBooks:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition,McGrawHillInternational Edition, 2010.
2. SoftwareEngineering- Sommerville,9thedition,Pearsoneducation, 2011.
3. Software Engineering, concepts and practices, Ugrasen Suman, Cengage learning,2013.

ReferenceBooks:

1. SoftwareEngineering-K.K.Agarwal&YogeshSingh,NewAgeInternationalPublishers, 2007.
2. SoftwareEngineering,anEngineeringapproach- JamesF.Peters,WitoldPedrycz,JohnWiely,2000.
3. SystemsAnalysisandDesign-ShelyCashmanRosenblatt,ThomsonPublications,2016.
4. Software Engineeringprinciplesandpractice- Waman SJawadekar, TheMcGraw-HillCompanies, 2004.

WebsitesReferences:

1. www.en.wikibooks.org/wiki/
2. www.slideshare.net/

B.Tech.IIYearIISemester **CourseStructure**

L	T	P	C
3	0	0	3

DATABASEMANAGEMENTSYSTEMS

(IT)

CourseCode:P18CST06 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: Nil

CourseObjectives:

1.Providesstudentswiththeoreticalknowledgeandpracticalskillsinthedesign,useofdatabasesand database managementsystemsininformationtechnologyapplications.

CourseOutcomes:

Aftercompletionofthiscourse,the studentswouldbeableto

1. AcquireknowledgeinfundamentalsofDBMSandidentifythedifferencesbetweentraditionalfilesystem and DB systems.
2. UnderstandvariousDBMSmodelsandhowqueriesarebeingprocessedandexecutedinRDBMS.
3. AnalyzeDBdesign methodologyand normalizationprocess.
4. Discussthevarioustransactionandconcurrencymanagementtechniques
5. Discussvariousfilesindexingtechniques.

UNIT– I (9Lectures)

Introduction: Database system, Characteristics (Database Vs File System), Database Users(Actors on Scene, Workers behind the scene), Advantages of Data base systems, Databaseapplications. Brief introduction of different Data Models; Concepts of Schema, Instance anddata independence; Three tier schema architecture for data independence; Database systemstructure,environment,Centralizedand ClientServerarchitectureforthedatabase.

UNIT– II (10Lectures)

Entity Relationship Model: Introduction, Representation of entities, attributes, entity set,relationship, relationship set, constraints, sub classes, super class, inheritance, specialization,generalizationusing ER Diagrams.

Relational Model: Introduction to relational model, concepts of domain, attribute, tuple,relation,importanceof null values, constraints andtheirimportance.

Basic SQL : Simple Database schema, data types, table definitions (create, alter), differentDMLoperations(insert,delete,update),basicSQLquerying(selectandproject)usingwhereclause,arithmetic&logicaloperations,Creatingtableswithrelationship,implementationofkeyandintegrityconstraints,nestedqueries,subqueries,grouping,aggregation,ordering, implementation of differenttypes ofjoins, views.

UNIT– III (9Lectures)

Schema Refinement (Normalization): Problems Caused by Redundancy, Decompositions,ProblemsRelatedtoDecomposition,Functionaldependency,PropertiesofFunctionaldependency,Normalformsbasedonfunctionaldependency-1NF,2NFand3NF,concept of surrogate key, Boyce-Codd normal form(BCNF), 4NF; Properties of Decompositions - Losslessjoin decomposition anddependency preserving decomposition.

UNIT– IV (9Lectures)

TransactionManagementAndConcurrencyControl:Transaction,propertiesoftransactions, transaction log, and transaction management with SQL using commit rollbackandsavepoint.Concurrencycontrolforlostupdates,uncommitteddata,inconsistentretrievals and the Scheduler. Concurrency control with locking methods : lock granularity,lock types, two phase locking for ensuring serializability, deadlocks, Concurrency controlwithtimestampordering:Wait/DieandWound/WaitSchemes,DatabaseRecoverymanagement : Transaction recovery. SQL constructs that grant access or revoke access fromuseroruser groups. BasicPL/SQLprocedures,triggers.

UNIT-V (8Lectures)

Overview Of Storages And Indexing: Data on External Storage- File Organization andIndexing – Clustered Indexing – Primary and Secondary Indexes, Index Data Structures,Hash-BasedIndexing –Tree-BasedIndexing,Comparisonof FileOrganization

Textbooks:

1. DatabaseManagementSystems, 3/eRaghuramKrishnan, JohannesGehrke,TMH, 2014.
2. DatabaseManagement System, 6/eRamezElmasri, ShamkantB. Navathe,PEA,2010.
3. DatabasePrinciplesFundamentalsofDesignImplementationandManagement,CorlosCoronel,Steven Morris,PeterRobb, CengageLearning, 2012.

ReferenceBooks:

1. DatabaseSystemConcepts.6/eSilberschatz,Korth,TMH,2013.
2. IntroductiontoDatabaseSystems,8/eCJ Date,PEA, 2003.
3. TheDatabasebook:principles&practiceusingOracle/MySqlNarainGehani,UniversityPress, 2008.

WebReferences:

1. www.studytonight.com/dbms/
2. www.tutorialspoint.com/dbms/
3. www.beginnersbook.com/2015/04/dbms-tutorial/
4. www.w3schools.com/sql/

B.TechIIYearIISemester

CourseStructure

L	T	P	C
1	0	2	2

FreeOpenSourceSoftware

(IT)

Subject

Code:P18CSL03COURS

EOBJECTIVES

- Toteachstudentsvariousunixutilitiesandshellscripting

Session-1

- Loginto the system
- Useviedítor tocreate afilecalledmyfile.txt whichcontains sometext.
- correcttypingerrorsduringcreation.
- Savethefile
- logoutof thesystem

Session-2

- Loginto the system
- openthefilecreatedin session1
- Add sometext
- Changesometext
- Deletesometext
- SavetheChanges
- Logoutof thesystem

2.a)Log into the system

b) Usethecat commandto create afilecontaining thefollowing data.Call it mytableusetabs to separate thefields

- 1425 Ravi 15.65
- 4320 Ramu 26.27
- 6830 Sita 36.15
- 1450 Raju 21.86

c) Usethecat command todisplay thefile, mytable.
d) Usethe vicommand tocorrect any errorsin thefile, mytable.
e) Use the sort command to sort the file mytable according to the first field. Call the sortedfilemy table (same name)

f)Printthefilemytable
g)Use the cut and paste commands to swap fields 2 and 3 of mytable. Call it my table (samename)
h)Print the new file,
mytablei)Logout ofthe
system

- Loginto the system
- Usetheappropriate commandto determineyourloginshell
- Usethe/etc/passwd fileto verifytheresult ofstepb.
- Use the who command and redirect the result to a file called myfile1. Use the

morecommandto seethe contents of myfile1.

- Use the date and who commands in sequence (in one line) such that the output of datewill display on the screen and the output of who will be redirected to a file calledmyfile2.Usethe morecommand tocheck thecontents of myfile2.

3) Writeasedcommandthatdeletes thefirst characterin eachlineinafile.

- Write a sed command that deletes the character before the last character in each line in afile.
- Writeasedcommandthat swapsthefirstand secondwords ineach lineinafile.

4) Pipeyour/etc/passwd filetoawk, andprint outthe homedirectory ofeach user.

- Develop an interactive grep script that asks for a word and a file name and then tells howmanylines contain that word.
- Repeat
- Partusingawk

5) Write a shell script that takes a command –line argument and reports on whether it isdirectory,a file, or something else.

- Write a shell script that accepts one or more file name as arguments and converts all ofthemto uppercase, provided theyexist in thecurrent directory.

6) Write a shell script that accepts a file name starting and ending line numbers as argumentsanddisplays all the lines between the given linenumbers.

7) a) Write a shell script that computes the gross salary of a employee according to thefollowing rules:
i)If basic salary is < 1500 then HRA =10% of the basic and DA =90% of the basic.
ii)Ifbasic salary is >=1500 then HRA =Rs500 and DA=98% of the basic The basic salary isenteredinteractively through the key board.

8)Writeashell scriptto searchgiven numberusing binarysearch.

9) a)Write a shell script that displays a list of all the files in the current directory to whichtheuser has read, writeand execute permissions.
b) Develop an interactive script that ask for a word and a file name and then tells how manytimesthat word occurredin thefile.
c) Write ashellscripttoperform the followingstringoperations:

i) Toextractasub-stringfromagivenstring.
ii) Tofind thelength ofagiven string.

10) Writeashellscriptwhich willdisplayArmstrongnumbers fromgiven arguments

11) Writeashell scriptto displayfactorialvaluefromgiven argumentlist

12) Write a C program that simulates ls
Command(Usesystem calls / directoryAPI)

DothefollowingShellprogramsalso

Write a shell script to check whether a particular user has logged in or not. If he hasloggedin, also check whetherhehas eligibility toreceiveamessageor not

1. Write a shell script which will display the username and terminal name who loginrecentlyin to the unix system
2. Writeashell script to findno. offiles in a directory
3. Writeashellscript tocheckwhetheragivennumber isperfect ornot
4. Writeamenu drivenshell scriptto copy,edit,rename anddeleteafile
5. Writeashellscript forconcatenationoftwo strings
6. Write a shell script which will display Fibonacci series up to a given number ofargument
7. Write a shell script to accept student number, name, marks in 5 subjects. Find total,average and grade. Display the result of student and store in a file called stu.datRules:avg>=80 then gradeA
   Avg<80&&Avg>=70 then grade
   BAvg<70&&Avg>=60 then grade
   CAvg<60&&Avg>=50 then grade
   DAvg<50&&Avg>=40 then grade
   EElsegradeF
8. Write a shell script to accept empno,empname,basic. Find DA,HRA,TA,PF usingfollowing rules. Display empno, empname, basic, DA,HRA,PF,TA,GROSS SAL andNETSAL.Also storealldetails in afilecalledemp.dat
   Rules: HRA is 18% of basic if basic > 5000 otherwise
   550DAis 35%of basic
   PF is 13% of
   basicIT is 14% of
   basicTAis10%ofba
   sic
9. Writeashellscripttodemonstratebreakandcontinuestatements
10. Writeashellscript to displaystring palindromefromgiven arguments
11. Writeashellscript todisplayreversenumbersfromgivenargumentlist
12. Writeashell script which will find maximum filesizein thegiven argument list

13. Write a shell script which will greet you “Good Morning”, ”Good Afternoon”, “GoodEvening’and “GoodNight” according to currenttime
14. Writeashell scriptto sorttheelements inaarrayusingbubble sorttechnique
15. Writeashell scripttofind largestelementin a array
16. Writean awkprogram toprint sum, avgofstudentsmarks list
17. Writeanawkprogramtodisplaystudentspass/fail report
18. Writean awkprogram to countttheno. ofvowels in agiven file
19. Write an awk program which will find maximum word and its length in the given inputFile
20. Writeashell scripttogeneratethemathematicaltables.
21. Writeashell scripttosort elementsofgiven arraybyusing selectionsort.
22. Write a shell script to find number of vowels, consonants, numbers, white spaces andspecialcharacters in a given string.
23. Writeashell script to searchgiven numberusing binarysearch.

B.Tech.IIYearIISemester **CourseStructure**

L	T	P	C
0	0	3	1.5

DATABASEMANAGEMENTSYSTEMSLAB

(IT)

CourseCode:P18CSL05 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: Nil

CourseObjectives:

AfterCompletion ofthis coursestudentmust beable to

1. Understand,analyzeandapplySQLcommandslikeDDL,DML,DCLtoperformdifferentDatabaseoperations
2. Understandandpractice PL/SQLblock,controlstatementsandcursors.
3. DevelopPL/SQLprogramsusing,functions,procedures,packagesandTriggers.

CourseOutcomes:

Afterlearning thecontents ofthis paperthestudentmust beable to

1. KnowaboutSQLDDL,DML,DCL,TCLcommands
2. Knowhowto writeSQLQuiresusingset operators
3. Knowabouthow to implement PL/SQLprograms usingconditional ,loopsstatements
4. Knowaboutimplementingof triggers,cursorsandexceptions
5. Knowaboutimplementingprocedures, functionsandpackages

ExperimentsList

1. Creation,alteringanddroppingoftablesandinsertingrowsintoatable(useconstraintswhile creating tables).

2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS,UNION,INTERSET, Constraints.

3. QueriesusingAggregatefunctions(COUNT,SUM,AVG,MAXandMIN),GROUPBY, HAVINGand Creationand dropping of Views.

4. QueriesusingConversionfunctions,STRINGfunctionsandDATEfunctions

5. i)Creation of simple PL/SQL program which includes declaration section, executablesectionand exception–Handling section

   ii)InsertdataintostudenttableanduseCOMMIT,ROLLBACKandSAVEPOINTin PL/SQLblock.

6. DevelopaprogramthatincludesthefeaturesNESTEDIF,CASEandCASEexpression.The programcanbeextendedusingtheNULLIFandCOALESCEfunctions.

7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loopsusingERRORHandling,BUILT–INExceptions,USEdefinedExceptions,RAISEAPPLICATIONERROR.8.Programsdevelopmentusingcreationofprocedures,passing parametersIN andOUT ofPROCEDURES.

8. Program development using creation of stored functions, invoke functions in SQLStatementsand writecomplex functions.

9. WriteaPL/SQLblockillustratingpackages.

10. WriteaPL/SQLcodeusing CURSOR.

11. DevelopProgramsusingBEFOREandAFTERTriggers,RowandStatementTriggersandInstead of Triggers.

B.TechIIYearIISemester **CourseStructure**

L	T	P	C
3	0	0	0

INDIANCONSTITUTION

SubjectCode:P18MCT05 **(IT)**

CoursePrerequisites: Nil

CourseObjectives:

1. ToknowaboutIndianconstitution.
2. Toknowaboutcentralgovernmentfunctionalitiesin India.
3. Toknowaboutstategovernment functionalitiesinIndia.
4. Toknowaboutfunctionsof IndianConstitution
5. ToknowaboutIndiansociety.

CourseOutcomes:

Uponcompletionofthecourse, studentswill beable to

1. Understandthebackgroundandstructureof Indian Constitution
2. Understandthe functionsoftheIndiangovernment
3. Understandthe functionsoftheStategovernment
4. Understandandabidetherulesoftheindian constitution.
5. Understandandappreciatedifferentcultureamongthepeople.

UNITI (9Lectures)

Introduction : Historical Background – Constituent Assembly of India– PhilosophicalfoundationsoftheIndianConstitution–Preamble–FundamentalRights– DirectivePrinciples of State Policy – Fundamental Duties – Citizenship – Constitutional Remedies forcitizens.

UNITII (9Lectures)

Structure And Function Of Central Government : Union Government – Structures of theUnion Government and Functions – President – Vice President – Prime Minister – Cabinet –Parliament– Supreme Court ofIndia – JudicialReview.

UNITIII (9Lectures)

StructureAnd FunctionOfStateGovernment

State Government – Structure and Functions – Governor – Chief Minister – Cabinet – StateLegislature– Judicial System inStates– High Courtsand otherSubordinateCourts.

UNITIV (9Lectures)

Constitution Functions : Indian Federal System – Center – State Relations – President'sRule – Constitutional Amendments – Constitutional Functionaries – Assessment of workingoftheParliamentary System in India.

UNITV (9Lectures)

Indian Society: Society : Nature, Meaning and definition; Indian Social Structure; Caste,Religion, Language in India; Constitutional Remedies for citizens – Political Parties andPressure Groups; Right of Women, Childrenand Scheduled CastesandScheduled Tribesand otherWeaker Sections.

Textbooks:

1. IntroductiontotheConstitutionofIndia,DurgaDasBasu,PrenticeHallofIndia,NewDelhi,1994.
2. IndianPoliticalSystem,R.C.Agarwal, S.ChandandCompany, NewDelhi,1997.
3. Society:AnIntroductionAnalysis,MaciverandPage,MacMilanIndiaLtd.,NewDelhi,2007.
4. SocialStratificationinIndia:IssuesandThemes,K.L.Sharma,JawaharlalNehruUniversity,New Delhi, 1997.

ReferenceBooks:

1. IntroductiontotheConstitutionofIndia,8/e,Sharma,BrijKishore,PrenticeHallofIndia, NewDelhi, 2011.
2. IndianPoliticalSystem,U.R.Gahai,NewAcademicPublishingHouse,Jalaendhar,1998.
3. IndianSocialProblems,R.N.Sharma, Media PromotersandPublishers Pvt.Ltd,1997.

WebReferences:

1. www.tutorialspoint.com/indian_polity/
2. www.clearias.com/indian-polity/
3. www.byjus.com/free-ias-prep/polity-notes-upsc/

B.TechIIYearIISemester **CourseStructure**

L	T	P	C
3	0	0	3

MANAGERIALECONOMICSANDFINANCIALANALYSIS

(IT)

SubjectCode:P18MBO01 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: Nil

CourseObjectives:

1. TheLearningobjectiveofthisUNITistounderstandtheconceptandnatureofManagerial Economic s and its relationship with other disciplines, Concept of DemandandDemand forecasting.
2. The Learning objective of this UNIT is to understand the concept of Production function,Input Output relationship, different Cost Concepts and Concept of Cost-Volume-ProfitAnalysis.
3. TheLearningObjectiveofthisUNITistounderstandtheNatureofCompetition,Characteristics of Pricing in the different market structure and significance of variouspricingmethods and toknow the different formsof Business organization
4. The Learning objective of this UNIT is to understand the different Accounting SystemspreparationofFinancialStatementsandusesofdifferenttoolsforperformanceevaluation
5. TheLearningobjectiveofthisUNITistounderstandtheconceptofCapital,Capitalization, Capital Budgeting and to know the techniques used to evaluate CapitalBudgetingproposals by using different methods

CourseOutcomes:

1. TheLearnerisequippedwiththeknowledgeofestimatingtheDemandforaproductandthe relationship between Priceand Demand.
2. OneshouldunderstandtheCostConceptsfordecisionmakingandtoestimatetheleastcostcombination ofinputs.
3. Onehastounderstandthenatureofdifferentmarketsand PriceOutputdeterminationundervariousmarket conditionsand withtheknowledgeofdifferent BusinessUNITs.
4. TheLearnerisabletoprepareFinancialStatementsandtheusageofvariousAccountingtoolsfor Analysis.
5. TheLearnerisabletoevaluatevariousinvestmentprojectproposalswiththehelpofcapitalbudgeting techniques fordecision making.

UNIT– I (8Lectures)

Introduction to Managerial Economics and demand Analysis : Definition of ManagerialEconomics-Scope of Managerial Economics and its relationship with other subjects-ConceptofDemand,TypesofDemand,DeterminantsofDemand-DemandSchedule,DemandCurve, Law of Demand and its limitations-Elasticity of Demand-Types of Elasticity ofDemandand Measurement-Demand forecasting and its Methods.

UNIT– II (10Lectures)

Production and Cost Analyses : Concept of Production function-Cobb-Douglas ProductionFunction – Law of one Variable proportions- Isoquants and Isocosts and choice of Least costfactor combination-Concepts of Returns to Scale and Economics of Scale-Different CostConcepts: Opportunity Costs, Explicit Costs and Implicit Costs -Fixed Costs, Variable Costsand Total Costs - Cost Volume Profit analysis - Determination of Break-Even Point (SimpleProblem)Managerial Significanceandlimitations of Breakeven point.

UNIT– III (8Lectures)

Introduction to Markets andTypes of Business Organization: Market Structures:PerfectCompetition,Monopoly,Monopolistic CompetitionandOligopoly– Features–Price and Output Determination– Other Methods of Pricing: Average Cost Pricing, LimitPricing, MarketSkimming Pricing,Internet Pricing.Featuresand EvaluationofSole Trader

– Partnership – Joint Stock Company –Private Public Partnership - State/Public Enterprisesandtheirforms– BusinessCycles –Meaning and Features– Phasesof BusinessCycle.

UNIT– IV (9Lectures)

Introductionto Accounting& FinancingAnalysis:IntroductiontoDoubleEntrySystems – Preparation of Financial Statements-Analysis and Interpretation of Financial Statements(SimpleProblems) GST basic concepts and Slab rates.

UNIT– V (10Lectures)

CapitalandCapitalBudgeting:CapitalBudgeting:MeaningofCapital-MeaningofCapitalBudgeting-TimevalueofMoney-MethodsofappraisingProjectprofitability:Traditionalmethods(paybackperiod,accountingrateofreturn)andModernMethods(Discounted cash flow method, Net present value method, internal rate of return method andprofitabilityindex)

TextBooks:

1. Managerial Economics and Financial Analysis, Dr. N. Appa Rao, Dr. P. Vijay Kumar,CengagePublications, New Delhi– 2011.
2. ManagerialEconomicsandFinancialAnalysis,Dr.A.R.Aryasri,TMH,2011.
3. ManagerialEconomicsandFinancialAnalysis,Prof.J.V.Prabhakararao,Prof.P.Venkatarao,RavindraPublication, 2011.

ReferenceBooks:

1. ManagerialEconomics,V.Maheswari,SultanChand,2009.
2. ManagerialEconomics,SumaDamodaran,Oxford2011.
3. ManagerialEconomics&FinancialAnalysis,Dr.B.KuberuduandDr.T.V.Ramana,Himalaya Publishing House, 2011.
4. ManagerialEconomics,VanithaAgarwal, PearsonPublications2011.
5. FinancialAccountingforManagers, SanjayDhameja,Pearson,2015.
6. FinancialAccounting, Maheswari,VikasPublications,2018.
7. ManagerialEconomicsandFinancialAnalysis,S.A.Siddiqui&A.S.Siddiqui,NewAgeInternational Publishers, 2012.

WebReferences:

1. www.lecturenotes.in/
2. www.nptel.ac.in/
3. www.crectirupati.com/

B.TechIIYearIISemester **CourseStructure**

L	T	P	C
3	0	0	3

INTRODUCTIONTOSIMULATIONSOFTWARE

(IT)

SubjectCode:P18ECO02 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: Nil

CourseObjective:

1. By the end of this course, students in this class will understand the basic principles ofprogrammingandofimplementingmathematicalconceptsbyusingMATLAB.Specifically,theywillbeabletowritenumericalalgorithmsandevaluatethecomputationalresultsusinggraphicalrepresentations.Theultimategoalistomotivatethestudents fortheirprofessionand for futurecourses incurriculum.

CourseOutcomes:

Bytheend ofthiscourse,thestudentwill beableto

1. TranslatemathematicalmethodstoMATLABcode
2. Generalizeresultsandrepresentdatavisually.
3. Studentswillbeabletoapplycomputermethodsforsolvingawiderangeof Engineeringproblems
4. Studentswillbeabletoutilizecomputerskillstoenhancelearningandperformanceinotherengineering andsciencecourses
5. Studentswillbeabletodemonstrateprofessionalisminteractionswithindustry

UNIT-1 (8Lectures)

IntroductiontoMatLab

Historical Background, Applications, Scope of MATLAB, Importance of MATLAB forEngineers,Features,MATLABWindows(Editor,WorkSpace,CommandHistory,Command Window).InstallationprocedureofMATLAB.OperationswithVariables,NamingandCheckingExistence,ClearingOperations,Commands,Datatypes,Operators.

UNIT-II (9Lectures)

DataandDataFlow inMatLab

Vectors, Matrix Operations & Operators, Reshaping Matrices, Arrays, Colon Notations,Numbers,Strings, Functions,FileInput-Output,Importingand Exporting ofdata.

UNIT-III (8Lectures)

Matlab Programming

Conditional Statements, Loops, Writing Script Files, Error Correction, Saving Files, WorkedoutExamples.

UNIT-IV (10Lectures)

Matlab Advanced

Plotting,Graphics,CreatingPlot&EditingPlot,GUI(GraphicalUserInterface).
Matlab-
Algebra,Calculus,Differential,Integration,Polynomials,solvingasystemoflinearequations.

UNIT-V (10Lectures)

Simulink

Introduction, Importance, Model Based Design, Tools, Mathematical Modeling, ConvertingMathematical Model into Simulink Model, Running Simulink Models, Importing ExportingData,Solver Configuration, Masking Block/Model.

TextBooks:

1. Getting Started With Mat lab: A Quick Introduction For Scientists AndEngineers(English)byRudraPratap,OXFORDUniversityPress,1998.
2. MatlabProgrammingby Y.KiraniSingh, B.B.Chaudhuri,PHIPublication,2008.
3. Understanding MATLAB, A Textbook for Beginners by S.N. ALAM & S.S.ALAM,2013.

ReferenceBooks:

1. MATLAB®ProgrammingFor EngineersFourthedition byStephenJ.Chapman,2012.
2. Applied Numerical Methods Using MATLAB 1st Edition by Won Y. Yang ,WenwuCao,Tae-Sang Chung, JohnMorris, 2005.
3. Signal processing simulation using MATLAB by Dr. V.S.K REDDY &Dr.Y.MadhaveeLatha, 2013.

WebReferences:

1. www.tutorialspoint.com/matlab/
2. www.ocw.mit.edu//

B.Tech.IIYearIISemester **CourseStructure**

L	T	P	C
3	0	0	3

ENGINEERINGMECHANICS

CourseCode:P18EST05 **Internal Marks: 40ExternalMarks:60**

CoursePrerequisites: EngineeringMathematics, Physics

CourseObjectives:

1. Study various types of force systems, basic principles of mechanics of rigid bodies andCalculationtheunknownforcesthroughtheuseofequilibriumequationsforarigidbody.
2. Analyzesimpletrusses usingmethod ofjoints andmethod ofsections
3. Studyanddeterminecentroid andcentreofgravityofvarious compositeshapes.
4. Study the concept of moment of inertia and the mathematical calculations involved infindingmoments of inertiaof two dimensional areas.
5. Learn principle of dynamics and apply it to impulse and momentum, work and energywhichis useful to analyzeturbo machineries.

CourseOutcomes:

Aftercompletion ofthecoursethe studentwill be able to

1. Applythe principleofrigidbody equilibrium and todetermineunknownforces.
2. Analyzetheforceof friction andtrusses using methodofJoints andmethod of sections.
3. Findthecentroidandcenterofgravityof compositeareas
4. Calculatethe momentof inertia of variousshapesbyintegrationandmomentofinertia ofcompositeareas.
5. Understandkinematics,kinetics and rotationofa rigidbody

UNIT– I (9Lectures)

Systems of forces: Resolution of coplanar and non-coplanar force systems (both concurrentand non-concurrent),Determining the resultant of planar force systems.Moment offorceandits applications and couples.

Equilibrium of force system: Free body diagrams, equations of equilibrium of planar forcesystemsand its applications.Problems on generalcaseofforcesystems.

UNIT– II (8 Lectures)

Analysis of Trusses*:* Introduction, force calculations using method of joints and method ofsections.

Theory of friction: Introduction, types of friction, laws of friction, application of friction toasinglebody & connecting systems. Wedgefriction

UNIT– III (9Lectures)

Centroid*:* Significance of centroid, moment of area, centroid of line elements, plane areas,compositeareas, theorems of Pappus & its applications.

Centerofgravity: CGofelementary andcompositebodies

UNIT– IV (9Lectures)

Moment of Inertia: Definition of MI, Polar Moment of Inertia, radius of gyration, transferstheorem, moment of Inertia of elementary & composite areas, and product of inertia. Massmomentsof inertiaforelementary andcompositebodies

UNIT– V (10Lectures)

Kinematics: Introduction, Rectilinear kinematics: Continuous motion, General curvilinearmotion, Curvilinear motion: Rectangular components, Motion of a projectile, curvilinearmotion: Normal and tangential components, Absolute dependent motion analysis of twoparticles.

Kinetics: Kinetics of a particle-D'Alemberts principle-Motion in a curved path – work,energy and power. Principle of conservation of energy- Kinetics of rigid body in translation,rotationwork done-Principleof work-energy-Impulse-momentum.

TextBooks:

1. Engineeringmechanics-staticsanddynamicsbyA.K.Tayal-Umeshpublications,Delhi(For numerical problems) , 2008.
2. EngineeringmechanicsbyS.Timoshenko,D.H.YoungandJVRao-TataMcGraw-HillPublishing CompanyLimited, NewDelhi(Forconcepts) , 2009.
3. EngineeringMechanicsby Dr.R. Kumaravelan,Scitech Publications,2014.

ReferenceBooks:

1. EngineeringMechanicsbyS.S.Bhavikatti, NewAgeinternational Publishers2012.
2. EngineeringMechanics-StaticsandDynamicsbyIrvingH.Shames,PearsonEducation,2006.
3. Singer'sEngineeringMechanics:StaticsandDynamics,K.VijayaKumarReddyandJSureshKumar, 3rd Edition SIUNITs-BS Publications, 2010.
4. ATextbookofEngineeringmechanicsstaticsanddynamicsbyJ.L.MeriamandL.Kraige, WileyIndia, 6th Edition , 2010.

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B.Tech.IIYearIISemester **CourseStructure**

L	T	P	C
0	0	3	1.5

JAVAPROGRAMMING LAB

InternalMarks:40
External Marks: 60CoursePrerequisites: Object OrientedProgramming Concepts

Subject Code:

P18CSL01Exercise-

1(Basics)

a). Write aJAVA programtodisplay defaultvalue ofallprimitivedatatypeofJAVA
b). Write a java program that display the roots of a quadratic equation ax2+bx=0.CalculatethediscriminateDandbasing onvalue of D,describethenature of root.

Exercise-2(Operations,Expressions,Control-flow,Strings)

a). Write a JAVA program to search for an element in a given list of elements using binarysearchmechanism.
b). Write a JAVA program to sort for an element in a given list of elements using bubblesort
(c). Write a JAVA program to sort for an element in a given list of elements using mergesort.
(d)Write aJAVA programusingStringBufferto delete,removecharacter.

Exercise-3 (Class,Objects)

a). Write a JAVA program to implement class mechanism. – Create a class, methods andinvokethem inside main method.
b). WriteaJAVAprogram toimplement constructor.

Exercise-4(Methods)

a). Write a JAVA program to implement constructor overloading.b).WriteaJAVAprogramimplement method overloading.

Exercise-5(Inheritance)

a). WriteaJAVAprogramtoimplementSingleInheritance
b). WriteaJAVAprogramto implementmultilevelInheritance
c). Write ajavaprogramforabstractclass tofind areas ofdifferentshapes

Exercise-6(Inheritance -Continued)

a). WriteaJAVAprogramgiveexamplefor“super”keyword.
b). Write a JAVA program to implement Interface. What kind of Inheritance can beachieved?

Exercise-7(Exception)

a).Write a JAVA program that describes exception handling mechanismb).WriteaJAVAprogram IllustratingMultiple catchclauses

Exercise– 8 (RuntimePolymorphism)

a). Write aJAVAprogram that implementsRuntime polymorphism
b). Write a Case study on run time polymorphism, inheritance that implements inaboveproblem

Exercise–9(UserdefinedException)

a). Write a JAVA program for creation of Illustrating throwb).WriteaJAVAprogramforcreationofIllustratingfinally
c). Write a JAVA program for creation of Java Built-in Exceptionsd).WriteaJAVAprogramforcreationofUser DefinedException

Exercise–10(Threads)

a). Write a JAVA program that creates threads by extending Thread class .First threaddisplay “Good Morning “every 1 sec, the second thread displays “Hello “every 2 secondsand the third display “Welcome” every 3 seconds ,(Repeat the same by implementingRunnable)

b). Writeaprogramillustrating**isAlive**and**join()**

c). Write aProgramillustratingDaemonThreads.

Exercise– 11(Packages)

a). Write aJAVAprogramillustrateclasspath

b). Write a case study on including in class path in your os environment of your package.c). Write a JAVA program that import and use the defined your package in the previousProblem

Exercise-12(Applet)

a).Write aJAVA program topaint likepaintbrush inapplet.

b)WriteaJAVAprogramtodisplay analog clock using Applet.

c). Write aJAVAprogramtocreatedifferent shapesandfill colorsusingApplet.

Exercise-13(Swings)

a).Write aJAVA programtobuild aCalculator inSwings

b).WriteaJAVAprogramto displaythedigital watchin swing tutorial.

Exercise–14(Swings- Continued)

a). Write a JAVA program that to create a single ball bouncing inside a JPanel.b).WriteaJAVAprogram JTreeasdisplaying areal treeupsidedown

IIIYEARISEMESTER								
S. No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18CST08	ComputerNetworks	3	0	0	3	40	60
2	P18ITT04	Design & Analysis ofAlgorithms	3	1	0	4	40	60
3	P18CST09	OperatingSystems	3	0	0	3	40	60
4	P18ITT05	DataScience	3	0	0	3	40	60
5	P18ITEX	ProfessionalElective–I	3	0	0	3	40	60
6	P18ITOX	*OpenElective-II*	2	0	0	2	40	60
7	P18ITL06	DataScience Lab	0	0	3	1.5	40	60
8	P18ITL07	ComputerNetworks & operating Systems Lab	0	0	3	1.5	40	60
9	P18MCT08	DesignThinking	0	0	4	2	40	60
TotalPeriods			**17**	**1**	**10**	**22**	**360**	**540**

ProfessionalElective–I		
S.No	**CourseCode**	**COURSE**
1	P18ITE01	AdvancedDataStructures(T1)
2	P18ITE02	SoftwareTesting(T2)
3	P18ITE01	PrinciplesofprogrammingLanguages(T3)
4	P18CSE03	ComputerGraphics(T4)

S.No	***Subject***	***Offered***	***OpenElective–II***
1	P18ITO05	BS&H	FuzzySetsandLogic
2	P18MBO03	HSMC	Professionalethics
3	P18ECO03	ECE	DataCommunications
4	P18CSO08	CSE/IT	ITsystemsManagement

B.TechIIIYearISemester

CourseStructure

L	T	P	C
3	0	0	3

COMPUTER NETWORKS(IT)

InternalMarks:40

CourseCode:P18CST08

ExternalMarks:60

CoursePrerequisites: OperatingSystemandComputerArchitecture.

CourseObjectives:

1. Understandstate-of-the-artinnetworkprotocols,architectures,andapplications.
2. TodemonstratetheTCP/IP&OSImodelmerits&demerits.
3. Constraintsandthoughtprocessesfornetworkingresearch.
4. ProblemFormulation-Approach- Analysis.
5. Toknowthe roleofvarious protocols in Networking.

CourseOutcomes:

1. Enables the students to visualize the different aspects of networks, protocols andnetworkdesign models.
2. Students should be understand and explore the basics of Computer Networks andVariousProtocols.
3. Studentwillbeina positiontounderstandthe WorldWideWebconcepts.
4. Students will be in a position to administrate a network and flow of informationfurther.
5. Studentcanunderstandeasily theconceptsof networksecurity,Mobile.
6. Enablesthestudentstocompareandselectappropriateroutingalgorithmsforanetwork.

UNITI: (9Lectures)

Introduction: Network, Uses of Networks, Types of Networks, Reference Models: TCP/IPModel, The OSI Model, Comparison of the OSI and TCP/IP reference model. Architectureof Internet.

Physical Layer: Guided transmission media, Wireless transmission media, SwitchingMultiplexing: Frequency Division Multiplexing, Time Division Multiplexing, CodeDivision Multiplexing

UNITII: (9Lectures)

Data Link Layer - Design issues, Error Detection & Correction, Elementary Data LinkLayerProtocols, Sliding window protocols.

Multiple Access Protocols - ALOHA, CSMA,CSMA/CD, CSMA/CA, Collision freeprotocols, Ethernet- Physical Layer, Ethernet Mac Sub layer, Data link layer switching: Useof bridges, learning bridges, spanning tree bridges, repeaters, hubs, bridges, switches,routersand gateways.

UNITIII: (10Lectures)

Network Layer: Network Layer Design issues, store and forward packet switchingconnection less and connection oriented networks-routing algorithms-optimality principle,shortest path, flooding, Distance Vector Routing, Count to Infinity Problem, Link StateRouting, Path Vector Routing, Hierarchical Routing; Congestion control algorithms, IPaddresses, CIDR, Subnetting, Super Netting, IPv4, Packet Fragmentation, IPv6 Protocol,TransitionfromIPv4 to IPv6, ARP, RARP.

UNITIV: (9Lectures)

Transport Layer: Services provided to the upper layers elements of transport protocoladdressing connection establishment, Connection release, Error Control & Flow Control,CrashRecovery.

The Internet Transport Protocols: UDP, Introduction to TCP, The TCP Service Model,The TCP Segment Header, The Connection Establishment, The TCP Connection Release,TheTCPSliding Window, TheTCPCongestion Control Algorithm.

UNITV: (8Lectures)

ApplicationLayer-Introduction,providingservices.

Applications layer paradigms: Client server model, HTTP, E-mail, WWW, TELNET,DNS;RSA algorithm.

TextBooks:

1. TanenbaumandDavidJWetherall,ComputerNetworks,5thEdition,PearsonEdu,2010.
2. DataCommunicationsandNetworking-BehrouzA.Forouzan,FifthEditionTMH,2013.

References:

1. ComputerNetworks:ATopDownApproach,BehrouzA.Forouzan,FirouzMosharraf,Mc Graw HillEducation**.**
2. AnEngineeringApproachtoComputerNetworks-S.Keshav,2ndEdition,PearsonEducation.
3. UnderstandingcommunicationsandNetworks,3rdEdition,W.A.Shay,CengageLearning .
4. ComputerNetworking:ATop-DownApproachFeaturingtheInternet,JamesF.Kurose,K. W. Ross, 3rdEdition, Pearson Education.

WebReferences:

1. en.wikipedia.org/wiki/
2. www.w3schools.com/
3. www.w3.org/
4. http://computing.dcu.ie/~humphrys/ca651/index.html
5. http://www.cs.ccsu.edu/~stan/classes/CS490/Slides/Networks4-Ch4-4.pdf
6. http://ecourses.vtu.ac.in/nptel/courses/Webcourse-contents/IIT-MADRAS/ComputerNetworks/pdf/
7. http://www.solarwinds.com/support/tutorials.aspx

B.TechIIIYearISemester

CourseStructure

	L	T	P	C
OPERATING SYSTEMS(IT)	**3**	**0**	**0**	**3**

InternalMarks:40

CourseCode:P18CST09 **ExternalMarks:60**

CoursePrerequisites: ComputerSystemfundamentals

CourseObjectives:

1. Analyzethetradeoffsinherent inoperatingsystemdesign.
2. Summarizethevariousapproachestosolvingtheproblemofmutualexclusioninanoperatingsystem.
3. UnderstandtheprinciplesofDeadlocks.
4. Evaluatethetrade-offsintermsofmemorysize(mainmemory,cachememory,auxiliarymemory) and processor speed.
5. Demonstratediskstoragestrategies,filestrategiesandsystemprotectionandsecuritywith different crypto models.

CourseOutcomes:

1. Describe the important computer system resources and the role of operating systemintheir management andIdentify the System.
2. DesignvariousScheduling algorithmsandApplythe principlesofconcurrency.
3. Designdeadlock,preventionandavoidance algorithms.
4. Compareandcontrastvariousmemorymanagementschemes.
5. Designand Implementa prototypefilesystems.

UNITI: (11Lectures)

Computer System and Operating System Overview: Overview of Computer Systemhardware, Operating System Objectives and functions, Evaluation of operating System,OperatingSystem Services, System Calls.

Process Management: Process Description, Process Control, Process States, CooperatingProcesses,Inter-processCommunication.

UNITII: (13Lectures)

CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, ThreadsOverview,Threading issues.

Synchronization: Background, The Critical-Section Problem, Peterson solution,Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems ofSynchronization,Monitors.

UNITIII: (11Lectures)

Dead Locks: System Model, Deadlock Characterization, Methods for Handling Deadlocks,DeadlockPrevention,DeadlockAvoidance,DeadlockDetection,RecoveryfromDeadlock.

UNITIV: (13Lectures)

Memory Management Strategies: Background, Swapping, Contiguous MemoryAllocation,Segmentation, Paging, Structureof PageTable.

Virtual Memory Management: Background, Demand Paging, Page Replacement,allocationofframes, Thrashing.

UNITV: (12Lectures)

File system Interface: The concept of a file, Access Methods, Directory structure, Filesystemmounting, file sharing, protection.

File System implementation: File system structure, allocation methods, free spacemanagement

Massstoragestructure, overviewofMass-storage structure,Disk scheduling.

TextBooks:

1. Operating System Concepts, Abraham Silberschatz, Peter Baer Galvin and Greg Gagne9thEdition, John Wiley and Sons Inc., 2012.
2. OperatingSystems– InternalsandDesignPrinciples,WilliamStallings,7thEdition,PrenticeHall, 2011.

References:

1.Modern Operating Systems, Andrew S. Tanenbaum, Second Edition, Addison Wesley,2001.

2. OperatingSystems:ADesign-OrientedApproach,CharlesCrowley,TataMcGrawHill Education",1996.
3. OperatingSystems:AConcept-BasedApproach,DMDhamdhere,SecondEdition,Tata McGraw-HillEducation,2007.

WebReferences:

1.https://nptel.ac.in/courses/106/106/106106144/
2. https://www.tutorialspoint.com/operating_system
3. https://www.youtube.com/playlist?list=PLEJxKK7AcSEGPOCFtQTJhOElU44J_JAun
4. https://www.pdf-archive.com/2016/12/25/operating-system-concepts-9th-edition/operating-system-concepts-9th-edition.pdf.

B.TechIIIYearISemester CourseStructure

L	T	P	C
3	1	0	4

DESIGN AND ANALYSIS OF ALGORITHMS(IT)

InternalMarks:40

CourseCode:P18ITT04 **ExternalMarks:60**

CoursePrerequisites: Mathematics,DataStructures

CourseObjectives:

1. Analyzethe asymptoticperformanceofalgorithms.
2. Writerigorouscorrectnessproofsforalgorithms.
3. Demonstrateafamiliaritywithmajoralgorithmsanddatastructures.
4. Applyimportantalgorithmicdesignparadigmsandmethodsofanalysis.
5. Synthesizeefficientalgorithmsincommonengineeringdesignsituations.

CourseOutcomes:

1. Identifytime,space complexitiesfordifferentproblems.
2. ImplementGreedyMethodtosolveProblems.
3. ImplementDynamicProgrammingtechniquetosolveProblems.
4. Able how to applyBacktracking and Branch & Bound Techniques in real-timeproblems.
5. Analyzethepattern-matching algorithms.

UNITI: (12Lectures)

Introduction: WhatisanAlgorithm,PseudocodeConventionsRecursiveAlgorithm,PerformanceAnalysis, SpaceComplexity, TimeComplexity,AsymptoticNotations.

Divide and Conquer: General Method, Binary Search, Finding the Maximum andMinimum,MergeSort, Quick Sort.

UNITII: (12Lectures)

The Greedy Method: The General Method, Knapsack Problem, Minimum-cost SpanningTrees, Prim's Algorithm, Kruskal's Algorithms, Huffman Coding, Optimal Merge Patterns,SingleSourceShortest Paths.

UNITIII: (12Lectures)

Dynamic Programming: The General Method, All Pairs Shortest Paths, Single – SourceShortestpathsGeneralWeights,StringEdition,0/1Knapsack,TravellingSalespersonProblem.

UNITIV: (12Lectures)

Backtracking: TheGeneralMethod,the8-QueensProblem,SumofSubsets,GraphColoring,Hamiltonian Cycles.

BranchandBound: TheMethod,The15-Puzzleproblem,TravelingSalesperson.

UNITV: (12Lectures)

NP-Hard and NP-Complete Problems: Travelling salesman problem NP complete, NP-HardGraphProblem (CliqueDecision Problem).

Pattern Matching Algorithms: Knuth-Morris-Pratt KMP String Matching Algorithm, RabinKarpString Matching Algorithm.

TextBooks:

1. FundamentalsofcomputeralgorithmsE.HorowitzS.Sahni,UniversityPress.
2. IntroductiontoAlgorithmsThomasH.Cormen,PHILearning.

References:

1. TheDesignandAnalysisofComputerAlgorithms,AlfredV.Aho,JohnE.Hopcroft,Jeffrey D.Ullman

2. AlgorithmDesign,JonKleinberg,Pearson.

WebReferences:

1.https://nptel.ac.in/courses/106/106/106106131/

2. https://www.tutorialspoint.com/design_and_analysis_of_algorithms/index.htm
3. https://slideplayer.com/slide/5877267/

B.TechIIIYearISemes ter

CourseStructure

L	T	P	C
3	0	0	3

DATASCIENCE

(IT)

InternalMarks:40

CourseCode:P18ITT05 **ExternalMarks:60**

CourseObjectives:

1. Tounderstandthemathematicalfoundationsrequiredfordatascience.
2. Todescribe aflowprocessfordatascienceproblems.
3. Tointroducebasicdatascience algorithmsanddatavisualization.
4. Tolearnmachine toolsandtechniques.
5. Tolearn theideas andtools fordatavisualization.

CourseOutcomes:

1. ExplainthebasictermsofLinearAlgebraandStatisticalInference.
2. DescribetheDataScienceprocessandhowitscomponentsinteract.
3. ApplyEDA andthe Data Scienceprocessin acasestudy.
4. ClassifyData Scienceproblems.
5. Analyzeandcorrelatetheresultsto thesolutions.
6. SimulateDataVisualizationinexcitingprojects.

UNIT1 **9Hrs.**

Linear Algebra: Algebraic view – vectors 2D, 3D and nD, matrices, product of matrix &vector, rank, null space, solution of over determined set of equations and pseudo-inverse.Geometric view - vectors, distance, projections, eigenvalue decomposition, Equations ofline,plane, hyperplane, circle, sphere, Hypersphere.

UNIT2 **9 Hrs.**

ProbabilityAndStatistics: Introduction to probability and statistics, Population andsample,NormalandGaussiandistributions,ProbabilityDensityFunction,Descriptivestatistics,notionofprobability,distributions,mean,variance,covariance,covariancematrix,understandingunivariateandmultivariatenormaldistributions,introductiontohypothesistesting, confidenceinterval forestimates.

UNIT3 **9 Hrs.**

Exploratory Data Analysis And The Data Science Process: Exploratory Data Analysisand the Data Science Process - Basic tools (plots, graphs and summary statistics) of EDA -Philosophy of EDA - The Data Science Process - Data Visualization - Basic principles,ideasand tools fordatavisualization

-Examplesofexcitingprojects-Data VisualizationusingTableau.

UNIT4 **9Hrs.**

MachineLearningTools,TechniquesAndApplications: SupervisedLearning,Unsupervised Learning,ReinforcementLearning,DimensionalityReduction,PrincipalComponent Analysis, Classification and Regression models, Tree and Bayesian networkmodels,Neural Networks, Testing, Evaluationand Validation ofModels.

UNIT5 **9 Hrs.**

Introduction To Python: Data structures-Functions-Numpy-Matplotlib-Pandas-problemsbased on computational complexity-Simple case studies based on python (Binary search,commonelements in list), Hash tables, Dictionary.

TEXT/ REFERENCEBOOKS

1. CathyO'NeilandRachelSchutt.DoingDataScience,StraightTalkFromTheFrontline.O'Reilly.2014.
2. IntroductiontoLinearAlgebra-ByGilbertStrang,Wellesley-CambridgePress,5th Edition.2016.
3. AppliedStatisticsandProbabilityForEngineers– ByDouglasMontgomery.2016.
4. JureLeskovek,AnandRajaramanandJeffreyUllman.MiningofMassiveDatasets.v2.1,CambridgeUniversity Press. 2014. (freeonline)
5. AvrimBlum,JohnHopcroftandRavindranKannan.FoundationsofDataScience.
6. JiaweiHan,MichelineKamberandJianPei.DataMining:ConceptsandTechniques,3rd Edition. ISBN 0123814790. 2011.
7. TrevorHastie,RobertTibshiraniandJeromeFriedman.ElementsofStatisticalLearning,2nd Edition.ISBN0387952845. 2009.(free online)

B.TechIIIYearISemester

CourseStructure

L	T	P	C
3	0	0	3

COMPUTER GRAPHICS(IT)

InternalMarks:40

CourseCode:P18CSE03 **ExternalMarks:60**

CoursePrerequisites: Mathematics

CourseObjectives:

1. Gainknowledgeontwo dimensionalgraphicsand their transformations.
2. Gainknowledgeabout graphicssystemsand drawingalgorithms.
3. Appreciateilluminationandcolormodels.
4. Understand the comparison between two and three dimensional graphics and theirtransformations.
5. Befamiliarwithclippingtechniques.

CourseOutcomes:

1. Applyoutputprimitivesongraphics.
2. Designtwodimensionalgraphics,Applyclippingtechniquestographics.
3. Designthreedimensional graphics,Transformations.
4. Design RGB Colour models and Apply Illumination and colour models.5.Designanimation sequences with tools.

UNITI: (9Lectures)

OVERVIEWOF GRAPHICS SYSTEMS:

Raster scan systems, Random scan systems, Output primitives – points and lines, linedrawingalgorithms,circleandellipsegeneratingalgorithms,filledareaprimitives.

UNITII: (9Lectures)

TWODIMENSIONALGRAPHICS:

Two dimensional geometric transformations – Matrix representations and homogeneouscoordinates, composite transformations; Two dimensional viewing – viewing pipeline,viewing coordinate reference frame; widow-to-viewport coordinate transformation, Twodimensional viewing functions; clipping operations – point, line, and polygon clippingalgorithms.

UNITIII: (9Lectures)

THREEDIMENSIONALGRAPHICS:

Three dimensional concepts; Three dimensional object representations – Polygon surfaces-Polygon tables- Plane equations – Polygon meshes; Curved Lines and surfaces, Quadraticsurface; Spline representations – Bezier curves and surfaces -B-Spline curves and surfaces.**TRANSFORMATIONANDVIEWING:**

Three dimensional geometric and modeling transformations – Translation, Rotation,Scaling,compositetransformations.

UNITIV: (9Lectures)

COLOURMODELS:

RGBcolourmodel–YIQcolourmodel–CMYcolourmodel–HSVcolourmodel–HLScolourmodel.

UNITV: (9Lectures)

ANIMATIONS&REALISMANIMATIONGRAPHICS:

Design of Animation sequences – animation function – raster animation – key framesystems – motion specification –morphing – tweening. COMPUTER GRAPHICSREALISM: Tiling the plane – Recursively defined curves – Koch curves – C curves –Dragons – space filling curves – fractals – Grammar based models – fractals – turtlegraphics– raytracing, Toolslike 3DStudio Max,Maya, Blender.

TextBooks:

1. John F. Hughes, Andries Van Dam, Morgan Mc Guire ,David F. Sklar , James D.Foley,StevenK.FeinerandKurtAkeley,"ComputerGraphics:PrinciplesandPractice",, 3rdEdition,Addison-WesleyProfessional,2013.(UNITI,II, III, IV).
2. Donald Hearnand Pauline Baker M, "Computer Graphics",PrenticeHall, NewDelhi,2007 (UNITV).

References:

1. DonaldHearnandM.PaulineBaker,WarrenCarithers,"ComputerGraphicsWithOpenGL", 4th Edition, Pearson Education, 2010.
2. JeffreyMcConnell,"ComputerGraphics:TheoryintoPractice",JonesandBartlettPublishers,2006.
3. HillFSJr.,"ComputerGraphics",MaxwellMacmillan",1990.
4. Peter Shirley, Michael Ashikhmin, Michael Gleicher, Stephen R Marschner, ErikReinhard, KelvinSung, and AK Peters, Fundamental of Computer Graphics, CRCPress,2010.
5. William M. Newmanand Robert F.Sproull, "Principles ofInteractiveComputerGraphics",McGrawHill 1978.

WebReferences:

1. https://nptel.ac.in/courses/106106090/
2. https://www.tutorialspoint.com/computer_graphics/index.htm
3. https://ptgmedia.pearsoncmg.com/images/9780321399526/samplepages/0321399528.pd

B.TechIIIYearISemester

CourseStructure

L	T	P	C
3	0	0	3

ADVANCEDDATASTRUCTURES(IT)

InternalMarks:40

Course Code:P18ITE01 **ExternalMarks:60**

CoursePrerequisites: DataStructures

CourseObjectives:

1. Describe and implement a variety of advanced data structures (hash tables, priorityqueues,balanced search trees, graphs).
2. Analyzethespace and time complexityof thealgorithmsstudied inthecourse.
3. Identifydifferentsolutionsforagivenproblem;analyzeadvantagesanddisadvantagesto different solutions.
4. Demonstrate an understanding of external memory and external search and sortingalgorithms.
5. Illustrationoftrieswhichsharesomepropertiesoftablelookup,variousissuesrelatedto thedesign offile structures

CourseOutcomes:

1. Illustratethedatastoringby usingkey,valuepattern.
2. Beabletounderstandandapplyamortizedanalysisondatastructuresincludingmergablehe aps, andqueues.
3. IllustrationofBalancedtreesandtheiroperations.
4. Have an idea of applications of algorithms in a variety of areas, including linearprogramming and duality, string matching, game-theory.
5. Describevariousfilesindexingtechniques.

Unit-I:

Introduction: Static Hashing- Hash Table- Hash Functions- Secure Hash Function- Overflow Handling- Theoretical Evaluation of Overflow Techniques, Dynamic Hashing- Motivation for Dynamic Hashing -Dynamic Hashing Using Directories- Directory lessDynamicHashing, Skip Lists.

Unit-II

Priority Queues: Model, Simple Implementation, Binary Heap-Structure Property-Heap-OrderProperty-BasicHeap Operations-OtherHeap Operation,Applicationsof Priority

Queues- The Selection Problem Event Simulation Problem, Binomial Queues- BinomialQueueStructure–BinomialQueueOperation- Implementation ofBinomialQueues.

Unit-III

EfficientBinarySearchTrees:

Optimal Binary Search Trees, AVL Trees, Red-Black Trees, Definition- Representation of aRed- Black Tree- Searching a Red-Black Tree- Inserting into a Red Black Tree- Deletionfroma Red-BlackTree-JoiningRed-Black Trees,Splitting aRed-Black tree.

Multi-waySearch Trees:

M-Way Search Trees, Definition and Properties- Searching an M-Way Search Tree, B-Trees, Definition and Properties- Number of Elements in a B-tree- Insertion into B-Tree- Deletion from a B-Tree- B+-Tree Definition- Searching a B+-Tree- Insertion into B+-tree- Deletionfrom a B+-Tree.

Unit-IV

Pattern matching and Tries : Pattern matching algorithms- the Boyer –Moore algorithm,theKnuth-Morris-Pratt algorithm

Tries:Definitionsand conceptsofdigital searchtree,Binary trie,Patricia,Multi-waytrie

UnitV

File Structures: Fundamental File Processing Operations-opening files, closing files,Readingand Writing filecontents,Special characters in files.

Fundamental File Structure Concepts- Field and record organization, Managing fixed-length,fixed-field buffers.

TextBooks :

1. DataStructures,APseudocodeApproach,RichardFGilberg,BehrouzAForouzan,Cengage.
2. FundamentalsofDATASTRUCTURESinC:2nded,,Horowitz,Sahani,Anderson-freed,Universities Press
3. DatastructuresandAlgorithmAnalysisinC,2nd edition, MarkAllenWeiss,Pearson

ReferenceBooks:

1. http://lcm.csa.iisc.ernet.in/dsa/dsa.html
2. http://utubersity.com/?page_id=878
3. http://freevideolectures.com/Course/2519/C-Programming-and-Data-Structures
4. http://freevideolectures.com/Course/2279/Data-Structures-And-Algorithms
5. FileStructures:AnObjectorientedapproachwithC++,3rded,MichelJFolk,GregRiccardi, Bill Zoellick

B.TechIIIYearISemester **CourseStructure**

L	T	P	C
3	0	0	3

PRINCIPLESOFPROGRAMMINGLANGUAGE

(IT)

SubjectCode:P18ITE01 **Internal Marks:**

40ExternalMarks:60

CoursePrerequisites: Nil

CourseObjectives:

1. Tounderstandanddescribesyntaxandsemantics ofprogramminglanguages.
2. Tounderstanddata,data types,andbasic statements.
3. Tounderstandcall-return architectureandwaysofimplementingthem.
4. Tounderstandobject-orientation,and concurrencyinprogrammingLanguages.
5. Todevelopprogramsinnon-proceduralprogrammingparadigms.

CourseOutcomes:

1. Describesyntaxandsemanticsofprogramminglanguages.
2. Explaindata,datatypes,andbasicstatementsofprogramminglanguages
3. Designandimplementsubprogramconstructs,Applyobject-oriented,andConcurrencyprogrammingconstructs.
4. DevelopprogramsinScheme,ML,andProlog.
5. Understandandadoptnewprogramminglanguages.

UNITI (8Lectures)

SYNTAX AND SEMANTICS : Evolution of programming languages, describing syntax,language translators, structure of compilers, context free grammars, attribute grammars,describingsemantics,lexical analysis,parsing, recursive -decent bottom -up parsing.

UNITII (9Lectures)

Data, Data Types, And Basic Statements: Names, variables, binding, type checking,scope, scope rules, lifetime of variable, primitive data types, strings, array types, associativearrays, record types, union types, pointers and references, expressions(arithmetic, relationaland boolean)overloaded operators, type conversions, assignment statements , mixed modeassignments,control structures –selection, iterations,

branching.

UNITIII (10Lectures)

Subprograms: Subprograms, design issues, local referencing, parameter passing, designissuesforfunctions.

Implementations: Semantics of call and return, implementing simple subprograms, stackanddynamiclocal variables, nested subprograms,blocks, dynamicscoping.

UNITIV (9Lectures)

Object- Orientation, Concurrency: Object – orientation, design issues for OOP languages,implementation of object, oriented constructs, concurrency, semaphores, Monitors, messagepassing,threads, statement level concurrency.

UNITV (9Lectures)

Functional & Logic Programming Languages: Fundamentals of functional programminglanguages, Programming with Scheme, – Programming with ML. Introduction to logic andlogicprogramming,– Programming with Prolog.

TextBooks:

1. Concepts of Programming Languages, Robert W. Sebesta, Tenth Edition, AddisonWesley,2012.
2. Programming Languages, Principles & Paradigms, 2ed, Allen B Tucker, Robert ENoonan,TMH, 2002.

ReferenceBooks:

1. The Scheme programming language, R. Kent Dybvig, Fourth Edition, MIT Press,2009.
2. Elements of ML programming, Jeffrey D. Ullman, Second Edition, Prentice Hall,1998.
3. ThecraftofProlog,RichardA.O'Keefe,MITPress,2009.
4. Programming in Prolog: Using the ISO Standard, W. F. Clocksin and C. S. Mellish, FifthEdition,Springer, 2003.

WebReferences:

1. www.geeksforgeeks.org/
2. www.slideshare.net/
3. www.ntu.edu.sg/
4. www.tutorialspoint.com/
5. www.computerscience.org/

B.TechIIIYearISemester

CourseStructure

L	T	P	C
3	0	0	3

SOFTWARETESTING

(PROFESSIONALELECTIVEI)

InternalMarks:40

CourseCode: **ExternalMarks:60**

CoursePrerequisites: SoftwareEngineering

CourseObjectives:

- Describetheprinciplesandproceduresfor designingtestcases.
- Providesupports todebugging methods.
- Actsasthereferenceforsoftwaretestingtechniquesandstrategies.

CourseOutcomes:

- Interpretamodelfortestingand understandtheprocessoftesting.
- VisualizecontrolflowgraphanddemonstratecompletepathtestingtoachieveC1+C2 and identify the complications in a transaction flow testing and anomalies indataflow testing.
- Apply reduction procedures to control flow graph and simplify it into a single pathexpression.
- Ableto understandtheuseof decisiontablesandKVchartsin testcasedesign.
- Identify effective approach for node reduction. And able to apply different testingtoolsto resolve theproblems in Real timeenvironment.

UNITI: (8Lectures)

Introduction: Purpose of Testing, Dichotomies, model for testing, consequences of bugs,Taxonomyof bugs.

FunctionalTesting: BoundaryvalueAnalysis,Equivalenceclasstesting,Decisiontablebasedtesting, Cause-effectgraphing technique.

UNITII: (9Lectures)

Flow Graphs and Path testing: Basic concepts, Predicates, Path predicates and achievablepaths,path sensitizing, path instrumentation,application ofpath testing.

Data flow testing: Basics of Data flow testing, strategies in dataflow testing, application ofdataflowtesting

UNITIII: (9Lectures)

Paths, path products and Regular expressions: Path products & Path expression,reductionprocedure,applications,regularexpressionsandflowanomalydetection.

UNITIV: (9Lectures)

LogicBasedTesting: Overview,decisiontables,pathexpressions,kvcharts,specifications.

State, state graphs and Transition Testing: State Graphs, good and bad state graphs, statetesting, testabilitytips.

UNITV: (9Lectures)

Graph matrices and Application: Motivational overview, matrix of graph relations, powerofamatrix, node reduction algorithm,

Automated Test Data Generation: What is Automated Test Data generation. Approachesto test Data Generation, Test data Generation using Genetic Algorithm, Test DataGenerationTools

TextBooks:

1. Softwaretestingtechniques –BorisBeizer,Dreamtech,secondedition.
2. SoftwareTesting-YogeshSingh,Camebridge

References:

1. BrainMarick;—TheCraftofSoftwareTesting‖;PrenticeHallSeriesin innovativetechnology.
2. RenuRajaniPradeep Oak; —Software Testing,Effectivemethods,Tools andTechniques‖;TMHI
3. Dr.K.V.K.K.Prasad,—SoftwareTestingTools‖–Dreamtech.
4. EdwardKit,—SoftwareTestingin theRealWorld‖–Pearson.
5. Perry,—EffectivemethodsofSoftwareTesting‖,JohnWiley.

WebReferences:

1. https://freevideolectures.com›ComputerScience›IITBombay
2. https://www.youtube.com/watch?v=gPE9emPFrwo
3. https://nptel.ac.in/courses/106105150
4. www.softwaretestinghelp.com
5. https://www.atlassian.com/landing/software-testing/

B.TechIIIYearISemester

CourseStructure

L	T	P	C
0	0	3	1.5

COMPUTER NETWORKS

LAB(IT)

InternalMarks:40

CourseCode:P18ITL07 **ExternalMarks:60**

CourseObjectives:

1. Understandthe functionalitiesofvariouslayersofOSImodel.
2. Understandtheoperating Systemfunctionalities

Part-A:

1. Implement the data link layer farming methods such as character, character stuffingandbit stuffing.
2. ImplementonadatasetofcharactersthethreeCRCpolynomials-CRC12,CRC16and CRC CCIP.
3. ImplementDijkstra'salgorithmto computetheShortestpath thruagraph.
4. Implementationofdistancevectorroutingalgorithm.
5. Takeanexamplesubnetofhosts.Obtainbroadcasttreeforit.
6. ImplementationofRSAalgorithm.

Part-B:

1. SimulatethefollowingCPUschedulingalgorithms
   a) RoundRobinb) SJFc)FCFS d)Priority
2. Implementationoffork(),wait(),exec()andexit()Systemcalls
3. Simulatethefollowing.
   a) Multiprogrammingwitha fixednumberoftasks(MFT)
   b) Multiprogrammingwithavariable numberoftasks(MVT)
4. SimulateBankersAlgorithmforDeadLockAvoidance
5. Simulatethefollowingpagereplacementalgorithms.
   a) FIFO b)LRU c)LFU
6. SimulatethefollowingFileallocationstrategies
   a) Sequenced b)Indexed c)Linked

B.TechIIIYearISemester

CourseStructure

L	T	P	C
0	0	3	1.5

DATA SCIENCE

LAB(IT)

InternalMarks:40

Course Code:P18ITL06 **ExternalMarks:60**

CourseObjectives:

1. Tointroducestudentstothevaluableconceptsofnumpy,pandasandmatplotlibinDataScience.
2. Todevelopanalyzingskillstothe studentsforsolvingpracticalproblems.
3. Togainexperienceofdoingindependentstudyand research.

CourseOutcomes:

1. DevelopbasicprogramsinPython.
2. Practiceand ImplementdifferentkindsofLists,DataFrame,Dictionaries
3. Createdatasetandanalyzethedataby usingnumpyandpandas.
4. Designdifferenttypesof plotsbyusingmatplotlibbyusingdataset.

Experiments:

1. InstallationandrunAnacondasoftware.
2. PythonProgram tofind ASCIIvalueofgiven number.
3. PythonProgram toMakeaSimple Calculator.
4. PythonProgramto CounttheNumber ofEachVowel.
5. PythonProgramto IllustrateDifferent SetOperations.
6. CreateListandapplydifferentfunctionsonit.
7. Createatuple and applydifferentbuilt-in functionsonit.
8. Applydifferentstringoperations.
9. Createadictionaryandapplydifferentoperationslikeaccessing,updatinganddeleting.
10. CreateDataFramesandapply mergeand joinfunctions onit.
11. CreateaVillageDatasetandexecutethebelowconditions:
    a) Check for any null values in the given dataset if you find any please remove themand
    continueto furthertasks.

b) calculatethecountofpeoplelivinginhutandusing smartTV.

c) Countthepeopleusingthedifferenttypeoftoiletsinallvillages.

d) For every village and for each and every income group count the number ofilliterates.

e)What is the Proportion of House Holds getting the income through Business did notunderstandGST.

f) HowManypeopleHavingSmartphoneandawareofdigitalfraud.

g) WhatistheratioofBusinessIncomeGroupstoOtherIncomeGroups inusing PHC.

12. Designdifferenttypesofplotsbyusingabovedataset

a) PlottheScatterplotGraphforthevaluesobtainedin11(b).

b) plotpiechartforthevaluesacrossdifferentvillagesobtainedin11(c).

c) PlottheBarGraphfortheValues Obtainedin11(d)byusingsubplots

PACEINSTITUTEOFTECHNOLOGY&SCIENCES,ONGOLE–532272(AUTONOMOUS)
AR-18REGULATIONSB.TechCOURSESTRUCTURE

IIIYEARII SEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18CST12	WebTechnologies	3	0	0	3	40	60
2	P18CSE08	Cryptography and NetworkSecurity	3	0	0	3	40	60
3	P18CST10	ArtificialIntelligence& MachineLearning	3	1	0	4	40	60
4	P18ITEX	ProfessionalElective-II	3	0	0	3	40	60
5	P18ITOX	*OpenElective–III*	2	0	0	2	40	60
6	P18ITT06	Theory of Automata andCompilerDesign	3	0	0	3	40	60
7	P18CSL09	WebTechnologiesLab	0	0	3	1.5	40	60
8	P18CSL07	ArtificialIntelligence& MachineLearningLab	0	0	3	1.5	40	60
9	P18ITM01	Mini Project	0	0	6	2	40	60
TotalPeriods			**17**	**1**	**12**	**23**	**360**	**540**

ProfessionalElective–II		
S.No	**CourseCode**	**COURSE**
1	P18CSE04	DataWarehousingandData Mining(T1)
2	P18CSE06	DistributedSystem(T2)
3	P18ITE05	UnifiedModelingLanguage (T3)
4	P18CSE07	MiddlewareTechnologies(T4)

S.No	***Subject Code***	***Offered ByDept.***	***OpenElective–III***
1	P18MBO04	HSMC	ManagementScience
2	P18ECO08	ECE	FundamentalsofEmbeddedSystems
3	P18ECO05	ECE	Microprocessors&MicroControllers
4	P18CSO12	CSE/IT	DatabaseSystems

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CourseStructure

L	T	P	C
3	0	0	3

WEB TECHNOLOGIE S(CSE&IT)

InternalMarks:40

CourseCode:P18CST12

External Marks: 60

CoursePrerequisites: Object Oriented Programming

CourseObjectives:

This course enables the students to identify the fundamental concepts for developing webapplicationusingPHPlanguageforserversidescripting,analyzehowdatacanbetransportedusingXML,developawebapplicationswithserversideprogrammingusingjavaservlets & JSP Servletsand client sidescripting withjavascript.

CourseOutcomes:

1. SummarizethebasictagsandpropertiesinHTML,XHTMLandCSS.
2. Createweb pagesusing.client sidescripting,validatingofformsandXML.
3. Identifytheroleofserver sidescriptingusingPHPprogramming
4. Designdynamicwebapplicationusingserverside programmingwithjavaservlets.
5. ContrastonhowtoconnectandretrievedatathroughwebpagefromdatabaseusingJDBC.

UNITI: (9Lectures)

HTMLCommontags-List,Tables,images, forms,Frames,LinksandNavigation,

CSS: Introduction, CSS Properties, Controlling Fonts, Text Formatting, Pseudo classes,Selectors.

UNITII: (9Lectures)

Client side Scripting: Introduction to Javascript: Javascript language – declaring variables,scope of variables, functions, event handlers (onclick, onsubmit etc.), Document ObjectModel,Form validation.

XML: Introduction to XML, Defining XML tags, their attributes and values, DocumentTypeDefinition, XML Schemas, Document Object Model.

UNITIII: (9Lectures)

Introduction to PHP: Creating PHP script, Running PHP script, Declaring variables, datatypes,arrays,strings,operators,expressions,controlstructures,functions,Readingdatafrom web form controls like text boxes, radio buttons, lists etc., Handling File Uploads,Connecting to database (MySQL as reference), executing simple queries, handling results,Handlingsessions and cookies.

UNITIV: (9Lectures)

A: Introduction to Servlets: Common Gateway Interface (CGI), Lifecycle of a servlet,deployingaservlet,

B: The Servlet API, Reading Servlet parameters, Reading Initialization parameters,HandlingHttp Request & Responses,Using Cookies and Sessions.

UNITV: (9Lectures)

Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, JSP application designwith MVC, Declaring variables and methods, sharing data between JSP pages, Requests anduserspassing controlanddatabetween pages,Sharingsessions andapplication data.

JDBC connectivity inJSP: Data base programming using JDBC, Studying javax.sql.*package,Accessing adatabasefromaJSPpage, Applicationspecificdatabaseactions.

TextBooks:

1. WebTechnologies,UttamKRoy,OxfordUniversityPress
2. TheCompleteReferencePHP–StevenHolzner, TataMcGraw-Hill

References:

1. Web Programming, building internet applications, Chris Bates 2nd edition, WileyDreamtech
2. JavaServerPages–HansBergsten,SPD O'Reilly
3. JavaScript,D.Flanagan,O'Reilly,SPD.
4. BeginningWebProgramming-JonDuckettWROX.
5. ProgrammingWorldWideWeb,R.W.Sebesta, FourthEdition,Pearson.
6. Internetand WorldWide Web –Howtoprogram,DietelandNieto,Pearson.

WebReferences:

1. https://www.w3schools.com/html/
2. https://www.javatpoint.com/servlet-tutorial
3. http://nptel.ac.in/courses/106105084/

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CourseStructure

L	T	P	C
3	1	0	4

ARTIFICIALINTELLIGENCEANDMACHINELEARNING

(IT)

InternalMarks:40

CourseCode:P18CST10 **External Marks:**

60CoursePrerequisites: None

CourseObjectives:

1. ExplainArtificial IntelligenceandMachineLearning
2. Illustrate AIandMLalgorithmand theiruseinappropriateapplications
3. Familiaritywithasetofwell-knownsupervised,unsupervisedandsemi-supervisedlearningalgorithms.
4. Theability toimplement somebasic machinelearning algorithms.
5. Understandingof howmachine learningalgorithms areevaluated.

CourseOutcomes:

1. Appraisethetheory ofArtificialintelligence.
2. Illustratetheworking of AIAlgorithms.
3. Demonstratethe applicationsofAI.
4. Recognizethecharacteristicsofmachinelearningthatmakeitusefultoreal-worldProblems.
5. Characterizemachinelearningalgorithmsassupervised,semi-supervised,andunsupervised.

UNITI: (11 Lectures)

Whatisartificialintelligence?,Problems,problemspacesandsearch,Heuristicsearch Techniques.

Knowledgerepresentationissues, Predicatelogic,Representationknowledgeusingrules.

UNITII: (13 Lectures)

ConceptLearning: Conceptlearningtask,Conceptlearningassearch,Find-Salgorithm,CandidateEliminationAlgorithm,InductivebiasofCandidateEliminationAlgorithm .**DecisionTreeLearning:**Introduction,Decisiontreerepresentation,Appropriateproblems,ID3 algorithm.

UNITIII: (12 Lectures)

Artificial NeuralNetwork: Introduction,NNrepresentation,Appropriateproblems,Perceptron, Back propagation algorithm. **Bayesian Learning:** Introduction, Bayes theorem,Bayestheorem andconcept learning.

UNITIV: (12 Lectures)

The ingredients of machine learning, Tasks: the problems that can be solved with machinelearning, Models: the output of machine learning, Features, the workhorses of machinelearning.

Binaryclassificationandrelatedtasks: Classification,Scoringandranking,Classprobability estimation

UNITV: (12 Lectures)

Supervised Learning : Regression Analysis, Linear Regression,Simple Linear Regression,MultipleLinearRegression,Backward Elimination,PolynomialRegression Classification

:Classification Algorithm ,Logistic Regression, K-NN Algorithm, Support Vector MachineAlgorithm,Naïve BayesClassifier

TextBooks:

1. ElaineRich,KevinKandSBNair,"ArtificialInteligence",3rd Edition,McGrawHillEducation, 2017.
2. MachineLearning:Theartandscienceofalgorithmsthatmakesenseofdata,PeterFlach,Cambridge.
3. MachineLearning,TomM.Mitchell,MGH.

References:

1. SarojKaushik,Artificial Intelligence,Cengagelearning
2. StuartRusell,PeterNorving,ArtificialIntelligence:AModernApproach,PearsonEducation 2nd Edition
3. UnderstandingMachineLearning:FromTheorytoAlgorithms,ShaiShalev-Shwartz,ShaiBenDavid,Cambridge.
4. MachineLearninginAction, PeterHarington,2012,Cengage.

WebReferences:

1. https://nptel.ac.in/courses/106106139/
2. https://nptel.ac.in/courses/106105077/
3. https://www.tutorialspoint.com/machine_learning_with_python/index.htm

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CourseStructure

L	T	P	C
3	0	0	3

CRYPTOGRAPHY & NETWORK

SECURITY(IT)

InternalMarks:40

CourseCode:P18CSE08 **External Marks:**

60CoursePrerequisites: Computer Networks

CourseObjectives:

1. The main objective of this course is to teach students to understand and how toaddressvarioussoftwaresecurityproblems inasecureandcontrolledenvironment.
2. During this course the students will gain knowledge in various kinds of softwaresecurity problems, and techniques that could be used to protect the software fromsecuritythreats.

CourseOutcomes:

1. Evaluatetheuseofencryption algorithmforachieving dataconfidentiality.
2. ApplySecurehash functionsforattaining data integrity.
3. Analysethesecuritymechanismsforachievingauthentication.
4. Analysetheprotocolsfor achievingavailability,accesscontroltoresourcesandprotocolsfornon-repudiation
5. Explorethe threatsand remedialmeasures forsystemsecurity .

UNITI: (10Lectures)

Introduction: Security Attacks(Interruption, Interception, Modification and Fabrication),Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, AccessControlandAvailability)and Mechanisms, AModel for Internetworksecurity.

Symmetric Key Cryptography: Symmetric Encryption Principles, Symmetric EncryptionAlgorithms(DES,TripleDES andAES), CipherBlock Modesof Operations.

UNITII: (8Lectures)

Public-Key Cryptography and Message Authentication: Approaches to MessageAuthentication, Secure Hash Functions, Message Authentication Codes, Public-KeyCryptographyPrinciples,Public-KeyCryptographyAlgorithms,DigitalSignatures.

UNITIII: (9Lectures)

ElectronicMailSecurity: PrettyGoodPrivacy(PGP)andS/MIME.

IP Security: IP Security Overview, IP Security Architecture, Authentication Header,EncapsulatingSecurityPayload,CombiningSecurityAssociations,Internet KeyExchange.

UNITIV: (9Lectures)

Web Security: Web Security Requirements, Secure Socket Layer (SSL) and TransportLayerSecurity (TLS), SecureElectronicTransaction (SET).

UNITV: (9Lectures)

Intruders and Malicious Software: Intruders, Intrusion Detection, Viruses and RelatedThreats,Trusted System.

Firewalls: Firewalls-Characteristics, Types of Firewalls, Placement of Firewalls, FirewallConfiguration.

TextBooks:

1. CryptographyandNetworkSecurity:PrinciplesandPractice,6th Edition,WilliamStallings ,Pearson Education,2011.
2. NetworkSecurityEssentials(ApplicationsandStandards),WilliamStallings,PearsonEdu cation.
3. IntroductiontoComputerNetworks&CyberSecurity,ChwanHwaWu,J.DavidIrwin,CR C Press, 2013.

References:

1. FundamentalsofNetworkSecuritybyEricMaiwald(Dreamtechpress).
2. PrinciplesofInformationSecurity,Withman,Thomson.
3. IntroductiontoCryptography,Buchmann,Springer.

WebReferences:

1. https://onlinecourses.nptel.ac.in/noc18_cs07/preview
2. https://www.coursera.org/learn/cryptography
3. https://www.coursera.org/specializations/computer-network-security
4. https://www.youtube.com/watch?v=Q-HugPvA7GQ&list=PL71FE85723FD414D7

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CourseStructure

L	T	P	C
3	0	0	3

DATA WARE HOUSING AND DATA MINING(CSE,CSIT,IT)

InternalMarks:40

CourseCode:P18CSE04 **External Marks:**

60CoursePrerequisites: Nil

CourseObjectives:

1. Studentswillbeenabledtounderstandandimplementclassicalmodelsandalgorithmsindata warehousing and data mining.
2. Theywilllearnhowtoanalyzethedata,identifytheproblems,andchoosetherelevantmodels andalgorithms to apply.
3. Theywillfurtherbeabletoassessthestrengthsandweaknessesofvariousmethodsandalgorithms and to analyzetheirbehavior.

CourseOutcomes:

1. Ability to know the functionalities of data mining and how the data to bepreprocessedto improve the data andmining results.
2. AbletoUnderstanddifferenttypesdatapreprocessingtechniques
3. Abletoanalyzedifferenttypesclassificationandpredictionmethods.
4. AbletoUsevarious kindsofassociation rulesandassociation analysisalgorithms
5. Ability to Use different types of cluster analysis and mining the complex types ofdata.

UNITI: (11Lectures)

Introduction: Why Data Mining? What Is Data Mining?1.3 What Kinds of Data Can BeMined?1.4 What Kinds of Patterns Can Be Mined? Which Technologies Are Used? WhichKinds of Applications Are Targeted? Major Issues in Data Mining. Data Objects andAttribute Types, Basic Statistical Descriptions of Data, Data Visualization, Measuring DataSimilarityand Dissimilarity

UNITII: (13Lectures)

Data Pre-processing: Data Preprocessing: An Overview, Data Cleaning, Data Integration,DataReduction, DataTransformation and DataDiscretization

UNITIII: (11Lectures)

Classification: Basic Concepts, General Approach to solving a classification problem,DecisionTree Induction:WorkingofDecisionTree,buildingadecisiontree,methodsfor

expressing an attribute test conditions, measures for selecting the best split, Algorithm fordecisiontreeinduction.

UNITIV: (13Lectures)

Classification: Alterative Techniques, Bayes' Theorem, Naïve Bayesian Classification,BayesianBeliefNetworks

Association Analysis: Basic Concepts and Algorithms: Problem Defecation, FrequentItem Set generation, Rule generation, compact representation of frequent item sets, FP-GrowthAlgorithm.**(Tan &Vipin)**

UNITV: (12Lectures)

Cluster Analysis: Basic Concepts and Algorithms: Overview: What Is Cluster Analysis?Different Types of Clustering, Different Types of Clusters; K-means: The Basic K-meansAlgorithm, K-means Additional Issues, Bisecting K-means, Strengths and Weaknesses;Agglomerative Hierarchical Clustering: Basic Agglomerative Hierarchical ClusteringAlgorithm DBSCAN: Traditional Density Center-Based Approach, DBSCAN Algorithm,Strengthsand Weaknesses.**(Tan &Vipin)**

TextBooks:

1. IntroductiontoDataMining:Pang-NingTan&MichaelSteinbach,VipinKumar,Pearson.(UNIT-I,III,IV,V)
2. DataMiningconceptsandTechniques,3/e,JiaweiHan,MichelKamber,Elsevier.(UNIT-I,II)

References:

1. DataMiningTechniquesandApplications:An Introduction,HongboDu,CengageLearning..
2. DataMining:VikramPudiandP.RadhaKrishna, Oxford.
3. DataMiningandAnalysis-FundamentalConceptsandAlgorithms;MohammedJ.Zaki,Wagner Meira, Jr,Oxford
4. DataWarehousingData Mining&OLAP,AlexBerson,StephenSmith,TMH.

WebReferences:

1. https://swayam.gov.in/nd1_noc20_cs12/preview
2. https://www.tutorialspoint.com/DataMining
3. https://www.youtube.com/watch?v=ykZ-UGcYWg&list=PLLspfyoOYoQcI6Nno3gPkq0h5YSe81hsc

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CourseStructure

L	T	P	C
3	0	0	3

DISTRIBUTEDSYSTEM

(CSE&IT) **InternalMarks:40**

CourseCode:P18CSE06 **External Marks:**

60CoursePrerequisites: DatabaseManagement System

CourseObjectives:

1. Understandhowdataiscollectedanddistributedinadatabaseacrossmultiplephysicallocations.
2. ToGainadvancedknowledgeoncreatingandmaintainingdatabasesindistributedenvironment,how tohandling all typesofqueries,query optimization techniques.
3. Toimprovedatabaseperformanceat end-users worksites.
4. Understandandtogetknowledgeofadvancedfeaturesofobjectorientationandinteroperabilityobject management in distributedenvironment.
5. Managementofdistributeddatawithdifferentlevelsoftransparency.

CourseOutcomes:

1. Achieve advanced knowledge on creating and maintaining databases in distributedenvironment.
2. Abletohandleall types ofqueries,queryoptimization techniques.
3. KnowhowtouseFoundationsofDistributedConcurrencyControl.
4. Recognizehow to Query Processing Layers in DistributedMulti-DBMS.
5. Identifywithhowtoimplement ObjectOrientationandInteroperability.

UNITI: (9Lectures)

DistributedDatabases:

Features of Distributed versus Centralized Databases, Distributed Database ManagementSystems (DDBMSs)

Principles Of Distributed Databases -Levels of Distribution Transparency: ReferenceArchitecture for Distributed Databases, Types of Data Fragmentation, Integrity ConstraintsinDistributed Databases.

UNITII: (9Lectures)

DistributedDatabaseDesign:

A Framework for Distributed Database Design, the Design of Database Fragmentation, theAllocationofFragments.

Translation of Global Queries to Fragment Queries: Equivalence Transformations ForQueries, Transforming Global Queries into Fragment Queries, Distributed Grouping andAggregate Function Evaluation, Parametric Queries.

The Management of Distributed Transactions: A Framework for TransactionManagement, Supporting Atomicity of Distributed Transactions, Concurrency Control forDistributedTransactions.

UNITIII: (9Lectures)

ConcurrencyControl:

Foundations of Distributed Concurrency Control, Distributed Deadlocks, ConcurrencyControlBasedonTimestamps,OptimisticMethodsforDistributedConcurrencyControl.

Reliability: Basic Concepts, Non-blocking Commitment Protocols, Reliability andConcurrency Control, Determining a Consistent View of the Network, Detection andResolutionof Inconsistency.

UNITIV: (9Lectures)

DistributedObjectDatabaseManagementSystems:

ArchitecturalIssues:AlternativeClient/ServerArchitectures,CacheConsistency.

Object Management: Object Identifier Management, Pointer Swizzling, Object MigrationDistributed Object Storage, Object Query Processing Architectures, Query ProcessingIssues, Query Execution. Transaction Management in Object DBMSs, Transactions asObjects.

UNITV: (9Lectures)

DatabaseInteroperability:

Database Integration: Scheme Translation, Scheme Integration.Query Processing Layers inDistributed Multi-DBMSs, Query Optimization Issues. Transaction and ComputationalModel,Multi databaseConcurrencyControl, Multi databaseRecovery.

ObjectOrientationandInteroperability:

Object Management Architecture, CORBA and Database Interoperability, DistributedComponentObject Model,COM/OLEand Database Interoperability.

TextBooks:

1. StefanoCeriandGiuseppePelagatti, *"DistributedDatabases–PrinciplesandSystems"*,1st Edition, Tata McGraw-Hill Edition,2008.

2. MTamerOzsu,PatrickValduriez,*"PrinciplesofDistributedDatabaseSystems"*,2ndEditi on, Pearson Education. (Last 2 Units).

References:

1.M.Tamerozsu,PatrickValduriez,*"PrinciplesofDistributedDataBaseSystems"*,3rdEdition, Springer, 2011.

WebReferences:

1. https://www.tutorialspoint.com/distributed_dbms/distributed_dbms_databases.htm
2. https://www.geeksforgeeks.org/distributed-database-system/

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CourseStructure

L	T	P	C
3	0	0	3

MIDDLEWARETECHNOLOGIES

(CSE&IT)

InternalMarks:40

CourseCode:P18CSE07 **External Marks:**

60CoursePrerequisites: Object Oriented Programming

CourseObjectives:

1. Thecourseprovides detailsabout themodern componentplatforms.
2. Basedonpracticalexamples,detailsaboutmodernmiddlewaretechnologieswillbeanalyzed.
3. Studentsgetthechancetogainin-depthknowledgeabouttheirfavoritemiddlewareplatform.

CourseOutcomes:

1. Havelearntthedifferenttypesofserverclientconcepts.
2. LearnthedesignofEJBarchitecture.
3. DeployEJBforspecificapplications.
4. Buildan applicationusing CORBA.
5. Buildanapplication usingCOM.

UNITI: (9Lectures)

CLIENT/SERVER CONCEPTS:

Client–Server–FileServer,Databaseserver,Groupserver,Objectserver,Webserver .Middleware – General Middleware – Service specific middleware. Client / Server Buildingblocks– RPC– Messaging – Peer– to-Peer.

UNITII: (9Lectures)

EJBARCHITECTURE:

EJB – EJB Architecture – Overview of EJB software architecture – View of EJBConversation– Buildingand Deploying EJBs– Rolesin EJB.

UNITIII: (9Lectures)

EJBAPPLICATIONS:

EJBSessionBeans–EJBentitybeans–EJBclients–EJBDeployment–BuildinganapplicationwithEJB.

UNITIV: (9Lectures)

CORBA:

CORBA – Distributed Systems – Purpose - Exploring CORBA alternatives – Architectureoverview–CORBAandnetworkingmodel–CORBAobjectmodel–IDL–ORB-Buildingan application with CORBA.

UNITV: (9Lectures)

COM:

COM – Data types – Interfaces – Proxy and Stub – Marshalling – Implementing Server /Client Interface Pointers – Object Creation, Invocation , Destruction – Comparison COMand CORBA – Introduction to .NET – Overview of .NET architecture – Marshalling -Remoting.

TextBooks:

1. RobertOrfali,DanHarkeyandJeriEdwards,"TheEssentialClient/ServerSurvivalGuide", Galgotia Publications Pvt. Ltd.,2002.
2. TomValesky,"EnterpriseJavaBeans",PearsonEducation,2002.

References:

1. JesseLiberty,"ProgrammingC#",2ndEdition,O'ReillyPress,2002.
2. Mowbray,"InsideCORBA",PearsonEducation, 2002.
3. JasonPritchard,"COMandCORBAsidebyside",AddisonWesley,2000.

WebReferences:

1. https://www.tutorialspoint.com/ejb/index.htm
2. https://www.ece.uvic.ca/~itraore/seng422-06/notes/arch06-6-1.pdf
3. https://nptel.ac.in/content/storage2/courses/106105087/pdf/m17L42.pdf

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CourseStructure

L	T	P	C
3	0	0	3

TheoryofAutomataandCompiler Design

(IT)

InternalMarks:40

CourseCode:P18ITT06 **External Marks: 60Course Prerequisites:** Programming Languages, computer architecture, data structures andsimplegraph algorithms, logicoralgebra.

CourseObjectives:

- Tounderstandthevariousphasesinthedesignofacompiler.
- Tounderstandthedesignoftop-downandbottom-upparsers.
- Tounderstandsyntaxdirectedtranslationschemes.
- Tointroducelexandyacctools.
- Tolearntodevelopalgorithmstogeneratecodeforatargetmachine.

CourseOutcomes:

- Abilitytodesign,develop,andimplementacompilerforanylanguage.
- Abletouselexandyacctoolsfordevelopingascannerandaparser.
- AbletodesignandimplementLLandLR parsers.
- Able to design algorithms to perform code optimization in order to improve theperformanceofa program intermsofspaceandtimecomplexity.
- Abilitytodesignalgorithms togeneratemachinecode

UNITI

Fundamentals: Introduction, Basic Concepts, Introduction to Formal Proofs, Inductive proofs,Introduction to Defining Language, Kleen Closures, Arithmetic Expressions, Graphs, Trees,Finite State Machine, Acceptance of Strings and Languages, DeterministicFinite Automata,Non-DeterministicFiniteAutomata.

UNITII

FiniteAutomata:Introduction,SignificanceofNondeterministicFiniteAutomation,NFA with Є – Transactions, Conversions and Equivalence , NFA to DFA Conversion,Minimization of FSM,EquivalencebetweenTwo FSMs.

UNITIII

GrammarFormalism:Introduction,RegularGrammar,EquivalencebetweenRegularGrammarandFA,ConversationofRight–LinearGrammartoLeftLinearGrammar,Context FreeGrammar.

Overview of Language Processing : Introduction, Preprocessors, Compiler, Assembler,Interpreters,Linkers andloaders,structureofcompiler, Phasesof compiler

UNITIV

Lexical Analysis : Introduction , Role of Lexical Analysis, Lexical Analysis Vs Parsing,Token,PatternsandLexeme,LexicalErrors,InputBuffering,RegularExpressions

UNITV

Syntax Analysis : Introduction, Role of Parser, Context Free Grammar(CFG), ClassificationofParsing Techniques, Top DownParsing, Recursive Descent Parser

TEXTBOOKS:

1. John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman (2007), Introduction to AutomataTheoryLanguages andComputation,3rdedition, PearsonEducation,India.

2. Compilers:Principles,TechniquesandTools,SecondEdition,AlfredV. Aho,Monica S.Lam,RaviSethi,JeffryD.Ullman,Pearson.

REFERENCEBOOKS:

1. K. L. P Mishra, N. Chandrashekaran (2003), Theory of Computer Science-AutomataLanguagesandComputation, 2ndedition, PrenticeHallofIndia, India.
2. CompilerConstruction-PrinciplesandPractice,KennethCLouden,CengageLearning.
3. Modern compiler implementation in C, Andrew W Appel, Revised edition,CambridgeUniversityPress.
4. FormalLanguages&AutomataTheory,A.A.Puntambekar,FirstEdition,TechnicalPublications.
5. CompilerDesign,A.A.Puntambekar,FirstEdition,TechnicalPublications

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CourseStructure

L	T	P	C
3	0	0	3

UNIFIEDMODELINGLANGUAGE(IT)

InternalMarks:40

CourseCode:P18ITE05 **External Marks: 60CoursePrerequisites:** SoftwareEngineering, OOPS

CourseObjectives:

- Tounderstandhowtosolvecomplexproblems
- Analyzeanddesignsolutionstoproblemsusingobjectorientedapproach
- StudythenotationsofUnifiedModelingLanguage

CourseOutcomes:

- Abilitytofindsolutionstothecomplexproblemsusingobjectorientedapproach
- Representclasses,responsibilitiesandstatesusingUMLnotation
- Identifyclassesandresponsibilitiesoftheproblemdomain
- Representthedatadependenciesofasimpleprogramusing UML
- RepresentuserandprogrammaticinteractionsusingUML

UNIT I:

Whywemodel:TheImportanceofModeling,PrinciplesofModeling,Object-OrientedModeling

IntroducingtheUML:AnoverviewoftheUML,AConceptualModeloftheUML,Architecture,SoftwareDevelopmentLife Cycle

UNITII:

BasicStructuralModeling:Classes,Relationships,CommonMechanisms,Diagrams

AdvancedStructuralModeling:AdvancedClasses,AdvancedRelationships,InterfacesTypes,andRoles, Packages, Instances

UNITIII:

StructuralModeling:ClassDiagrams,ObjectDiagrams

BasicBehavioralModeling:Interactions,UseCases,UseCaseDiagrams,InteractionDiagrams,Activity Diagrams

UNIT IV:

AdvancedBehavioralModeling:EventsandSignals,StateMachines,StatechartDiagrams,

ArchitecturalModeling:Components,Deployment,ComponentDiagrams,DeploymentDiagrams

UNITV:

CaseStudy:
LibraryManagementSystems,Onlineshopping,StudentInformationSystem,EmployeeInformationSystem

TEXTBOOKS:

1. Unified Modeling Language User Guide, The Grady Booch, James Rumbaugh, IvarJacobson,Publisher: Addison Wesley,First Edition

REFERENCEBOOKS:

1. “Object-orientedanalysisanddesignusingUML”,MaheshP.Matha,PHI
2. “Head first object-oriented analysis and design”, Brett D. McLaughlin, GaryPollice,DaveWest, O“Reilly

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CourseStructure

L	T	P	C
3	0	0	3

MANAGEMENTSCIENCE

InternalMarks:40

CourseCode:P18MBO04 **External Marks: 60COURSEOBJECTIVES:**

- To understand the application of management science in decision making process&its importance, evaluation of management thought, how organisation structure isdesignedand its principleand types.
- To understand the types of management about work study, how quality is controlled,controlcharts and inventory control andtheirtypes.
- Tolearnthemainfunctionalareasoforganisationi.e.,FinancialManagement,ProductionManagement,MarketingManagement,HumanresourceManagement,Productlifecyclesand Channels of Distribution.
- The learning objective of this unit is to understand the Development of Network andIdentifyingCritical Path.
- Thelearningobjectiveofthisunitistounderstandtheconceptofstrategicmanagement, and the basic concepts of MIS, MRP, JIT, TQM, Six sigma, CMM,Supply chain management, ERP, Business Process Outsourcing, bench marking andbusinessprocess re-engineering.

COURSEOUTCOMES:

- Able to apply the concepts & principles of management in real life.The student willbeable to design& develop organization structure foran enterprise.
- AbletoapplyPPC techniques,QualityControl,Work-study principlesinindustry.
- The student can identify and apply Marketing, HRM, and Production Strategies andimplementthem effectively.
- Able to develop PERT/CPM Charts for projects of an enterprise and estimate time &costof project.
- Able to develop Mission, Objectives, Goals & strategies for an enterprise in dynamicenvironment and apply modern management techniques MIS, ERP, TQM, SCM,BPR,and Bench Marking wherever possible

UNIT-I:

Introductiontomanagement: Concept–natureandimportanceofManagement–GenericFunctionsofManagement–EvaluationofManagementthought-TheoriesofMotivation–

Decisionmakingprocess-Designingorganizationstructure-Principlesoforganization– Organizational typology- International Management: Global Leadership and OrganizationalbehaviorEffectiveness(GLOBE) structure.

UNIT– II

Operations Management: Principles and Types of Management – Work study-StatisticalQuality Control- Control charts (P-chart, R-chart, and C-chart) Simple problems-MaterialManagement: Need forInventory control- EOQ,ABC analysis (simple problems) and TypesofABC analysis (HML,SDE, VED, andFSNanalysis).

UNIT– III

Functional Management: Concept of HRM, HRD and PMIR- Functions of HR Manager-Wage payment plans (Simple Problems)– Job Evaluation and Merit Rating - MarketingManagement- Functions of Marketing – Marketing strategies based on product Life Cycle,Channelsof distributions.Operationalising changethrough performancemanagement.

UNIT-IV

Project Management: (PERT/CPM): Development of Network – Difference between PERTandCPM IdentifyingCritical Path-Probability-ProjectCrashing (SimpleProblems)

UNIT–V

Strategic Management: Vision, Mission, Goals, Strategy – Elements of Corporate PlanningProcess–SWOTanalysis-StepsinStrategyFormulationandImplementation,GenericStrategyAlternatives. Global strategies.

Contemporary Management Practices: basic concepts of MIS, Total Quality Management(TQM),SixSigma,Supplychainmanagement,EnterpriseResourcePlanning(ERP), Businessprocess Re-engineering and Bench Marketing,

TextBooks:

1. Dr.P.VijayaKumar&Dr.N.AppaRao, '*ManagementScience'*Cengage,Delhi, 2012.

2. Dr.A.R.Aryasri, *ManagementScience'*TMH 2011.

References:

1. PhilipKotler&Armstrong:PrinciplesofMarketing,Pearsonpublications

2. BiswajitPatnaik:HumanResourceManagement,PHI,2011

3. Hittand VijayaKumar: Starategic Management, Cengagelearning

4. Seth&Rastogi:GlobalManagementSystems, Cengagelearning,Delhi,2011

WebReferences:

1. https://mrcet.com/downloads/digital_notes/ECE/II%20Year/Management%20Science.pdf

2. https://books.askvenkat.org/management-science-textbook-aryasri-pdf/

3. https://nptel.ac.in/courses/122/102/122102007/

4. https://nptel.ac.in/courses/122/108/122108038/

5. http://www.universityofcalicut.info/SDE/Management_science_corrected_on13April2016.pdf

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CourseStructure

L	T	P	C
2	0	0	2

FUNDAMENTALSOFEMBEDDEDSYSTEMS

InternalMarks:40

CourseCode: P18ECO08 **External Marks:**

60CoursePrerequisite: Microprocessors andMicrocontrollers

CourseObjectives:

1. BuildingBlocksofEmbeddedSystem
2. VariousEmbeddedDevelopmentStrategies
3. BusCommunicationinprocessors,Input/outputinterfacing.
4. Variousprocessorschedulingalgorithms.
5. BasicsofRealtimeoperatingsystemandexampletutorialstodiscussononere al timeoperatingsystemtool.

CourseOutcomes: Aftergoingthrough thiscoursethestudent willbeableto

1. Analyzethe Embeddedsystemsandsuggestforagivenapplication.
2. UtilizethevariousEmbeddedDevelopmentStrategies
3. AnalyzeaboutthebusCommunicationinprocessors.
4. Builtup theknowledgeonvariousprocessorschedulingalgorithms.
5. ExaminebasicsofRealtimeoperatingsystem.

UNITI (9 Lectures)

INTRODUCTIONTOEMBEDDEDSYSTEMS: IntroductiontoEmbeddedSystems –StructuralunitsinEmbeddedprocessor,selectionofprocessor&memory devices-DMA– Memory management methods- Timer andCountingdevices, Watchdog Timer, Real Time Clock, In circuit emulator, Target HardwareDebugging.

UNITIIEMBEDDEDNETWORKING (9Lectures)

EmbeddedNetworking:Introduction,I/ODevicePorts&Buses– SerialBuscommunication protocols RS232 standard – RS422 – RS 485 - CAN Bus - SerialPeripheralInterface (SPI)– InterIntegratedCircuits(I^2C)–needfordevicedrivers.

UNITIII **(9Lectures)**

EMBEDDED FIRMWARE DEVELOPMENTENVIRONMENT Embedded Product Development Life Cycle- objectives, different phases of EDLC, Modellingof EDLC;issuesinHardware-softwareCo-design,DataFlowGraph,statemachinemodel, Sequential Program Model, concurrent Model, object orientedModel.

UNITIVRTOSBASEDEMBEDDEDSYSTEMDESIGN **(9 Lectures)**

Introduction to basic concepts of RTOS- Task, process & threads, interrupt routinesinRTOS,MultiprocessingandMultitasking,Preemptiveandnon-preemptivescheduling, Task communication shared memory, message passing-, Inter processCommunication – synchronization between processes-semaphores, Mailbox, pipes,priorityinversion, priorityinheritance.

UNITV **(9Lectures)**

EMBEDDEDSYSTEMAPPLICATIONANDDEVELOPMENT: CaseStudy ofWashingMachine-AutomotiveApplication-SmartcardSystemApplication-ATMmachine–Digital camera

TextBooks:

1. Peckol,"EmbeddedsystemDesign",John Wiley&Sons,2010
2. LylaBDas,"EmbeddedSystems-An IntegratedApproach",Pearson,2013
3. Shibu.K.V,"IntroductiontoEmbeddedSystems",2e,McgrawHill,2017.

ReferenceBooks:

1. Raj Kamal, „Embedded System-Architecture, Programming, Design",McGrawHill,2013.
2. C.R.Sarma,"EmbeddedSystemsEngineering",UniversityPress(India)Pvt.Ltd,2013.
3. TammyNoergaard,"EmbeddedSystemsArchitecture",Elsevier,2006.
4. Han-WayHuang,"EmbeddedsystemDesignUsingC8051",CengageLearning,2009.
5. RajibMall"Real-TimesystemsTheoryandPractice"PearsonEducation,2007.

WebReferences:

1. https://www.edx.org/learn/embedded-systems
2. https://www.udemy.com/course/introduction-to-embedded-systems/

4.https://nptel.ac.in/courses/108/102/108102045/

5.

B.TechIIIYearIISemester

CourseStructure

L	T	P	C
2	0	0	2

MICROCPROCESSORS&MICROCONTROLLERS

InternalMarks:40

CourseCode: P18ECO05 **External Marks:**

60CoursePrerequisite: Switching Theoryand Logic Design

CourseObjectives:

1. Understandthetheoryandbasicarchitectures of8086microprocessors
2. Learnthe assemblylanguageprogramming.
3. Understand Interfacingof8086,With memoryandotherperipherals
4. Studythefeatures8051microcontrollerandprogramming.
5. LearnthefeaturesofPICmicrocontrollerfamilies.

CourseOutcomes: Aftergoingthrough this coursethestudent willbe ableto

1. Describethemicroprocessorcapabilityingeneralandexploretheevaluationofmicro processors.
2. Writetheassemblylanguageprogramming
3. Describe8086interfacingwithdifferentperipheralsandimplementprograms.
4. Describe hardware concepts, development of programs for 8051Microcontrollerandinterfacing.
5. DescribehardwarefeaturesofPICmicrocontrollerfamilies.

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UNIT-I (9Lectures)

8086ARCHITECTURE:Mainfeatures,pindiagram/description,8086microprocessor family, 8086 internal architecture, bus interfacing unit, execution unit,interrupts and interrupt responses, 8086 system timing, minimum mode and maximummodeconfiguration, Advanced microprocessors.

UNIT-II (8Lectures)

8086PROGRAMMING:Programdevelopmentsteps,instructions,addressingmodes, assembler directives, writing simple programs with an assembler, assemblylanguageprogram development tools.

UNIT-III **(10Lectures)**

8086 INTERFACING: Semiconductor memories interfacing (RAM,ROM), 8254software programmable timer/counter, Intel 8259 programmable interrupt controller,software and hardware interrupt applications, Intel 8237a DMA controller, Intel 8255programmableperipheralinterface,keyboardinterfacing,alphanumericdisplays(LED,7-segmentdisplay,multiplexed7-segmentdisplay,LCD),Intel8279programmablekeyboard/displaycontroller,steppermotor,A/Dand D/Aconverters.

UNIT-IV **(8Lectures)**

Intel8051MICROCONTROLLER: Architecture,Memoryorganization,counters/timers , serial data input/output, interrupts. Assembly language programming:Instructions, addressing modes, simple programs. Interfacing: keyboard, displays (LED,7-segmentdisplayunit),A/D and D/Aconverters.

UNIT-V **(10Lectures)**

PIC MICROCONTROLLER: Introduction, characteristics of PIC microcontroller,PIC microcontroller families, memory organization, parallel andserial input andoutput,timers,Interrupts,PIC16F877architecture,instructionsetofthePIC16F877.

TextBooks:

1. Microprocessors and Interfacing – Programming and Hard ware by Douglas VHall,SSSPRao,TataMcGrawHill EducationPrivate Limited,3rdEdition.
2. The 8051 Microcontroller & Embedded Systems Using Assembly and C byKennethJ.Ayala,DhananjayV.Gadre,CengageLearninbg,IndiaEdition.

ReferencesBooks:

1. TheIntelMicroprocessors-Architecture,Programming,andInterfacingbyBarryB.Brey, Pearson,Eighth Edition-2012.
2. Microprocessors and Microcontrollers-Architecture, Programming and SystemDesignbyKrishnaKant,PHILearningPrivate Limited, SecondEdition,2014.

WebReferences:

1. https://nptel.ac.in/courses/106108100/

2. https://www.sanfoundry.com/best-reference-books-microprocessors-microcontrollers/

B.TechIIIYearIISemester

CourseStructure			
L	**T**	**P**	**C**
2	**0**	**0**	**2**

DATABASE SYSTEMS(CSE)

InternalMarks:40

CourseCode:P18CSO12 **ExternalMarks:60**

CoursePrerequisites: None

CourseObjectives:

1. Providesstudentswiththeoreticalknowledge
2. Designadatabasesystemandunderstandtheissuesinvolvedinimplementingthedatabase.

CourseOutcomes:

1. Createconceptualdatamodel usingEntityRelationshipDiagram
2. Designconceptualandlogicaldatabasemodelsforan application.
3. Normalizerelationaldatabasedesignof an application.
4. Implementtheneed forIndexingandHashingand illustratetransactionalprocessing.
5. Implementthevariousfilesindexing techniques.

UNITI: (6Lectures)

Introduction: Database System Application, Purpose of Database Systems, View of Data,DatabaseLanguages,RelationalDatabase,DatabaseDesign,SpecialtyDatabases,DataStorageand Querying, DatabaseArchitecture, DatabaseUsers andAdministrators.

DatabaseDesignandE-RModel: OverviewoftheDesignProcess,TheE-RModel,Constraints,E-RDiagrams,E-RDesignIssues,ExtendedE-Rfeatures,ReductiontoRelationalSchemas, Other aspects of DatabaseDesign.

UNITII: (6Lectures)

RelationalModel: StructureofRelationDatabase,FundamentalRelationalAlgebraOperations,AdditionalRelationalAlgebraOperations,ExtendedRelationalAlgebraOperations,Modificationof theDatabase.

StructuredQueryLanguage: Introduction,BasicStructureofSQLQueries,SetOperations, Additional Basic Operations, Aggregate Functions, Null Values, Nested Subqueries,Views, JoinExpression.

UNITIII: (6Lectures)

Schema Refinement (Normalization): Problems Caused by Redundancy, Decompositions,ProblemsRelatedtoDecomposition,Functionaldependency,Properties of Functional

dependency, Normal forms based on functional dependency - 1NF, 2NF and 3NF, concept ofsurrogatekey,Boyce-Coddnormal form(BCNF), 4NF;Properties of Decompositions– Losslessjoin decomposition anddependency preserving decomposition.

UNITIV: (6Lectures)

Transaction Management: Transaction concept, Storage Structure, Transaction AtomicityandDurability,TransactionIsolationandAtomicity,Serializability,Recoverability,TransactionIsolation Levels, ImplementationofIsolationLevels.

Concurrency Control: Lock Based Protocols, Timestamp – Based Protocols ValidationBased Protocols, Multiples Granularity, Multiversion Schemes, Deadlock Handling, InsertandDeleteOperations.

UNITV: (6Lectures)

Overview of Storages And Indexing: Data on External Storage- File Organization andIndexing – Clustered Indexing – Primary and Secondary Indexes, Index Data Structures,Hash-BasedIndexing –Tree-BasedIndexing,ComparisonofFileOrganization.

TextBooks:

1. AbrahamSilberschatz,HenryFKorth,SSudharshan,*DatabaseSystemConcepts*,6thEditio n,McGraw-HillInternational Edition,2011
2. DateCJ,KannanA,SwamynathanS,*AnIntroductiontoDatabaseSystem*,8thEdition,Pearso nEducation-2006.
3. Database Principles Fundamentals of Design Implementation and Management,CorlosCoronel, Steven Morris, PeterRobb, CengageLearning,2012.
4. DatabaseManagementSystems,RajeshNarang,SecondEdition,2018.

References:

1. DatabaseSystemConcepts.5/eSilberschatz,Korth,TMH,2002.
2. IntroductiontoDatabase Systems,8/eCJDate,PEA,2000.
3. The Database book principles & practice using Oracle/MySql Narain Gehani,UniversityPress,2008.

WebReferences:

1. www.academy.vertabelo.com
2. www.w3schools.com
3. www.codecademy.com

B.TechIIIYearIISemester

CourseStructure

L	T	P	C
0	0	3	2

ARTIFICIALINTELLIGENCEANDMACHINELEARNINGLAB

Internal Marks : 40ExternalMarks:60

CourseCode:P18CSL07

CourseObjectives

- ExplainArtificial IntelligenceandMachineLearning
- Illustrate AIandMLalgorithmand theiruseinappropriateapplications
- Familiaritywithasetofwell-knownsupervised,unsupervisedandsemi-supervisedlearningalgorithms.
- Theability toimplement somebasic machinelearning algorithms.
- Understandingofhowmachinelearningalgorithms areevaluated.

ListofExperiments:

1. ImplementanddemonstratetheFIND-Salgorithmforfindingthemostspecifichypothesisbasedonagivensetoftrainingdatasamples.Read thetrainingdatafroma.CSVfile.

2. For a given set of training data examples stored in a .CSV file, implement anddemonstrate the Candidate-Elimination algorithm to output a description of the set of allhypothesesconsistent with the trainingexamples.

3. Writeaprogram todemonstrate theworkingof thedecisiontreebasedID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledgeto classifyanew sample.

4. Build an Artificial Neural Network by implementing the Backpropagation algorithmandtest thesameusingappropriate datasets.

5. Write a program to implement the naïve Bayesian classifier for a sample training datasetstoredasa.CSVfile. Computetheaccuracyoftheclassifier,consideringfewtestdatasets.

6. Assuming a set of documents that need to be classified, use the naïve BayesianClassifier model to perform this task. Built-in Java classes/API can be used to write theprogram.Calculatetheaccuracy,precision, andrecall foryourdataset.

7. WriteaprogramtoconstructaBayesiannetworkconsideringmedicaldata.Usethismodelto demonstratethe diagnosisofheartpatientsusingstandardHeartDiseaseDataSet. Youcan useJava/Python MLlibraryclasses/API.

8. ApplyEM algorithmto cluster aset ofdatastoredin a.CSVfile. Usethesamedata set for clustering using *k*-Means algorithm. Compare the results of these two algorithms andcomment on the quality of clustering. You can add Java/Python ML library classes/API in theprogram.

9. Writeaprogramtoimplement*k*-NearestNeighbouralgorithmtoclassifytheirisdata set.Printbothcorrectandwrongpredictions.Java/PythonMLlibraryclassescanbeusedforthisprobl em.

10. Implementthenon-parametricLocallyWeightedRegressionalgorithminordertofitdatapoints. Selectappropriatedataset foryourexperimentand draw graphs.

CourseOutcomes:

6. AppraisethetheoryofArtificialintelligence.
7. Illustratetheworkingof AIAlgorithms.
8. DemonstratetheapplicationsofAI.
9. Recognizethecharacteristicsofmachinelearningthatmakeitusefultoreal-worldProblems.
10. Characterizemachinelearningalgorithmsassupervised,semi-supervised,andunsupervised.

Note:Thecreation ofsampledatabaseforthe purposeoftheexperimentsis expectedtobepredecidedby the instructor

TextBooks:

4. ElaineRich,KevinKandSBNair,"ArtificialInteligence",3rd Edition,McGrawHillEducation, 2017.
5. MachineLearning:Theartandscienceofalgorithmsthatmakesenseofdata,PeterFlach,Cambridge.
6. MachineLearning,TomM.Mitchell,MGH.

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CourseStructure

L	T	P	C
0	0	3	1.5

WEB TECHNOLOGIES

LAB(CSE&IT)

InternalMarks:40

CourseCode:P18CSL09 **ExternalMarks:60**

CoursePrerequisites: JavaProgramming

CourseOutcomes:

5. Createastaticwebpagesusing HTMLandCSS.
6. DevelopJavaScriptcode fordatavalidation.
7. Integratefrontend andbackendtechnologiesinclient-serversystems.
8. Designdynamicweb applicationsusingPHPandJSP.
9. Demonstratedatabaseconnectivityfordevelopingwebapplications.

The students have to choose one of the following project and do the all 12 experimentsrelatedto that project.

1. Trainingandplacementcell.
2. SchoolEducationSystem.
3. UniversityManagement System.
4. HospitalManagementSystem.

The following are the experiments related to Training and Placement cell project. For theremaining projects, the concern lab instructor has to decide the experiments according to thewebsitesgiven as examples.

ListofExperiments

Experiment 1: Design the following static web pages required for a Training and placementcellweb site.
1)HomePage2) Login Page3) Registrationpage

Experiment 2: 4) Company Details Page 5) Alumni Details Page 6) Placement Staff DetailsPage

Experimen 3: 7) Student personal Info Page 8) Student Academic Info page 9) SemesterWisePercentage& theirAggregate page

Experiment4: Validate loginpageandregistrationpageusingregularexpressions.

Experiment 5: Apply different font styles, font families, font colors and other formattingstylesto theabovestaticweb pages.

Experiment 6: Install wamp server and tomcat server, access above developed static webpagesusing theseservers.

Experiment 7: Write a servlet/PHP to connect to the database, Insert the details of the userswhoregisterwiththewebsite,wheneveranewuserclicksthesubmitbuttonintheregistration.

Experiment 8: Write a JSP/PHP to connect to the database, Insert the details of the studentacademicinformation with student academicinfopage.

Experiment9: UserAuthentication:

Assumefourusersuser1user2,user3anduser4havingthepasswordspwd1,pwd2,pwd3andpwd4 respectively.Writeaservlet fordoingthe following.

1. CreateaCookie and addthesefouruserid'sand passwordstothisCookie.
2. ReadtheuseridandpasswordsenteredintheLoginform(week1)andauthenticatewiththeval ues (user idand passwords) available in thecookies.

Ifheisavaliduser(i.e.,user-nameandpasswordmatch)youshouldwelcomehimbyname(user-name)elseyoushould display"Youarenotanauthenticated user".
Useinit-parameterstodothis.Storetheuser-namesandpasswordsinthewebinf.xmlandaccessthem in theservletby usingthegetInitParameters()method.

Experiment10: WriteaJSPwhich doesthefollowingjob:

Authenticatetheuserwhenhesubmitsthelogin formusingtheusername andpasswordfromthedatabase.

Experiment11:writeaJSPtoinsertthestudent'ssemesterwisepercentagesandcalculateaggregate and insert intodatabase.

Experiment12:writeaJSPtosearchthestudentsaccordingtotheiraggregateandproducesortedlist or according totheirEnroll number.

IVYEARISEMESTER									
S. No	**CODE**	**COURSE**		**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	P18ITT08	WebScriptinglanguages		3	0	0	3	40	60
2	P18CST11	BigDataTechnologies		3	0	0	3	40	60
3	***ProfessionalElective–III***			3	0	0	3	40	60
	P18CSE22	PatternRecognition(T1)							
	P18ITE06	ConcurrentParallelProgramming(T2)							
	P18CSE13	Multimedia and ApplicationDevelopment(T 3)							
	P18CSE12	ImageProcessing(T4)							
4	***ProfessionalElective-IV***			3	0	0	3	40	60
	P18CSE19	Internet ofThings(T1)							
	P18ITE07	SoftwareProjectManagement (T2)							
	P18CSE15	SoftComputingTechniques(T3)							
	P18CSE16	CloudComputing(T4)							
5	***OpenElective-IV***			2	0	0	2	40	60
	P18MBO05	HSMC	EntrepreneurialDevelopment						
	P18MET02	MECH	ROBOTICS						
	P18ECO11	ECE	Introduction to WirelessNetworks						
	P18ITO01	CSE/IT	DistributedDatabases						
6	P18ITL03	ScriptinglanguageLab		0	0	3	1.5	40	60
7	P18CSL09	Hadoop& Big DataLab		0	0	3	1.5	40	60
8	P18ITL04	AndroidApplicationDevelopmentLab		0	0	3	2	40	60
9	P18CSL12	Employabilityskills		2	0	0	2	40	60
TotalPeriods				**16**	**0**	**9**	**21**	**360**	**540**

B.TechIVYearISemester

CourseStructure

L	T	P	C
3	1	0	3

WEBSCRITINGLANGUAGES(

IT)

InternalMarks:40

CourseCode: **ExternalMarks:60**

CoursePrerequisites: ObjectOrientedProgramming

CourseObjectives:

. Thiscourseintroducesthe scriptprogrammingparadigm.
- Introducesscriptinglanguagessuchas Perl,RubyandTCL.
- LearningTCL.

CourseOutcomes:

- Comprehendthedifferencesbetweentypicalscriptinglanguagesandtypicalsystem and applicationprogramminglanguages.
- Gainknowledgeof thestrengths andweaknessofPerl,TCL andRuby;and selectanappropriate languageforsolving a given problem.
- Acquireprogrammingskillsinscriptinglanguage.

UNITI: (9Lectures)

Introduction to Scripting Languages: Overview, Ruby, Rails, the structure and Executionof Ruby Programs, Package Management with RUBYGEMS, Ruby and web: Writing CGIscripts,cookies, Choice of Webservers, SOAPand web services

UNITII: (9Lectures)

Extending Ruby: Ruby Objects in C, the Jukebox extension, Memory allocation, Ruby TypeSystem,Embedding Ruby to OtherLanguages, Embedding aRuby Interpreter

UNITIII: (9Lectures)

IntroductiontoPERLandScripting

ScriptsandPrograms,OriginofScripting,ScriptingToday,CharacteristicsofScriptingLanguages, Usesfor Scripting Languages,WebScripting, and the universe of ScriptingLanguages. PERL-Names and Values, Variables, Scalar Expressions, Control Structures,arrays,list, hashes, strings, pattern and regular expressions, subroutines.

UNITIV: (9Lectures)

AdvancedPerl

Finerpointsoflooping,packandunpack,filesystem,eval,datastructures,packages,modules, objects, interfacing to the operating system, Creating Internet ware applications,DirtyHandsInternet Programming, securityIssues.

UNITV: (9Lectures)

TCL: TCL Structure, syntax, Variables and Data in TCL, Control Flow, Data Structures,input/output, procedures, strings, patterns, files, Advance TCL- eval, source, exec and uplevelcommands,Namespaces,trappingerrors,eventdrivenprograms,makingapplicationsinternetaware,NutsandBoltsInternet Programming,SecurityIssues,CInterface.

TK:TK-VisualToolKits,FundamentalConceptsofTK,TKbyexample,EventsandBinding,Perl-TK.

TextBooks:

1. TheWorldofScriptingLanguages,DavidBarron,WileyPublications.
2. RubyProgramminglanguagebyDavidFlanagan andYukihiroMatsumotoO'Reilly
3. "Programming Ruby" The Pramatic Progammers guide by Dabve Thomas Secondedition

References:

1. Open Source Web Development with LAMP using Linux Apache, MySQL, Perl andPHP,J.LeeandB. Ware(Addison Wesley)Pearson Education.
2. PerlbyExample,E.Quigley,Pearson Education.
3. ProgrammingPerl,Larry Wall,T.ChristiansenandJ.Orwant,O'Reilly,SPD.
4. TclandtheTkToolkit, Ousterhout,PearsonEducation.
5. PerlPower,J.P.Flynt,CengageLearning.

WebReferences:

4. https://www.w3schools.com/html/
5. https://www.javatpoint.com/servlet-tutorial
6. http://nptel.ac.in/courses/106105084/

B.TechIVYearISemester

CourseStructure

L	T	P	C
3	0	0	3

BIGDATATECHNOLOGIES

InternalMarks:40

CourseCode:P18CST11 **External Marks:**

60CoursePrerequisites: Fundamentals of JavaProgramming

CourseObjectives:

1. Understandthebigdatacharacteristics,importanceandHDFS
2. ApplytheMapReduceconceptsto workwiththe bigdata.
3. AbletoUnderstandHadoopI/O.
4. ApplyPiglatin,ApacheSparktoolstosolvethewordcountexample.
5. ApplyHivestructuretoHadoopdata.

CourseOutcomes:

1. UnderstandHDFSArchitecturetostorethedatainadistributedenvironment
2. ApplyMapReduce conceptstowork withthebigdata.
3. ImplementationofcustomwritableinHadoopI/O.
4. Ableto ApplyPig latin,ApacheSpark toolsto workwith bigdata problems
5. Applyhiveclientto storeandwork withbigdata.

UNITI: (9Lectures)

Introduction to Big Data: Big Data-definition, Characteristics of Big Data (Volume,Variety,Velocity, Veracity, Validity),Importanceof Big Data.

Working with Big Data: Google File System, Hadoop Distributed File System (HDFS) – BuildingblocksofHadoop(Namenode,Datanode,SecondaryNamenode, JobTracker,TaskTracker), Introducing and Configuring Hadoop cluster (Local, Pseudo-distributed mode,FullyDistributed mode),Configuring XML files.

UNITII: (9Lectures)

Writing MapReduce Programs: A Weather Dataset, Understanding Hadoop API forMapReduceFramework(OldandNew),BasicprogramsofHadoopMapReduce:Driverco de,Mapper code, Reducer code, RecordReader, Combiner,Partitioner

UNITIII: (9Lectures)

HadoopI/O:TheWritableInterface,WritableComparableandcomparators,WritableClasses:WritablewrappersforJavaprimitives,Text,BytesWritable,NullWritable,ObjectWritable and GenericWritable, Writable collections, Implementing a Custom Writable:ImplementingaRawComparator for speed, Customcomparators.

UNITIV: (9Lectures)

Pig: Hadoop Programming Made Easier Admiring the Pig Architecture, Going with the PigLatin Application Flow, Working through the ABCs of Pig Latin, Evaluating Local andDistributed Modes of Running Pig Scripts, Checking out the Pig Script Interfaces, Scriptingwith Pig Latin.

Apache Spark: Introduction to Apache spark, features, components, RDD, installation,writingword count using apachespark, hadoop vsspark.

UNITV: (9Lectures)

Applying Structure to Hadoop Data with Hive: Saying Hello to Hive, Seeing How theHiveisPutTogether,GettingStartedwithApacheHive,ExaminingtheHiveClients,Working with Hive Data Types, Creating and Managing Databases and Tables, Seeing HowtheHive Data ManipulationLanguageWorks, Queryingand Analyzing Data.

TextBooks:

1. Hadoop: The Definitive Guide by Tom White, 3rd Edition, O'reilly 2009 (UNIT-I,II,III,IV,V).
2. DirkdeRoos,ChrisEaton,GeorgeLapis,PaulZikopoulos,TomDeutsch"UnderstandingBigDataAnalyticsforEnterpriseClassHadoopandStreamingData",1st Edition, TMH,2012 (UNIT-I).

References:

1. HadoopinAction byChuckLam, MANNINGPubl.
2. HadoopinPracticebyAlexHolmes,MANNING Publishers
3. Miningofmassivedatasets,AnandRajaraman,JeffreyDUllman,WileyPublications.

WebReferences:

1. https://nptel.ac.in/courses
2. https://www.tutorialspoint.com/spark
3. https://www.youtube.com/watch?v=zez2Tv-bcXY
4. https://www.youtube.com/watch?v=VSbU7bKfNkA

B.TechIVYear-ISemester **Coursestructure**

L	T	P	C
3	0	0	3

PatternRecognition

CourseCode:P18CSE22 **Internal Marks:40External Marks:60**

CoursePrerequisite: ImageProcessing,Artificial Intelligence,MachineLearning

CourseObjectives:

1. Toenablethestudents tounderstandthe fundamentalsofPatternrecognition.
2. To make the students should learn to choose an appropriate feature, Patternclassificationalgorithm for apattern recognition problem
3. To make the students properly implement the algorithm using modern computingtoolssuch as Matlab, OpenCV, C, C++and correctly.
4. Toanalyze,andreporttheresultsusingpropertechnicalterminology

CourseOutcomes:

Attheend ofthis coursethe student will beableto

1. understandthefundamentals ofpattern recognitionandmachine learningalgorithms
2. designandimplementcertainimportantpatternrecognitiontechniques
3. developapplicationsby usingpatternrecognitionalgorithms.
4. constructmachinelearningmodelsforpattern recognition
5. presentthevariouspatternsusingmathematicalmodels.

UNITI **(8Lectures)**

Introduction to Pattern Recognition: Data Sets for Pattern Recognition, Different Paradigmsfor Pattern Recognition,Pattern Representation: Data Structures for Pattern Representation,Representation of Clusters, Proximity Measures, Size of Patterns, Abstractions of the DataSet,Feature, FeatureSelection,

UNITII **(10Lectures)**

NearestNeighborBasedClassifiers:NearestNeighborAlgorithm,VariantsoftheNNAlgorithm,Use of the Nearest Neighbor Algorithm for Transaction Databases, EfficientAlgorithms,DataReduction,PrototypeSelection,BayesClassifier:BayesTheorem,Minimum error rate classifier, Estimation of Probabilities, Comparison with the NNC, NaiveBayesClassifier,

UNITIII **(10Lectures)**

HiddenMarkovModels:MarkovModelsforClassification,HiddenMarkovModels,Classification UsingHMMs,ClassificationofTestPatterns.DecisionTrees:Introduction,

Decision Trees for Pattern Classification, Construction of Decision Trees, Splitting at theNodes,Overfitting and Pruning, ExampleofDecision TreeInduction.

UNITIV (12Lectures)

Support Vector Machines: Introduction, Linear Discriminant Functions, Learning the LinearDiscriminant Function, Neural Networks, SVM for Classification, Linearly Separable Case,Non-linearlySeparableCase.CombinationofClassifiers:Introduction,MethodsforConstructing Ensembles of Classifiers, Methods for Combining Classifiers, Evaluation ofClassifiers,Evaluation ofClustering

UNITV (10Lectures)

Clustering: Clustering and its Importance, Hierarchical Algorithms, Partitional Clustering,Clustering Large Data Sets, An Application to Handwritten Digit Recognition: Description oftheDigitData,Pre-processingofData,ClassificationAlgorithms,SelectionofRepresentativePatterns.

TextBooks :

1. Pattern Recognition an Introduction, V. Susheela Devi M. Narasimha Murty,UniversityPress.
2. Pattern Recognition, Segrios Theodoridis,Konstantinos Koutroumbas, Fourth Edition,Elsevier

ReferenceBooks:

1. Pattern Recognition and Image Analysis, Earl Gose, Richard John Baugh, Steve Jost,PHI2004.
2. C. M. Bishop, „Neural Networks for Pattern Recognition“, Oxford University Press,Indian Edition, 2003.
3. PatternClassification,R.O.Duda,P.E.HartandD.G.Stork,JohyWiley,2002

WebReferences:

1. https://en.wikipedia.org/wiki/Pattern_recognition#:~:text=Pattern%20recognition%20is%20the%20automated,computer%20graphics%20and%20machine%20learning.
2. https://www.geeksforgeeks.org/pattern-recognition-introduction/https://www.tutorialspoint.com/biometrics/pattern_recognition_and_biometrics.htm

B.TechIVYear-ISemester

Coursestructure

L	T	P	C
3	0	0	3

CONCURRENT AND PARALLEL PROGRAMMING(PROFESSIONALELECTIVE)

CourseCode:

InternalMarks:40

ExternalMarks:60

COURSEOBJECTIVES:

• Improvement of students comprehension of CPP, new programming concepts, paradigmsand idioms
• Changeof'mood' regardingConcurrencycounter-intuitiveness
• Proactiveattitude:theoreticalteachingshouldn't besodull
• Multipath,individuallypaced,stop–and–replay,personalizedlearningprocess
• Frequentassessmentoflearningadvancesonthesubject

COURSEOUTCOMES:

• UnderstandingimprovementofCPPconceptspresented
• Thenumberof reinforcement–exercises assigned
• Thetimerequired fortheresolutionofexercises
• Compliancelevelwiththenewmodeloftheoreticalteaching

UNIT-1

Concurrent versus sequential programming, Concurrent programming constructs, raceCondition,Synchronization primitives.

UNIT-II

Processes and threads,Interprocess communication, Livelock and deadlocks, starvation, anddeadlock prevention, Issues and challenges in concurrent programming paradigm and currenttrends.

UNIT-III

Parallelalgorithms–sorting,ranking,searching,traversals,prefixsumetc.,

UNIT-IV

Parallel programming paradigms – Data parallel, Task parallel, Shared memory and messagepassing,Parallel Architectures, GPGPU, pthreads, STM,

UNIT-V

OpenMP,OpenCL,Cilk++,IntelTBB,CUDA

TEXTBOOKS:

1. Mordechai Ben-Ari. Principles of Concurrent and Distributed Programming, Prentice-HallInternational.
2. GregAndrews.ConcurrentProgramming:PrinciplesandPractice,AddisonWesley.

REFERENCES:

1. GadiTaubenfeld.SynchronizationAlgorithmsandConcurrentProgramming,Pearson.
2. M. Ben-Ari. Principles of Concurrent Programming, Prentice
Hall.3..FredB. Schneider.OnConcurrent Programming,Springer.
4. BrinchHansen.TheOriginsofConcurrentProgramming:FromSemaphor

WEBREFERENCES:

1. https://link.springer.com/
2. https://www.researchgate.net/
3. https://nptel.ac.in/
4. https://www.tutorialspoint.com/
5. https://www.javatpoint.com/

B.TechIV Year-I Semester **Coursestructure**

L	T	P	C
3	0	0	3

MultimediaandApplicationDevelopment

(ProfessionalElective–IV)

CourseCode:P18CSE13 **Internal Marks:40External Marks:60**

Course Prerequisite:

NilCourseObjectives:

1. Togiveeachstudentafirmgroundinginthefundamentalsoftheunderpinningtechnologiesin graphics,distributed systems andmultimedia
2. 2.Toteachstudentsabouttheprincipleddesignofeffectivemediaforentertainment,commun ication,training and education
3. 3.Toprovideeachstudentwithexperienceinthegenerationofanimations,virtualenvironme ntsand multimediaapplications, allowingtheexpression of creativity
4. 4.Toprovideeachstudentwithaportfoliooftheirowncompletedworkattheendoftheprogra mme

CourseOutcomes:

Attheend ofthis coursethe student will beableto

1. Demonstrateknowledgeandunderstandingoftheconcepts,principlesandtheoriesofM ultimedia Applications and Virtual environments
2. Demonstrateknowledgeandunderstandingofthecurrentissuesinvolvedwithdevelopm entand deployment ofmultimediasystem
3. Analyseandsolveproblemsrelatedto theirexpertisein MultimediaApplications
4. Demonstratetheir abilitytoextend their basic knowledge toencompassnewprinciplesand practice
5. Demonstratetheircomputing,technicalandtheoreticalskillsbydevelopingasubstantial Multimediaapplication.

Unit-1 **(7**Lectures)

Fundamentalconcepts: FundamentalconceptsinTextandImage-Multimediaandhypermedia.World WideWeb, overviewofmultimediasoftwaretools.

Graphicsand Image:data representationgraphics/imagedata types,file formats.

Unit-2 **(7**Lectures)

Colorin imageandvideo:colorscience,colormodelsinimages, colormodelsinvideo.

Basic concepts in video and digital audio: Types of video signals, analog video, digitalvideo,digitization ofsound,MIDI, quantization and transmissionofaudio.

Unit-3 **(**12Lectures)

Lossless compression algorithm: Run-Length Coding, Variable Length Coding, DictionaryBasedCoding, Arithmetic Coding.

Lossy compression algorithm: Quantization, Transform Coding, Wavelet-Based Coding,EmbeddedZerotreeofWaveletCoefficientsSet PartitioninginHierarchicalTrees(SPIHT).

Unit-4 (10Lectures)

VideoCompressionTechniques: Introductiontovideocompression,Videocompressionbasedon motion compensation,Search for motion vectors. MPEG.

Basic Audio Compression Techniques: ADPCM, Vocoders, Phase Insensitivity, ChannelVocoder, Formant Vocoder, Linear Predictive Coding, CELP. MPEG Audio Compression:Psychoacoustics, Equal-Loudness Relations, Frequency Masking, Temporal Masking,
MPEGAudio,MPEGLayers,MPEGAudioStrategy,MPEGAudioCompressionAlgorithm,MPEG-2AAC (Advanced Audio Coding).

Unit-5 (8Lectures)

MultimediaNetworks: BasicsofMultimediaNetworks,MultimediaNetworkCommunicationsandApplications,QualityofMultimediaDataTransmission,MultimediaoverIP,MultimediaoverATMNetworks,TransportofMPEG-4,tMedia-on-Demand(MOD).

TextBooks:

1. Fudamentals of Multimedia by Ze-Nian Li and Mark S. Drew PHIl l PearsonEducation
2. MultimediaSystemDesign,Andleigh andThakarar,PHI
3. MultimediaTechnology&Application,DavidHillman,GalgotiaPublications.

References:

1. RajanParekh“Principles ofMultimedia”(TataMcGraw-Hill)
2. S.J.Gibbs&D.C.Tsichritzis“MultimediaProgramming”,AddisonWesley1995
3. P.W.Agnew&A.S.Kellerman“DistributedMultimedia”,AddisonWesley1996
4. C.A.Poynton,“ATechnical IntroductiontoDigitalVideo”Wiley1996
5. F.Fluckiger,“UnderstandingNetworkedMultimedia”,Prentice-Hall1995

WebReferences:

1. https://www.tutorialspoint.com/multimedia/index.htm
2. https://www.wisdomjobs.com/e-university/multimedia-tutorial-270.html
3. https://dokumen.tips/documents/the-manualscom-fundamentals-of-multimedia-by-ze-nian-li-and-mark-s-drew-solution-manual.html

B.Tech.IVYearISemester **CourseStructure**

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3	0	0	3

IMAGE PROCESSING(PROFESSIONALELECTIVEIII)

InternalMarks:40

CourseCode:P18CSE12 **External Marks: 60**

Courseobjectives

- Atthe end ofthe coursethestudents will understandthe
- Fundamental concepts in digital image processing and enhancement in spatialdomain.
- Approachesused inenhancement infrequency domainand imagesegmentation.
- Imagerestorationandimagecompressiontechniques.
- Morphologicaltransformations,andimagerepresentationanddescription.

Courseoutcomes

- At theend ofthe coursethestudents will be able to
- Define image processing systems, and develop algorithms for image enhancementtechniquesin spatial domain.
- Developenhancementtechniquesinfrequency domainandimagesegmentation
- Developimagerestoration,andimagecompressiontechniques.
- Implement morphological transformation algorithms, and select various descriptorsforimagerepresentation.

CourseContent:

UNITI (08Periods)

Introduction:DigitalImageProcessing,FundamentalStepsinDigitalImageProcessing,Components of anImage Processing System.

Digital Image Fundamentals: Elements of Visual Perception, Image Sensing and Acquisition,ImageSampling andQuantization, Some basicRelationships between Pixels.

UNITII (10Periods)

Image Enhancement in the Spatial Domain: Some Basic Gray Level Transformation,Histogram Processing, Enhancement Using Arithmetic/Logic Operations,

Basics of SpatialFiltering,smoothing spatial Filters,Sharpening spatial Filters.

Image Enhancement in the Frequency Domain: Introduction to the Fourier Transform and theFrequency Domain, smoothing frequency domain Filters, Sharpening frequency-domainFilters.

UNITIII (10Periods)

ImageSegmentation:DetectionofDiscontinuities,EdgeLinkingandBoundaryDetection,Thresholding,Region-Based Segmentation.

Image Restoration: A Model of the Image Degradation/Restoration Process, Linear, Position-Invariant Degradations, Inverse Filtering, Minimum Mean Square Error (Wiener) Filtering,ConstrainedLeast Squares Filtering.

UNITIV (10Periods)

Image Compression: Image Compression Models, Error-free Compression, Lossy PredictiveCompression,ImageCompression Standards.

Morphological Image Processing: Dilation and Erosion, The Hit-or-Miss Transformation,Somebasic Morphological Algorithms.

UNITV (08Periods)

Representationand Recognition: Representation,Boundary Descriptors,RegionalDescriptors.

Image Recognition: Patterns and pattern classes – Matching by minimum distance classifier – Matchingby Correlation

Text Book:

1.RafaelC.Gonzalez,RichardE.Woods,'DigitalImageProcessing'AddisonWesleyPubs(SecondEdition).

ReferenceBooks:

ImageProcessing.Analysis,andMachineVision,MilanSonka,VaclavHlavac,RogerBoyle(SecondEdition).

A.K.Jain,'Fundamentals ofDigitalImageProcessing'PHI.

DavidSalomon:DataCompression – TheCompleteReference,SpringerVerlagNewYorkInc.,4th Edition

WebReferences:

1. http://www.imageprocessingbasics.com/
2. www.imageprocessingplace.com/root_files_V3/tutorials.htm
3. www.library.cornell.edu/preservation/tutorial/intro/intro-01.html
4. www.olympusmicro.com/primer/digitalimaging/javaindex.html

B.Tech.IVYearISemester **CourseStructure**

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INTERNETOFTHINGS

(PROFESSIONALELECTIVE IV)

CourseCode:P18CSE19 **Internal Marks:40External Marks:60**

Course Prerequisite: Computer Networks,Analog and Digital Communication,MachineLearning

CourseObjectives:

1. IdentifyproblemsthatareamenabletosolutionbyAImethods,andwhichAImethodsmay besuited to solving a given problem.
2. Formulate a given problem in the language/framework of different AI methods (e.g.,asa search problem, as a constraint satisfaction problem, as a planning problem, as aMarkovdecision process, etc).
3. ImplementbasicAIalgorithms(e.g.,standardsearchalgorithmsordynamicprogramming).
4. Design and carry out an empirical evaluation of different algorithms on problemformulation,and state theconclusionsthat theevaluation supports.

CourseOutcomes:

Attheend ofthis coursethe student will beableto

1. DemonstrateknowledgeandunderstandingofthesecurityandethicalissuesoftheInternetof Things
2. Conceptuallyidentifyvulnerabilities,includingrecentattacks,involvingtheInternetof Things
3. DevelopdifferentM2Mcommunicationmodels
4. Compareand contrastthethreatenvironment basedon industryand/or devicetype.
5. Understandand Implementvarious IoTcloudbasedservices.

Unit-I: (8Lectures)

The Internet of Things: An Overview of Internet of things, Internet of Things Technology,behindIoTsSourcesoftheIoTs,M2MCommunication,ExamplesofIoTs,DesignPrinciplesFor ConnectedDevices

Unit-II: (9Lectures)

BusinessModelsforBusinessProcessesintheInternetofThings,IoT/M2MsystemsLAYERSANDdesignsstandardizations,ModifiedOSIStackfortheIoT/M2MSystems ,ETSIM2MdomainsandHigh-levelcapabilities,CommunicationTechnologies,DataEnrichment and Consolidation and Device Management Gateway Ease of designing andaffordability**.**

UNIT-III (12Lectures)

Design Principles for the Web Connectivity for connected-Devices, Web Communicationprotocols for Connected Devices, Data Acquiring, Organizing and Analytics in IoT/M2M,Applications/Services/BusinessProcesses.

UNIT-IV (10Lectures)

BusinessModelsforBusinessProcessesintheInternetOfThings,OrganizingData,Transactions, BusinessProcesses,IntegrationandEnterpriseSystems,DataCollection,StorageandComputing UsingaCloudPlatformforIoT/M2MApplications/Services.

UNIT-V (9Lectures)

Everything as a service and Cloud Service Models, IOT cloud-based services using theXively(Pachube/COSM),NimbitsandotherplatformsSensor,ParticipatorySensing,Actuator,RadioFrequencyIdentification,andWireless,SensorNetworkTechnology,SensorsTechnology, SensingtheWorld.

TEXTBOOKS:

1. InternetofThings:Architecture,DesignPrinciplesAndApplications,Rajkamal,McGraw Hill Higher Education
2. InternetofThings,A.BahgyaandV.Madisetti,UnivesityPress,2015

REFERNCEBOOKS:

1. DesigningtheInternet ofThings,AdrianMcEwenandHakimCassimally,Wiley
2. GettingStartedwiththe InternetofThingsCunoPfister,Oreilly

WebReferences:

4. https://internetofthingsagenda.techtarget.com/definition/Internet-of-Things-IoT
5. https://www.tutorialspoint.com/internet_of_things/internet_of_things_tutorial.pdf
6. https://www2.deloitte.com/content/dam/insights/us/articles/iot-primer-iot-technologies-applications/DUP_1102_InsideTheInternetOfThings.pdf

B.TechIVYearISemester

CourseStructure

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SOFTWARE PROJECT MANAGEMENT(IT)

InternalMarks:40

CourseCode: **ExternalMarks:60**

CoursePrerequisites: SoftwareEngineering

CourseObjectives:

Attheend ofthecourse,thestudent shallbeableto:

- To describe and determine the purpose and importance of projectmanagementfrom the perspectives of planning, tracking and completion ofproject
- Tocompareanddifferentiateorganizationstructuresandprojectstructures
- Toimplementaprojecttomanageprojectschedule,expenses andresourceswiththeapplicationofsuitableproject managementtools

CourseOutcomes:

Uponthecompletionofthecoursestudentswillbeable to:-

- Applytheprocesstobefollowed inthesoftwaredevelopmentlife-cyclemodels.
- Applytheconcepts ofprojectmanagement&planning.
- Implementtheprojectplansthroughmanagingpeople,communicationsandchange
- ConductactivitiesnecessarytosuccessfullycompleteandclosetheSoftwareprojec ts
- Implementcommunication,modeling,and construction&deploymentpracticesinsoftwaredevelopment.

UNITI (9Lectures)

ConventionalSoftwareManagement:Thewaterfallmodel,conventionalsoftwaremanagementp erformance.

EvolutionofsoftwareEconomics:Softwareeconomics,Pragmaticsoftwarecostestimation.

UNITII (9Lectures)

ImprovingSoftwareEconomics:Reducingsoftwareproductsize,improvingsoftwareprocesses, improving team effectiveness, improving automation, achieving required quality,peerinspections.

Life cycle Phases: Engineering and production stages, inception, elaboration, construction,transitionphases,Artifactsoftheprocess,Artifactsevolutionoverthelifecycle,Testart ifacts,Managementartifacts.

UNITIII (9Lectures)

Model Based Software Architecture: Management perspective and Technical perspective,Workflowsof theprocess,Softwareprocess workflows,Iteration workflows.

Checkpointsoftheprocess:Majormilestones,Minormilestones,periodicstatusassessments.

UNITIV (9Lectures**)**

Iterativeprocessplanning:workbreakdownstructures,planningguidelines,costandscheduleesti mating,Iteration planning process.

Projectorganizationandresponsibilities:Lineofbusinessorganizations,projectorganizations,e valuation of organizations, automationbuilding blocks.

UNITV (9Lectures)

Riskmanagement:Categoriesofrisk,Aframeworkfordealingwithrisk,riskidentification,riskasse ssment,riskplanning,riskmanagement,evaluatingriskstotheschedule,applying PERT techniques

Feature software project management: modern project profiles, next generation softwareeconomics,modern process transitions.

TextBooks:

1) SoftwareProject Management,WalkerRoyce,PearsonEducation,2005.
2) SoftwareProject Management,BobHughes,4th edition,MikeCotterell, TMH.

ReferenceBooks:

1) SoftwareProject Management,JoelHenry,PearsonEducation.
2) SoftwareProjectManagementinpractice, PankajJalote,PearsonEducation,2005.
3) EffectiveSoftwareProject Management,RobertK.Wysocki,Wiley,2006.

WebReferences:

1. https://www.tutorialspoint.com/
2. https://www.guru99.com/3.http s://www.javatpoint.com/

B.TechIVYear-I Semester **Coursestructure**

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SOFTCOMPUTINGTECHNIQUES

(PROFESSIONALELECTIVE)

CourseCode:P18CSE15 **Internal Marks:40External Marks:60**

Course Prerequisite:

NilCourseObjectives:

TointroducetheconceptsinSoftComputingsuchasArtificialNeuralNetworks,Fuzzylogic-based systems, geneticalgorithm-based systems and theirhybrids.

CourseOutcomes:

Attheend ofthis coursethe student will beableto

1. ToLearn aboutsoftcomputingtechniquesandtheirapplications.
2. ToAnalyzevariousneuralnetworkarchitectures.
3. ToDefinethefuzzysystems.
4. ToUnderstandthegeneticalgorithm conceptsandtheirapplications.
5. To Identify and select a suitable Soft Computing technology to solve the problem;constructasolution.

Unit-I: (8Lectures)

Introduction to Soft Computing: Artificial neural networks - biological neurons, Basicmodelsofartificialneuralnetworks–
Connections,Learning,ActivationFunctions,McCullochand Pitts Neuron,Hebb network..

Unit-II: (9Lectures)

Artificial Neural Networks : Perception networks – Learning rule – Training and testingalgorithm, Adaptive Linear Neuron, Back propagation Network – Architecture, Trainingalgorithm.

UNIT-III **(10Lectures)**

FuzzyLogicand Fuzzysystems:

Fuzzy logic - fuzzy sets - properties - operations on fuzzy sets, fuzzy relations - operationsonfuzzy relations.

Fuzzy systems: Fuzzy membership functions, fuzzification, Methods of Membership valueassignment-intuition-inference-rankordering,Lambda–
cutsforfuzzysets,Defuzzificationmethods.

UNIT-IV **(10Lectures)**

GeneticAlgorithms: TruthvaluesandTablesinFuzzyLogic,Fuzzypropositions,Formation of fuzzy rules -Decomposition of rules –Aggregation of rules, Fuzzy InferenceSystems – Mamdani and Sugeno types, Neuro-fuzzy hybrid systems –characteristics –classification.

UNIT-V **(9Lectures)**

Hybrid systems: Introduction to genetic algorithm, operators in genetic algorithm - coding - selection - cross over – mutation, Stopping condition for genetic algorithm flow, Genetic -neuro hybrid systems,Genetic-Fuzzyrulebasedsystem.

TextBooks

1. S.N.SivanandamandS. N.Deepa, Principlesofsoftcomputing-WileyIndia.
2. TimothyJ. Ross, Fuzzy Logic with engineeringapplications–WileyIndia.

References

1. N.K.SinhaandM.M.Gupta,SoftComputing&IntelligentSystems:Theory&Applications-AcademicPress/Elsevier.2009.
2. Simon Haykin, Neural Network- A Comprehensive Foundation- Prentice HallInternational,Inc.
3. R.EberhartandY.Shi,ComputationalIntelligence:ConceptstoImplementation,MorganKaufman/Elsevier,2007.
4. RossT.J.,FuzzyLogicwithEngineeringApplications-McGrawHill.
5. Driankov D., Hellendoorn H. and Reinfrank M., An Introduction to Fuzzy Control-NarosaPub.
6. Bart Kosko, Neural Network and Fuzzy Systems- Prentice Hall, Inc., Englewood CliffsGoldbergD.E.,GeneticAlgorithmsinSearch,Optimization,andMachineLearning-AddisonWesley.

B.TechIVYear-ISemester **Coursestructure**

L	T	P	C
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CLOUDCOMPUTING

CourseCode:P18CSE16 **Internal Marks:40External Marks:60**

CoursePrerequisite:Nil

CourseObjectives: Thestudentwilllearnabout

1. Thecloudenvironment,buildingsoftwaresystemsandcomponentsthatscaletomillionsofusers in modern internet.
2. Cloudconceptscapabilitiesacrossthevariouscloudservicemodelsincluding Iaas,Paas,Saas,and Virtualizations.
3. Developingcloudbasedsoftwareapplicationsontopofcloudplatforms.
4. ProgrammingandSoftwareEnvironments ondifferentcloudplatforms.
5. Understandingof cloudresourcemanagementschedulingalgorithmsand filesystems.

CourseOutcomes: The Student

1. Applythe keydimensions of thechallengeonCloud Computing
2. Assessmentoftheeconomics,financial,andtechnologicalimplicationsforselectingcloudcomputingforown organization
3. Assessingthefinancial,technological,andorganizationalcapacityofemployer'sforactivelyinitiating and installing cloud-based applications.
4. Assessmentofownorganizations'needsforcapacitybuildingandtraininincloudcomputing-relatedITareas.
5. Accessingthedatafromdifferentfilesystemsondifferentcloudflatforms.

UNITI:Systemsmodeling,Clustering: (9 Lectures)ScalableComputingovertheInternet,TechnologiesforNetworkbasedsystems,SystemmodelsforDistributedandCloudComputing,Softwareenvironmentsfordistributedsystemsandclouds, Performance,Security And EnergyEfficiency

UNITII:VirtualMachinesandVirtualization: (6 Lectures)ImplementationLevelsofVirtualization,VirtualizationStructures/Toolsandmechanisms,VirtualizationofCPU, Memory andI/ODevices.

UNITIII:CloudPlatformArchitecture: (10 Lectures)CloudComputingandserviceModels,ArchitecturalDesignofComputeandStorageClouds,PublicCloudPlatforms,InterCloudResourceManagement,CloudSecurityandTrustManagement.ServiceOrientedArchitecture, MessageOrientedMiddleware.

UNITIV:CloudProgrammingandSoftware Environments: (8 Lectures)Parallel&DistributedProgrammingParadigms,ProgrammingSupportofGoogleAppEngine,ProgrammingonAmazonAWS-SimpleStorageService(S3)ArchitectureandMicrosoftAzure, Emerging Cloud SoftwareEnvironments.

UNITV: (12Lectures)
CloudResourceManagementandSchedulingandStorageSystems: PoliciesandMechanisms for Resource Management Applications of Control Theory to Task SchedulingonaCloud, Two level Resource Allocation Architecture.
Scheduling Algorithms for Computing Clouds: Fair Queuing, Start Time Fair Queuing,Borrowed Virtual Time, Cloud Scheduling Subject to Deadlines, Scheduling MapReduceApplicationsSubject to Deadlines.
Storage models: Distributed file systems, general parallel file systems. Google file system.Apache Hadoop, BigTable, Megastore.

TEXTBOOKS:
1. DistributedandCloudComputing,KaiHwang,GeoffryC.Fox,JackJ.DongarraMKElsevier.
2. CloudComputing,TheoryandPractice,DanCMarinescu,MKElsevier.\
3. CloudComputing,AHandsonapproach,ArshadeepBahga,VijayMadisetti,University

Suggested/Reference Books:
3.CloudComputing,APracticalApproach,AnthonyTVelte,TobyJVelte,RobertElsenpeter,TMH
4.MasteringCloudComputing,FoundationsandApplicationProgramming,RajKumarBuyya,Christen vecctiola, S Tammaraiselvi, TMH

WebsitesReferences:

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http://www.ijircce.com/upload/2017/january/49_2_NEW.pdfhttps://www.ripublication.com/irph/ijict_spl/ijictv4n1spl_07.pdfhttp://aircconline.com/ijist/V6N2/6216ijist01.pdf
www.javatpoint.com

B.Tech.IVYearISemester **CourseStructure**

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ENTREPRENEURSHIPDEVELOPMENT

(OPENELECTIVE IV)

CourseCode:P18MBO05 **Internal Marks:40External Marks:60**

CourseObjectives:

To provide an introduction to entrepreneurship and its development process. It also enablesthestudenttolearnaboutprojectformulation,appraisal,financialandimplementations.Further it attempts to provide conceptual clarification to small scale industry and the stagesinvolvedin theestablishment ofsmall business.

CourseOutcomes:

1. Toidentifytheimportanceofentrepreneurshipin India.
2. Toevaluatethetrainingmethodsadoptedinincreasingentrepreneurshipin India
3. Tounderstandthepreparationofprojectsand evaluatingthem
4. To study the growth of small and micro enterprises and the reasons for their downfallin industry
5. Tounderstandtheinstitutionalsupportgivenforentrepreneursin India.

UNIT1: (10Lectures)

Entrepreneurship: Importance and growth - Characteristics and Qualities of Entrepreneur-Role of Entrepreneurship, Ethics and Social Responsibilities. Women Entrepreneurship: Role& Importance, Problems of Women Entrepreneurs – corporate entrepreneurship – mobility ofentrepreneur–entrepreneurial motivation.

UNIT2: (10Lectures)

Training: Designing Appropriate Training Programme to inculcate Entrepreneurial Spirit - TrainingforNewandExistingEntrepreneurs,FeedbackandPerformanceofTrainees.Creativityand Entrepreneurship:SourcesandMethodsofIdeasPlanningandDevelopmentofProgrammes, DesignThinking Tools.

UNIT3: (10Lectures)

PlanningandEvaluationofProjects: GrowthofFirm–Projectidentificationandselection -Factorsinducinggrowth--ProjectFeasibilityStudy-PostPlanningofProject-ProjectPlanning andControl.

UNIT4: (10Lectures)

SmallandMicroEnterprises: Importance,definitions,classification,ClassificationofIndustry– policies and their support to MSMEs - growth and growth strategies – sickness insmallbusiness and remedies –small entrepreneurs in International business.

UNIT5: (8Lectures)

Institutional Support to Entrepreneur and MSMEs: Role of Government - Role of IDBI,NIESBUD,SISI,DIC-FinancialInstitutions-CommercialBanks,EntrepreneurialDevelopmentInstitutes,UniversitiesandotherEducationalInstitutionsofferingEntrepreneurialDevelopment Programme.

Relevant cases have to be discussed in each unit and in examination case is compulsoryfrom any unit.

TextBooks:

1. AryaKumar:"Entrepreneurship",Pearson,PublishingHouse,NewDelhi,2012.
2. VSPRao,Kuratko:"Entrepreneurship',CengageLearning,NewDelhi,

References:

1. K.Ramachandran: "Entrepreneurship Development", TMH, New Delhi,
20122.B.Janakiram,MRizwana:
"EntrepreneurshipDevelopment"ExcelBooks,NewDelhi,2011.
3.RajeevRoy:"Entrepreneurship",OxfordUniversityPress,NewDelhi,2012
4. P.C.Shejwalkar:"EntrepreneurshipDevelopment",EverestPublishingHouse,NewDelhi,2011
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1. https://segera-wisuda.blogspot.com/2016/05/46-ebooks-entrepreneurship-download-free.html
2. https://www.free-ebooks.net/book-list/entrepreneurship
3. https://lecturenotes.in/subject/35/entrepreneurship-development-ed
4. *164.100.133.129:81/econtent/Uploads/Entrepreneurship_Development.pdf*
5. *ncert.nic.in/ncerts/l/lebs213.pdf*

B.Tech.IVYearISemester **CourseStructure**

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ROBOTICS

InternalMarks:40

CourseCode:P18MET02 **External Marks:**

60CoursePrerequisite: Kinematics of Machinery

CourseObjectives:

1. Togivestudentspracticeinapplyingtheirknowledgeofmathematics,scienceandEngineeringa nd to expand this knowledgeinto thevast areaofrobotics.
2. Tounderstandthe basiccomponents ofrobotics.
3. Tounderstandthemotionanalysisandkinematic ofrobotics.
4. Mathematicalapproachto explainhowtherobotic armmotion canbedescribed.
5. Thestudentswillunderstandfunctioningofsensorsandactuators.

CourseOutcomes:

Aftercompletion ofthecoursethe studentwill be able to

1. Identifyvariousrobotconfigurations.
2. Identifythevariouscomponentsofrobots.
3. Carryoutkinematicanddynamicanalysisforsimpleserialkinematicchains.
4. Performthemathematicalapproachformotionof robots.
5. PerformtrajectoryplanningforamanipulatorbyavoidingobstaclesandSelectappropriate actuatorsandsensors fora robotbasedonspecificapplication

UNIT– I: (9Lectures)

INTRODUCTION: Robotics in Automation, CAD/CAM and Robotics- An over view ofRobotics–ApplicationsofRobotics–Classificationbycoordinatesystemandcontrolsystem.

UNIT– II: (9Lectures)

COMPONENTSOFTHEINDUSTRIALROBOTICS: Functionlinediagramrepresentation of robot arms, common types of arms. Components, Architecture, number ofdegrees of freedom – Requirements and challenges of end effectors, determination of the endeffectors,comparison ofElectric,Hydraulicand Pneumatictypes of locomotiondevices.

UNIT– III: (9Lectures)

MOTIONANALYSIS: Homogeneoustransformationsasapplicabletorotationandtranslation-problems.

MANIPULATORKINEMATICS: Specificationsofmatrices,D-Hnotationjointcoordinatesandworldcoordinates Forwardandinversekinematics – problems.

DYNAMICS: Differential transformation and manipulators, jacobians- problems Dynamics-Lagrange-Eulerand Newton– Euler formulations–Problems.

UNIT-IV: (9Lectures)

Generalconsiderationsinpathdescriptionandgeneration.TrajectoryplanningandAvoidance of obstacles, path planning, Skew motion, joint integrated motion – straight linemotion – robot programming, languages and software packages – description of paths with arobotprogramming language.

UNIT-V: (9Lectures)

ROBOTACTUATORSANDFEEDBACKCOMPONENTS: Actuators:Pneumatics, Hydraulic actuators, Electric and stepper motors. Feedback components: Position sensors – potentiometers,resolvers, encoders– velocity sensors.

TextBooks:

1. IndustrialRoboticsbyGroover,MP/Pearsonedu.
2. RoboticsandControl byMittalR K&NagrathIJ, TMHPublishers

ReferenceBooks:

1. RoboticsbyFuKS,McGrawHillPublishers.
2. RoboticEngineeringbyRichardD.Klafter,PranticeHallpublishers.
3. RobotAnalysisandControlby H.Asada andJ.J.E.Slotine,BSP Bookspvt.Ltd.
4. IntroductiontoRoboticsbyJohn J.Craig,Pearson Edu.

WebReferences:

1. https://www.iare.ac.in
2. https://www.millibar.com
3. https://www.coursehero.com
4. https://link.springer.com
5. https://www.ulektzbooks.com

B.Tech.IVYearISemester **CourseStructure**

L	T	P	C
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INTRODUCTION TO WIRELESS SENSOR NETWORKS(OPEN ELECTIVEIV)

InternalMarks:40

CourseCode:P18ECO11

ExternalMarks:60

CoursePrerequisite: ComputerNetworks

CourseObjectives:

1. IdentifyandDistinguishbetweenthenotionofWiredand WirelessNetworks.
2. Analyzethe basic concepts fordesigning arouting Protocol forMANETs.
3. LearntheconceptsofSecurityissuesfordesigningMACandroutingprotocolforMANETs.
4. ApplyFundamentalprinciplesCharacteristicsfordesigningSensorNetworksforcommunications.
5. Learndifferenttoolsandapplicationsofwirelesssensornetworks.**Course**

Outcomes: After going through this coursethestudent will be ableto

1. Describe the fundamental aspects of sensing and communication under diverseenvironmentand scenarios.
2. Analyzethe connectionamong transceiverdesignandtopology.
3. ApplyingtheMACprotocolandNetworklayerfordemonstratingthecommunicationsaspectsin Ad-hocnetworks
4. EvaluatingtheendtoendperformanceofTransportlayeranditsdeliveryneedsin Ad-hocEnvironment
5. Creating asimulation environment with software according to theterrainused.

UNITI

(9Lectures)

OVERVIEW OF WIRELESS SENSOR NETWORKS: Key definitions of sensornetworks,AdvantagesofsensorNetworks,Uniqueconstraintsandchallenges,DrivingApplications,Enabling Technologiesfor WirelessSensorNetworks.

ARCHITECTURES: Single-NodeArchitecture-HardwareComponents,EnergyConsumptionofSensorNodes,OperatingSystemsandExecutionEnvironments,Network Architecture -Sensor Network Scenarios, Optimization Goals and Figures ofMerit.

UNITII

(9Lectures)

NETWORKINGTechnologies: PhysicalLayerandTransceiverDesignConsiderations,Personalareanetworks(PANs),hiddennodeandexposednodeproblem,Topologies ofPANs, MANETs, WANETs.

UNITIII

(9Lectures)

MACandROUTINGProtocolsforWirelessSensorNetworks: IssuesinDesigning a MAC protocol for Ad Hoc Wireless Networks, Design goals of a MACProtocol for Ad Hoc Wireless Networks, Classifications of MAC Protocols. Issues inDesigningaRoutingProtocolforAdHocWirelessNetworks,ClassificationofRoutingProtocols.

UNITIV

(9Lectures)

TRANSPORT LAYER AND SECURITY PROTOCOLS: Introduction, Issues inDesigningaTransportLayerProtocolforAdHocWirelessNetworks,DesignGoalsofaTransportLayerProtocolforAdHocWirelessNetworks,ClassificationofTransportLayerSolutions

UNIT V

(9Lectures)

SECURITY IN WSNs: Security in Ad Hoc Wireless Networks, Network SecurityRequirements,Issues andChallengesin Security Provisioning

SENSORNETWORKPLATFORMSANDTOOLS: SensorNodeHardware–BerkeleyMotes,ProgrammingChallenges.

APPLICATIONS of WSN: S Ultra wide band radio communication, Wirelessfidelity systems. Future directions, Home automation, smart metering

Applications**Text Books:**

1. AdHocWirelessNetworks:ArchitecturesandProtocols-C.SivaRamMurthyand B.S.Manoj, 2004,PHI
2. WirelessAd-hocand SensorNetworks:Protocols, PerformanceandControl– JagannathanSarangapani, CRC Press
3. HolgerKarl&AndreasWillig,"ProtocolsAndArchitecturesforWirelessSensorNetworks", JohnWiley,2005.

ReferenceBooks:

1. KazemSohraby,DanielMinoli,&TaiebZnati,"WirelessSensorNetworks-Technology,Protocols, andApplications", JohnWiley,2007.
2. FengZhao&LeonidasJ.Guibas,"WirelessSensorNetworks-AnInformationProcessingApproach", Elsevier, 2007.
3. Ad-HocMobileWirelessNetworks:Protocols&Systems,C.K.Toh,1ed.PearsonEducation.
4. Wireless Sensor Networks- C.S.Raghavendra,Krishna M.Sivalingam,2004,Springer
5. WirelessSensorNetworks–SAnandamurugan,Lakshmi Publications

WebReferences:

1.http://www.engr.iupui.edu/~dskim/manet/2.https://ieeexplore.ieee.org/document/15477993.https://onlinelibrary.wiley.com/doi/10.1002/0470095121.ch2

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B.TechIVYearISemester

CourseStructure

L	T	P	C
3	0	0	3

DISTRIBUTED DATABASES(IT)

InternalMarks:40

CourseCode:P18ITO01 **ExternalMarks:60**

CourseObjectives:

1. In-depthstudyoftheclassicaldistributeddatabasemanagementissuessuchasdistributiondesign, distributed query processing and optimization, and distributed transactionmanagement.

2. To study more current distributed database management topics such as pervasivecompuitng,Web data management, different distribution models.

CourseOutcomes:

1. Understandtheoretical andpracticalaspectsof distributeddatabasesystems.
2. Study and identify various issues related to the development of distributed databasesystem.
3. Understandthedesignaspectsofobject-orienteddatabasesystemandrelateddevelopment.
4. Understanddistributeddatabasesystemsarchitectureanddesign.
5. Beableto applymethodsand techniquesfor distributedqueyprocessingandoptimisation.

Unit–I

Introduction; Distributed Data Processing, Distributed Database System, Promises ofDDBSs,DDMBS Architecture

DistributedDatabaseDesign: DistributionDesignissues,Fragmentation,Allocation.

Unit–II

Query processing and decomposition: Query processing objectives, characterization ofquery processors, layers of query processing, query decomposition, localization of distributeddata.

DistributedqueryOptimization: Queryoptimization,centralizedqueryoptimization

Unit_ III

Transaction Management: Definition, properties of transaction, types of transactions**Distributed concurrency control**: serializability, concurrency control mechanisms &algorithms, time - stamped & optimistic concurrency control Algorithms, deadlockManagement.

Unit-IV

Distributed DBMS Reliability: Reliability concepts and measures,failures in DistributedDBMS,local& distributedreliabilityprotocols, sitefailures andnetworkpartitioning.

Unit-V

Distributed object Database Management Systems: Fundamental object concepts andmodels, object distributed design, architectural issues, object management, distributed objectstorage,object query Processing.

TEXTBOOKS

1. M. Tamer OZSU and Patuck Valduriez: Principles of Distributed Database Systems,PearsonEdn. Asia, 2001.
2. StefanoCeriandGiuseppePelagatti:DistributedDatabases,McGrawHill.

REFERENCEBOOKS:

1. Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom: "Database Systems: TheCompleteBook", Second Edition, Pearson International Edition

WEBRERENCES

1. https://www.tutorialspoint.com/distributed_dbms/distributed_dbms_databases.htm
2. https://docs.oracle.com/cd/A57673_01/DOC/server/doc/SCN73/ch21.htm
3. https://www.tutorialride.com/distributed-databases/distributed-databases-tutorial.htm
4. https://www.sciencedirect.com/topics/computer-science/distributed-databases
5. https://nptel.ac.in/

B.TechIVYearISemester

CourseStructure

L	T	P	C
0	0	3	1.5

SCRITING LANGUAGES

LAB(IT)

InternalMarks:40

CourseCode: **ExternalMarks:60**

CoursePrerequisites: AnyHigh-levelprogramminglanguage(C,C++)

CourseObjectives:

ToUnderstandtheconceptsofscriptinglanguagesfordevelopingweb-basedprojectsTounderstandthe applications theof Ruby,TCL, Perl scripting languages

CourseOutcomes:

. AbilitytounderstandthedifferencesbetweenScriptinglanguagesandprogramminglanguages
. Ableto gain somefluency programming inRuby, Perl, TCL

List of

ExperimentsWeek1

:

a) WriteaRubyscripttocreateanewstringwhichisncopiesofagivenstringwherenis anon-negativeinteger.
b) WriteaRubyscriptwhichaccepttheradiusofacirclefromtheuserandcomputetheparameteranda rea.

Week2:

a) WriteaRubyscriptwhichaccepttheuser'sfirstandlastnameandprinttheminreverseorderwith aspacebetween them

b) WriteaRubyscript toaccepta filenamefromtheuserprintthe extensionofthat

week3:

a)Write aRubyscripttofindthegreatestofthreenumbers

b)WriteaRuby scriptto print oddnumbers from10 to 1

week4:

a)WriteaRubyscirpttochecktwointegersandreturntrueifoneofthemis20otherwisereturn theirsum

b)WriteaRubyscripttochecktwotemperaturesandreturntrueifoneislessthan0andtheotheris greater than 100

week5:

a)Write aRubyscript toprint theelements ofagivenarray

b)WriteaRubyprogramtoretrievethetotalmarkswheresubjectnameandmarksofastudentstored in a hash

week6:

a)Write aTCL scriptto findthefactorialofanumber

b).WriteaTCL scriptthat multipliesthenumbersfrom 1to 10

week7:

a) WriteaTCLscript forSorting alistusing acomparison function

b) WriteaTCLscriptto(i)createalist(ii)appendelementstothelist(iii)Traversethelist (iv)Concatenatethelist

week8:

a)Write aTCLscript tocomparingthefilemodifiedtimes.

b)WriteaTCL script toCopy afileandtranslateto native format.

Week9:

a) Write aPerlscripttofindthelargestnumber amongthreenumbers.

b)WriteaPerlscript to printthemultiplicationtables from 1-10using subroutines.

Week10:

a) WriteaPerlscripttosubstitute aword,withanother wordinastring.b)Writea PerlscripttovalidateIP addressand email address.

b)WriteaPerl scriptto print thefilein reverseorder using comm

B.TechIVYearISemester

CourseStructure

L	T	P	C
0	0	2	1.5

HADOOP& BIG DATALAB

InternalMarks:40

CourseCode:P18CSL09 **External Marks:**

60Experiments:

1. PerformsettingupandInstallingHadoopinitsthreeoperatingmodes:Standalone, Pseudodistributed,Fullydistributed
   a. Local
   b. Pseudodistributed
   c. FullyDistributed
2. Implement the following file management tasks in Hadoop:Addingfiles and directories
   Retrieving
   filesDeletingfil
   es
   Hint: A typical Hadoop workflow creates data files (such as log files) elsewhere andcopiesthem into HDFS using oneof theabove commandlineutilities.
3. RunabasicWordCountMapReduceprogramtounderstandMapReduce Paradigm.
4. Write a Map Reduce program that mines weather data. Weather sensors collectingdata every hour at many locations across the globe gather a large volume of log
   data,whichisagoodcandidateforanalysiswithMapReduce,sinceitissemistructuredandrecord-oriented.
5. InstallandRunPig
6. WritePigLatinscripts tosort,group, join,describe,and filteryourdata.
7. InstallandRunHive
8. Hivetocreate,alter, anddropdatabases,tables,views,functions,andindexes

B.TechIVYearISemester

CourseStructure

L	T	P	C
0	0	2	2

ANDROIDAPPLICATIONDEVELOPMENTLAB

Course Code:

P18ITL04CourseObject

ives:

- Tolearnhow todevelopApplications inandroid environment.
- Tolearnhow todevelopuser interface applications.
- Tolearn howto develop URLrelated applications.

ListofExperiments

1 CreateanAndroidapplicationthatshowsHello+ name oftheuserandrunitonanemulator.
(b)Createan applicationthat takesthe name fromatext boxand showshello message along with the name entered in text box, when the user clicks the OKbutton.

2 Create a screen that has input boxes for User Name, Password, Address, Gender(radio buttons for male and female), Age (numeric), Date of Birth (Date Picket),State(Spinner)and aSubmitbutton. Onclickingthesubmitbutton,print allthedatabelowthe Submit Button. Use
(a)LinearLayout ,(b)RelativeLayout and (c)Grid Layoutor TableLayout.

3 Develop an application that shows names as a list and on selecting a name it shouldshow the details of the candidate on the next screen with a “Back” button. If thescreen is rotated to landscape mode (width greater than height), then the screenshould show list on left fragment and details on right fragment instead of secondscreenwithback button.UseFragmenttransactionsand Rotationevent listener.

4 Develop an application that uses a menu with 3 options for dialing a number,openingawebsiteandtosendanSMS.Onselecting anoption,theappropriate

actionshould beinvokedusingintents.

5 Developan applicationthatinsertssome notificationsintoNotificationareaand wheneveranotificationis inserted, itshould showatoast withdetails ofthenotification.

6 Create an application that uses a text file to store user names and passwords (tabseparated fields and one record per line). When the user submits a login name andpasswordthroughascreen,thedetails shouldbeverified withthetext filedataandifthey match,show adialogsaying thatlogin is successful.Otherwise, show the
dialogwithLoginFailedmessage.

7 Createauserregistrationapplicationthatstorestheuserdetailsinadatabasetable.

8 Create a database and a user table where the details of login names and passwordsare stored. Insert some names and passwords initially. Now the login details enteredbytheusershouldbeverifiedwiththedatabaseandanappropriatedialog shouldbe
shownto theuser.

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CourseStructure

L	T	P	C
0	0	2	2

EMPLOYABILITYSKILLS

Course Code:

P18CSL12CourseObject

ives:

Themainaimofthiscourseis

Tolearnhowto makeeffectiveteams,personality developmentandleadershipskills.

- Tolearn skillsfordiscussingand resolving problemson thework site
- Toassessandimprovepersonalgrooming
- Topromotesafetyawarenessincludingrulesandproceduresontheworksite
- Todevelopand practiceself managementskills forthe worksite

CourseOutcomes:

Bytheendofthiscourse,thestudent

- Recitethecorporateetiquette.
- Makepresentationseffectivelywithappropriatebodylanguage
- Becomposedwithpositiveattitude
- Applytheircorecompetenciestosucceed inprofessionalandpersonallife

A list of vital employability skills from the standpoint of engineering students with discussionhowtopotentially develop such skills through campus life.

UNIT-1

CareerMapping:

Inculcateworkplaceandprofessionaletiquettes.TipsforSuccess.Etiquetteand Manners

–Social and Business.

TimeManagement–Concept,Essentials,Tips.

UNIT-2

PersonalityDevelopment–Meaning,Nature,Features,Stages,Models;LearningSkills;Adaptability Skills.

Decision-MakingandProblem-SolvingSkills:Meaning,TypesandModels,GroupandEthical Decision-Making, Problems and Dilemmas in application of these skills, Case studiesanddiscussions etc.

UNIT-3

ConflictManagement:Conflict-
Definition,Nature,TypesandCauses;MethodsofConflictResolution.

StressManagement:Stress-
Definition,Nature,Types,SymptomsandCauses;StressAnalysisModels andImpact ofStress;
Measurementand ManagementofStress

UNIT-4

TeamworkandLeadershipSkills:ConceptofTeams;Buildingeffectiveteams;ConceptofLeadership and honing Leadership skills.

LeadershipandAssertivenessSkills:AGoodLeader;LeadersandManagers;LeadershipTheories;Typesof Leaders; LeadershipBehaviour; Assertiveness Skills.

UNIT-5

EmotionalIntelligence:Meaning,History,Features,Components,IntrapersonalandManagementExcellence; Strategies toenhanceEmotional Intelligence.

ReferencesBooks:

1) Wallace,PersonalityDevelopment, IndiaEdition,CENGAGELearning,2008.
2) P.SubbaRao,PersonnelandHumanResourceManagement,HimalayaPublishingHouse;FifthEdition,2015
3) RamachandranandKarthik,FromcampustoCorporate,India,PEARSONPublication,2016.
4) BarunK.Mitra,PersonalityDevelopmentand SoftSkills,OxfordUniversityPress,2011.
5) S.P.Dhanavel,EnglishandSoftSkills,OrientBlackswan,2010.
6) Raman,Meenakshi&Sharma,Sangeeta,TechnicalCommunicationPrinciplesandPractice,Oxford University Press, 2011.

RelatedActivities

- ComparingcompanyWorkculture,NatureandManagementstyles-companyinformation.
- Handlingpersonnelmatters –egTimemanagement,Communicationat work.
- Roleplaysof chairingbusinessmeetings andnegotiations.
- ConflictsresolutionGames
- TeambuildingandleadershipskillsCasestudiesanddiscussions
- Findout theleadership stylesofvarious companiesCEO's.
- TipsforEnhancingYour OwnEmotionalIntelligenceor Teams

IVYEARIISEMESTER								
S.No	**CODE**	**COURSE**	**L**	**T**	**P**	**Credits**	**Internal**	**External**
1	***ProfessionalElective-V***		3	0	0	3	40	60
	P18CSE20	UserInterfaceDesign(T1)						
	P18CSE18	Information RetrievalSystems(T2)						
	P18CSE17	E– Commerce(T3)						
	P18CSE23	CyberSecurity(T4)						
2	***ProfessionalElective-VI***		3	0	0	3	40	60
	P18CSE21	MobileComputing(T1)						
	P18CST14	BlockChainTechnology(T2)						
	P18CSE24	Human ComputerInteracti on(T3)						
	P18ITE07	Designpatterns(T4)						
3	P18ITP03	Project	0	0	12	6	80	120
TotalPeriods			**6**	**0**	**12**	**12**	**160**	**240**

B.Tech.IV YearIISem. **L T P C**

3 0 0 3

USER INTERFACE DESIGN(PROFESSIONALELECTIVE-V)

CourseCode:P18CSE20 **Internal Marks:40External Marks:60**

Course Prerequisite:Engineering Mathematics

ICourseObjectives:

- Todescribethewebuser Interface
- Todescribethestructureofuser Interface anddesignprocess
- Toorganizethewebsystems and control

CourseOutcomes:

- AbletodescribetheCharacteristicsofGraphicsInterfaceanditsPrinciples.
- AbletodesignthestandardsandstructuresforHumancomputerinteraction.
- Abletounderstandthecomponentsofwebsystemsandtextboxes.
- AbletodemonstratetheGuidanceofmultimediasystemsanditsaccessibility
- Abletosummarizethe conceptsofwindowslayoutandvisualization

UNIT-I **(10Lectures)**

INTRODUCTION Human–Computer Interface – Characteristics Of Graphics Interface – Direct Manipulation Graphical System – Web User Interface –Popularity –Characteristic &Principles.

UNIT-II **(10Lectures)**

HUMANCOMPUTER INTERACTION User Interface Design Process – Obstacles – Usability–Human CharacteristicsIn Design
– Human Interaction Speed –Business Functions –Requirement Analysis–Direct–Indirect Methods – Basic Business Functions – Design Standards – System Timings–Human Consideration In Screen Design – Structures Of Menus – Functions Of Menus– ContentsOfMenu–Formatting–PhrasingTheMenu–SelectingMenuChoice– NavigatingMenus– Graphical Menus.

UNIT-III **(10Lectures)**

WINDOWSCharacteristics–Components–PresentationStyles– Types–Managements– Organizations– Operations– Web Systems– Device–BasedControlsCharacteristics– Screen – Based Controls – Operate Control – TextBoxes–SelectionControl–Combination Control– Custom Control–Presentation Control.

UNIT-IV **(8Lectures)**

MULTIMEDIATextForWebPages–EffectiveFeedback–Guidance&Assistance–Internationalization– Accessibility– Icons–Image– Multimedia–Coloring.

UNIT-V **(7Lectures)**

WINDOWSLAYOUT–TEST Prototypes–KindsOfTests–Retest–InformationSearch– Visualization– Hypermedia–WWW– SoftwareTools.

TEXTBOOKS:

1. Wilbent.O.Galitz,"TheEssentialGuideToUserInterfaceDesign",JohnWiley&Sons, 2001.
2. BenSheiderman,"DesignTheUserInterface", PearsonEducation,1998.

REFERENCEBOOKS:

1. AlanCooper,"TheEssentialOfUserInterfaceDesign",Wiley–DreamTechLtd.,2002.

WEB REFERENCES:

1. http://www.annaunivedu.in/2012/08/it2024-user-interface-design-syllabus.html#ixzz3xlplel6R
2. http://www.vidyarthiplus.in/2014/10/it2024-user-interface-design-two-marks.html

B.Tech.IV YearIISem. **L T P C**

3 0 0 3

INFORMATION RETRIEVAL SYSTEMS(PROFESSIONALELECTIV E-V)

Course Code:P18CSE18Course Objectives:

1 Demonstrategenesisanddiversityofinformationretrievalsituationsfortextandhypermedia.
2 Describehands-onexperiencestore,andretrieveinformationfromwwwusingsemanticapproaches.
3 Demonstratetheusage of differentdata/file structuresinbuildingcomputationalsearchengines.
4 Analyzetheperformanceofinformationretrievalusingadvancedtechniquessuchasclassification, clustering, and filtering overmultimedia.

CourseOutcomes:

1.Describe the objectives of information retrieval systems and models like vector-space,probabilistic andlanguagemodelstoiidentify the similarityofqueryanddocument
2. Implementclusteringalgorithmslikehierarchicalagglomerativeclusteringandk-meansalgorithm.
3. Understandrelevance feedbackinvectorspacemodelandprobabilisticmodel.
4. Designthemethodto buildinvertedindex

UNIT-I **(8Lectures)**

Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digitallibrariesand DataWarehouses.

UNIT-II **(9Lectures)**

InformationRetrievalSystemCapabilities: Search,Browse,Miscellaneous
CatalogingandIndexing: Objectives, IndexingProcess,AutomaticIndexing.

UNIT-III **(10Lectures)**

Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram datastructure,PATdata structure,Signaturefilestructure,Hypertext datastructure.

UNIT-IV **(8Lectures)**

Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language,Conceptindexing, Hypertext linkages

UNIT-V **(10Lectures)**

Document and Term Clustering: Introduction, Thesaurus generation, Item clustering,Hierarchyofclusters.

Text Search Algorithms: Introduction, Software text search algorithms, Hardware textsearchsystems.

TEXTBOOK:

1.Kowalski,Gerald,MarkTMaybury:
InformationRetrievalSystems:TheoryandImplementation,KluwerAcademicPress,
1997.

REFERENCES:

1. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data
StructuresandAlgorithms, PrenticeHall, 1992.
2. ModernInformationRetrivalByYatesPearsonEducation.
3. InformationStorage&RetievalByRobertKorfhage–JohnWiley&Sons.

WEBREFERENCES:

6. https://link.springer.com/
7. https://www.researchgate.net/
8. https://nptel.ac.in/
9. https://www.tutorialspoint.com/
10. https://www.javatpoint.com/

B.TechIVYear-IISemester **Course Structure**

L	T	P	C
3	0	0	3

E-COMMERCE(PROFESSIONALELECTIVEV)

COURSECODE:P18CSE17 **Internal Marks:40External Marks:60**

CoursePrerequisite:Nil

CourseObjectives:

1. UnderstandthesignificanceofE-Commerce
2. Understandthedifferentnetworkplatforms.
3. UnderstandthemechanismsforSecuringE-Commerce
4. UnderstandthepaymentsysteminE-commerce.
5. UnderstandthemechanismsforMarketing& AdvertisinginE-Commerce

CourseOutcomes:

Atthe end ofthis course studentwill ableto

1. LearnaboutE-Commerceplatforms.
2. DesignapplicationsforE-Commerce
3. Securelyperformonlinetransactions
4. Getknowledgeon onlinepaymentsystem inE-Commerce.
5. Designmechanismfor marketing&advertisingintheE-commerceworld

UNITI **(9Lectures)**

Introduction to E-Commerce: What is E-Commerce, Benefits, Impact of E-Commerce,Classifications, Web 2.0 based social networking platform for social media e-commerce,Applications, What is business Model, Conventional Trading Process, EDI, Building blocksofEDI, Value AddedNetworks, Benefits of EDI,Applications.

UNITII **(9Lectures)**

E-Commerce: Architectural Framework, FTP Application, e-mail, WWW Server, HTTP,Web Server Implementations, Information Publishing, Web Browsers, HTML, CGI, MultiMediaContent, OtherMultimedia Objects, VRML.

UNITIII **(10Lectures)**

SecuringE-Commerce:WhyInformationonInternetisvulnerable,SecurityPolicy,Procedures and Practices, Site Security, Protecting the Network, Firewalls, Securing the WebServices, Importance of Supply Chain Management, Impact of E-Commerce Technologies onSupplyChain Management.

UNITIV **(8Lectures)**

E–CommercePaymentMechanism:IntroductiontoOnlinePaymentSystems,Requirements Metrics of a Payment System, E – Cheque, E – Cash, E – Payment Threats &Protections.

UNITV **(9Lectures)**

E-CommerceMarketing:InfluenceonMarketing,SearchEnginesandDirectoryServices.InternetAdvertising,MobileCommerce-Introduction,Framework,Home–shopping,Tele-marketing, Agents in E-Commerce.

TextBooks:

1. "Electronic Commerce-Framework Technologies and Applications", Bharat Bhaskar,4th Edition, 2013, McGrawHill.

ReferenceBooks:

1. "Introduction to Electronic Commerce", Third Edition, Turban, David King, Lang,Pearson.
2. "E-CommerceFundamentalApplication",Chan,Lee,Dillon,Chang,WileyIndia.
3. "GlobalElectronicCommerce",WestLand,Clark,UniversityPress.
4. "E-Commerce and Mobile Commerce Technologies", Pandey, Srivastava and Shukla, S.ChandPublications.
5. "E-Business:TheoryandPractices",Canzer,CengagePublishers.

WebReferences:

1. https://sites.google.com/site/bus14101love/e-commerce-social-networking-and-web-2-0
2. https://whatis.techtarget.com/definition/Web-server
3. https://www.tutorialspoint.com/internet_technologies/web_servers.htm
4. https://techterms.com/definition/web_publishing
5. https://www.slideshare.net/swatichauhan133/vrml-swati
6. https://www.vistainfosec.com/blog/what-are-the-best-practices-for-securing-e-commerce-business/
7. https://www.revistaespacios.com/a19v40n24/a19v40n24p17.pdf
8. https://www.searchenginewatch.com/2013/09/26/major-search-engines-and-directories/
9. https://study.com/academy/lesson/market-influences-definition-examples.html
10. https://www.thedroidsonroids.com/blog/what-is-mcommerce-definition-and-types-of-mobile-commerce
11. https://www-users.cs.umn.edu/~gini/csom.html

B.TechIVYearIISemester

CourseStructure

L	T	P	C
3	0	0	3

CYBER SECURITY

(IT)

InternalMarks:40

CourseCode:P18CSE23

ExternalMarks:60

CourseObjectives:

- Tointroducethefundamentalconceptsofinformationandcyber securityinthebusinessenterprise.
- Toexplorethethreatsandvulnerabilities associatedwithbusinesssystems.
- Tounderstandthecoredomainsofsecurityaspresentedinwidelyacceptedcybersecurityframeworks.
- To explain criticalcybersecurity technicalcomponentsas related tothe respectivesecuritydomains.
- Tointroducecyberrisk managementconcepts.
- Toexplorethechallengesofcommunicatingcybersecurityconceptstobusinessexecutives .

CourseOutcomes:

- Understandthebroadsetoftechnical,social&politicalaspectsofComputerSecurity
- DescribetheoperationalandorganizationalsecurityAspects
- Haveunderstood thefundamentals ofcryptography
- ExplainAuthenticationMethods
- Understandthepurposeof Intrusiondetection system

UNITI: (9Lectures)

INTRODUCTIONSECURITYANDSECURITYTRENDS

Introduction about Security, Basic Security Terminology, Security Models,The ComputerSecurityProblems,Attacks andTargets, Approachesto ComputerSecurity, Ethics.

UNITII: (12Lectures)

OPERATIONALANDORGANIZATIONALSECURITY

Introduction about Policies and Procedures, Standards and Guidelines:-Security Awarenessand Training, Interoperability, Agreements:- The Security Perimeter, Physical Security,Environmental Issues, Wireless, Electromagnetic Eavesdropping, People:- A SecurityProblem,People as aSecurity Tool.

UNITIII: (12Lectures)
CRYPTOGRAPHYANDENCRYPTION

IntroductionaboutCryptography,Cryptography:-
HistoricalPerspectives,Algorithms,HashingFunctions,Symmetric,Encryption:-
AsymmetricEncryption,QuantumCryptography,Cryptography Algorithm Use.

UNITIV: (9Lectures)
AUTHENTICATIONANDREMOTE ACCESS

Introduction about Authentication, Users, Groups and Role Management:- Password Policies,Single Sign On, Security Controls and Permissions:- Preventing Data Loss or Theft,IntroductiontoRemoteAccess:-TheRemoteAccessProcess,RemoteAccessMethods.

UNITV: (9Lectures)
INTRUSIONDETECTIONSYSTEM

History of Intrusion Detection System, IDS Overview:- Network -Based IDSs, Host-BasedIDSs,Intrusion Prevention System:-Honeypots and Honey nets Tools.

TextBooks:
1.W.A.Coklin, G.White, Principles of Computer Security: Fourth Edition, McGrawHill,2016.
2.WilliamStallings,CryptographyandNetworkSecurityPrinciplesandPractices,SeventhEdition,Pearson

References:
1.Achyut S. Godbole, Web Technologies: TCP/IP, Web/Java Programming, and CloudComputing,Tata McGraw-Hill Education, 2013

B.Tech.IV YearIISem. **L T P C**

3 0 0 3

MOBILE COMPUTING(PROFESSIONALELECTIV E-VI)

CourseCode:P18CSE21 **Internal Marks:40External Marks:60**

Course Prerequisite: Operating SystemsCourseObjectives:

- Tomakethestudentunderstandtheconceptofmobilecomputingparadigm,itsnovelapplicationsandlimitations.
- To understand the typical mobile networking infrastructure through a popular GSMprotocol
- Tounderstandtheissuesandsolutionsofvariouslayersofmobilenetworks,namelyMAClayer, NetworkLayer& TransportLayer
- Tounderstandthedatabaseissuesin mobileenvironments&datadelivery models.
- Tounderstandtheadhocnetworksandrelatedconcepts.

CourseOutcomes:

- Abletothinkanddevelopnewmobileapplication.
- Abletotakeanynewtechnicalissuerelatedtothisnewparadigmandcomeupwith asolution(s).
- Abletodevelop newad-hocnetworkapplicationsand/oralgorithms/protocols.
- Ableto understand &develop anyexistingornewprotocolrelatedtomobileenvironment

UNIT-I **(8Lectures)**

Introduction: Mobile Communications, Mobile Computing – Paradigm, Promises/NovelApplicationsandImpedimentsandArchitecture;MobileandHandheldDevices,Limitationsof Mobile and Hand held Devices.
GSM – Services, System Architecture, Radio Interfaces, Protocols, Localization, Calling,Handover,Security, NewData Services,GPRS, CSHSD, DECT.

UNIT– II **(10Lectures)**

(Wireless)MediumAccessControl(MAC): MotivationforaspecializedMAC(Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA,WirelessLAN/(IEEE802.11)
MobileNetworkLayer:IPandMobileIPNetworkLayers,PacketDeliveryandHandoverManagement,LocationManagement,Registration,TunnelingandEncapsulation,Route Optimization, DHCP.

UNIT–III **(10 Lectures)**

Mobile Transport Layer: Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP,MobileTCP,Other Transport LayerProtocols forMobile Networks.

Database Issues: Database Hoarding & Caching Techniques, Client-Server Computing &Adaptation,TransactionalModels,Queryprocessing,DataRecoveryProcess&QoSIssues.

UNIT-IV (7Lectures)

Data Dissemination and Synchronization: Communications Asymmetry, Classificationof Data Delivery Mechanisms, Data Dissemination, Broadcast Models, Selective Tuningand IndexingMethods,DataSynchronization –Introduction,Software, andProtocols

UNIT-V (10Lectures)

Mobile Adhoc Networks (MANETs): Introduction, Applications & ChallengesofaMANET,Routing,ClassificationofRoutingAlgorithms,AlgorithmssuchasDSR,AODV,DSDV,etc. , MobileAgents, ServiceDiscovery.

Protocols and Platforms for Mobile Computing:WAP, Bluetooth,XML,J2ME,JavaCard,Palm OS, WindowsCE, Symbian OS, LinuxforMobile Devices,Android.

TEXTBOOKS:

1. JochenSchiller,"MobileCommunications",Addison-Wesley,SecondEdition,2009.
2. Raj Kamal, "Mobile Computing", Oxford University Press,2007, ISBN:0195686772.

REFERENCEBOOKS:

1. JochenSchiller,"MobileCommunications",Addison-Wesley,SecondEdition,2004.
2. StojmenovicandCacute,"HandbookofWirelessNetworksandMobileComputing",Wiley, 2002, ISBN0471419028.
3. Reza Behravanfar, "Mobile Computing Principles:DesigningandDevelopingMobileApplicationswithUMLandXML",ISBN:0521817331,CambridgeUniversityPress, Oct2004.

WEB REFERENCES:

1. https://dattashingate.files.wordpress.com/2018/07/specialized-mac-sdmafdmatdma-and-cdma.pdf
2. https://www.iith.ac.in/~tbr/teaching/docs/transport_protocols.pdf
3. https://www.coursehero.com/file/34566257/unit-5-full-notes-in-pdfpdf/
4. http://www.cruiserselite.co.in/downloads/btech/materials/4/1314/mc/unit-6.pdf

B.Tech.IV YearIISem. **L T P C**

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BLOCKCHAIN TECHNOLOGY(PROFESSIONALELECTIVE-VI)

CourseCode:P18CST14 **Internal Marks:40External Marks:60**

CoursePrerequisite:Cryptography

CourseObjectives:
Theblockchaintechnology courseallows
1. Thestudentstoexplore thedrivingforcebehindthecryptocurrencyBit coin.
2. AlongwiththeDecentralization,Cryptography,
3. Bitcoinswithitsalternativecoins,
4. Smartcontractsandoutsideofcurrencies.

Courseoutcomes:
At theend ofthe coursethestudent will be able to:
1. Understandthetypes,benefitsandlimitationofblockchain.
2. Exploretheblockchaindecentralizationandcryptography concepts.
3. EnumeratetheBitcoinfeatures anditsalternativeoptions.
4. Describeanddeploy thesmartcontracts
5. Summarizetheblockchainfeaturesoutsideofcurrencies.

Unit-1:Intoduction
Distributedsystems,Historyofblockchain,Introductiontoblockchain,Typesofblockchain,CAPtheorem and blockchain, Benefitsand limitations of blockchain.

Unit-2
DecentralizationandCryptography: Decentralizationusingblockchain,Methodsofdecentralization, Routes to decentralization, Decentralized organizations. Cryptography andTechnicalFoundations:Cryptographicprimitives,Asymmetriccryptography,Publicandprivatekeys

Unit-3
BitcoinandAlternativeCoinsA: Bitcoin, Transactions, Blockchain, Bitcoin paymentsB:AlternativeCoins,Theoreticalfoundations,Bitcoinlimitations,Namecoin,Litecoin,Primecoin,Zcash

Unit-4
SmartContractsandEthereum: SmartContracts:Definition,Ricardiancontracts.Ethereum101: Introduction, Ethereum blockchain, Elements of the Ethereum blockchain,Precompiledcontracts.

Unit-5

AlternativeBlockchains: BlockchainsBlockchain-OutsideofCurrencies:InternetofThings,Government, Health, Finance, Media

Textbook/Textbooks

1.MasteringBlockchain-Distributedledgers,decentralizationandSmartcontractsexplained, Author- Imran Bashir, Packt Publishing Ltd, Second Edition, ISBN 978-1- 78712-544-5, 2017

ReferenceBooks

1. BitcoinandCryptocurrencyTechnologies,Author-ArvindNarayanan,JosephBonneau,EdwardFelten,AndrewMiller, StevenGoldfeder,Princeton University,2016

2.Blockchain Basics: A Non-Technical Introduction in 25 Steps, Author- Daniel Drescher,Apress,First Edition, 2017

3. Mastering Bitcoin: Unlocking Digital Cryptocurrencies, Andreas M. Antonopoulos,O'ReillyMedia, FirstEdition, 2014

WebReferences:

1. https://www.javatpoint.com/blockchain-tutorial
2. https://www.tutorialspoint.com/blockchain/index.htm
3. https://www.guru99.com/blockchain-tutorial.html
4. https://www.simplilearn.com/tutorials/blockchain-tutorial

B.TechIVYear-IISemester **Coursestructure**

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HUMAN COMPUTER INTERACTION(PROFESSIO NALELECTIVE)

CourseCode:P18CSE24 **Internal Marks:40External Marks:60**

CoursePrerequisite: KnowledgeofComputerandItsArchitecture

CourseObjectives:

1. Toprovidebasicmethodologiesandprocessesfordesigninginterfaces.
2. To improve the interaction between users and computers by making computers moreusableand receptiveto theuser‘sneeds.
3. To provide relevant principles of behaviour,mostly derivedfrom cognitive scienceandpsychologyandothersourcesthatdescribehumanethologicinparticularenviron ment,especially technological ones.
4. Tomakethestudentsfamiliarwithdevelopingnewinterfacesandinteractiontechniques.

CourseOutcomes:

Attheend ofthis coursethe student will beableto

1. Identifytheelementsofgooduser interfacedesignthrougheffectiveGUI.
2. Identifytheimportanceofhumancharacteristicsandunderstandingbusinessfunctions.
3. Analyzescreendesignprinciplesformakinggooddecisionsbasedontechnologicalconside rationsin interfacedesign.
4. Selectthewindow,deviceandscreenbasedcontrolsthroughnavigationschemes.
5. Identifythebasic componentsandinteractiondevicestointeractwiththecomputers.

Unit-I: (9Lectures)

Introduction:ImportanceofuserInterface–definition,importanceofgooddesign,benefitsof good design.A briefhistoryof Screendesign.

Thegraphicaluserinterface–

popularityofgraphics,theconceptofdirectmanipulation,graphicalsystem,Characteristics,We buser–Interfacepopularity,characteristics-Principles of user interface.

Unit-II: (9Lectures)

Design process – Human interaction with computers, importance of human characteristicshumanconsideration, Humaninteraction speeds, understandingbusiness

junctions.

UNIT-III (10Lectures)

ScreenDesigning:Designgoals–Screenplanningandpurpose,organizingscreenelements, ordering of screen data and content – screen navigation and flow – Visuallypleasingcomposition–amountofinformation–focusandemphasis– presentationinformation simply and meaningfully – information retrieval on web – statistical graphics –Technologicalconsideration in interfacedesign.

UNIT-IV (8Lectures)

Windows – New and Navigation schemes selection of window, selection of devices basedandscreen basedcontrols.

UNIT-V (9Lectures)

Components – text and messages, Icons and images – Multimedia, colour – uses, problemswith choosingcolours.

Interaction Devices – Keyboard and function keys – pointing devices – speech recognitiondigitizationand generation– imageand video displays– drivers.

TextBooks:

1. Wilbert O Galitz, ‖The Essential Guide to User Interface Design‖, Wiley DreamaTech,Third Edition, 2007.

ReferenceBooks:

1. BenShneiderman,CatherinePlaisant,―DesigningtheUserInterface‖,FourthEdition,PearsonEducation ,2008.
2. ALAN DIX, JANET FINLAY, GREGORYD. ABOWD, RUSSELLBEALE,―HumanComputer Interaction‖,ThirdEdition,PEARSON,2009.

WebReferences:

1. http://ps.fragnel.edu.in/~dipalis/prgdwnl/eguid.pdf
2. https://www.alljntuworld.in/download/human-computer-interaction-materials-notes/
3. http://www.crectirupati.com/sites/default/files/lecture_notes/HCI-notes.pdf

B.Tech.IV YearIISem. **L T P C**

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DESIGN PATTERNS(PROFESSIONALELECTIVE-VI)

Course Code:P18ITE07Course Objectives:

- The aim of the course is to appreciate the idea behind Design Patterns in handlingcommonproblems facedduring buildinganapplication
- This course covers all pattern types from creational to structural, behavioral toconcurrency and highlights the scenarios when one pattern must bechosenoverothers.

CourseOutcomes:

- Createsoftwaredesignsthat arescalableand easilymaintainable
- UnderstandthebestuseofObjectOrientedconceptsforcreatingtrulyOOPprograms
- Usecreationaldesignpatternsin softwaredesignforclassinstantiation
- Usestructuraldesignpatternsforbetterclassandobjectcomposition
- Usebehavioralpatternsforbetterorganizationandcommunicationbetweentheobjects
- Userefactoring tocomposethemethods forpropercodepackaging
- Userefactoringtobetter organizethe classresponsibilitiesofcurrentcode

UNIT– I (10Lectures)

Introduction: What is a design pattern? design patterns in SmalltalkMVC,DescribingDesign Patterns, The Catalog of Design Patterns, Organizing the Catalog,HowDesignPatterns Solve Design Problems, How to Select a Design Pattern, How to UseaDesignPattern.

UNIT– II (9Lectures)

DesigningaDocumentEditor:DesignProblems,DocumentStructure,Formatting,EmbellishingtheUserInterface,SupportingMultipleLook-and-FeelStandards,SupportingMultipleWindowSystems,UserOperationsSpellingCheckingandHyphenation,Summary

UNIT– III (9Lectures)

Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton,DiscussionofCreationalPatterns.

StructuralPatternpart-1:Adapter,Bridge,Composite.

UNIT– IV (9Lectures)

StructuralPatternpart-II: Decorator,Façade,Flyweight,Proxy.

BehavioralPatternspart-1: ChainofResponsibility,Command,Interpreter,iterator.

UNIT– V (9Lectures)

Behavioral Patterns part-II : Mediator, Memento, Observer, State, Strategy, TemplateMethod,Visitor, Discussion ofbehavioral patterns.

TEXTBOOK:

1.DesignPatterns,ErichGamma,PearsonEducation

REFERENCEBOOKS:

1. Pattern'sinJava,Vol –I, MarkGrand,WileyDreamTech.
2. PatternsinJava,Vol-II, MarkGrand,WileyDreamTech.
3. JavaEnterpriseDesignPatternsVol-III,Mark Grand,WileyDreamTech.
4. HeadFirstDesignPatterns,EricFreeman,O'reilypublications