First Year **CORE COURSE I** **Semester I**

PROGRAMMING IN C AND DATA STRUCTURES

Code:22SCCIT1 **(Theory)** **Credit: 5**

COURSE OBJECTIVES:

- To know about the basics of C Programming, Control and Looping Structures and programming with it.
- To understand Arrays, Pointers and String Processing in C language
- To know about the basic concepts in Data Structures.

UNIT - I:

Basic of C: History of C and its importance – Structure of a C program – Data Types – Constants and Variables – Operators and Expressions – Order of Precedence, Evaluating of Arithmetic Expressions – Type Conversion- Decision Statements: if, if-else, and nested if statements.

UNIT - II:

Loops Structures: For Loop, While, Do-while loop – Arrays: - One Dimensional Array, Two-dimensional Arrays, Character Arrays and Strings – Functions: Function with arrays- Function with decision and looping statements - Recursion.

UNIT - III:

Pointers: Introduction – Pointer Expressions – Chain of Pointers – Pointers and Arrays – Array of Pointers – Pointers as function arguments – Functions returning Pointers – Pointers to Functions – Function pointer – Structures - declaration, initialization, Array of Structures – Pointer to structures, Structures and functions – Typed of Enumerated data types, Unions.

UNIT - IV:

Strings Processing, Standard string library functions – Files: introduction and files functions – Writing and reading in Text mode – Simple application: Display the contents of a file. Write data to a file.
Append data to an existing file – File IO – Reading and writing structures.

UNIT - V:

Stack: LIFO concept, Stack operations, Array implementation of stack – Queue: FIFO concept, Queue operations, Array implementation of queue – Singly Linked List: concepts, operations – Doubly Linked List: concepts, operations – Trees: General trees, Binary trees.

UNIT – VI CURRENT CONTOURS (For continuous internal assessment only):

Contemporary Developments Related to the Course during the Semester Concerned.

REFERENCES:

E. Balagurusamy, "Programming in ANSI C", Tata McGraw Hill, New Delhi, Seventh Edition, 2016.
E. Horowitz, S. Sahni and Susan Anderson Freed, "Fundamental Data Structures in C", 2ed, Orient BlackSwan Publisher, 2009.
Byron S. Gottfried, "Programming with C", Schaum's Outline Series, Tata-McGraw Hill Edition, New Delhi, 1991.
E. Karthikeyan, "A Textbook on C Fundamentals, Data Structures and Problem Solving", Prentice-Hall of India Private Limited, New Delhi, 2008.
Yashavant Kanetkar, "Let us C", BPB Publications, Tenth Edition, New Delhi, 2010.
Szuhay, Jeff, and Szuhay, Jeff, "Learn C Programming: A Beginner's Guide to Learning C Programming the Easy and Disciplined Way", Packt Publishing, 2020.
Jena, Sisir Kumar, and Jena, Sisir Kumar, "C Programming: Learn to Code", CRC Press, 2021.
https://www.tutorialspoint.com/cprogramming/index.htm
https://www.w3schools.in/data-structures/intro

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Summarize the basic knowledge to develop C programs
- Manipulate Looping, arrays and functions
- Apply and write programs for solving real world problems
- Create open, read, manipulate, write and close files.
- Understand the basic concepts in data structures.

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First Year **CORE PRACTICAL I** **Semester I**

PROGRAMMING IN C LAB

Code: 22SCCIT1P **(Practical)** **Credit : 4**

COURSE OBJECTIVES:

- To understand the programming fundamentals of C language.
- To impart writing skill of C programming and data structures for a list of problems.
- To impart hands on training for writing a C program using computers.

1. Write a Program
   a. To convert temperature from degree Centigrade to Fahrenheit,
   b. Find whether given number is Even or Odd,
   c. Find the greatest of Three numbers.
2. Writea Program to display Monday to Sunday using switch statement
3. Write a Program to display first Ten Natural Numbers and their sum.
4. Write a Program to perform Multiplication of Two Matrices.
5. Write a Program
6. To find the maximum number in an Array using pointer.
7. To reverse a number using pointer.
8. To add two numbers using pointer.
9. Write a Program to solve Quadratic Equation using functions.
10. Write a Program to find factorial of a number using Recursion.
11. Writea Program to demonstrate Call by Value and Call by Reference.
12. Write a Program to create a file containing Student Details.
13. Write a program to Implement a stack using singly linked list, Implement Queue using Linked List.

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Relate the use of language constructs to solve simple programs
- Develop programs for various concepts in C language
- Understand and trace the execution of the list of programs
- Understand the usage of file handling in C programming
- Solve data problems related to data structures.

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PROFESSIONAL ETHICS

I YEAR – I - SEMESTER
ALLIED COURSE I – 22SCACMM1B
ALGEBRA AND CALCULUS

Objectives :

To lean the basic concepts in the integration
To train the students to solve the problems in Theory of Equations

UNIT I

Theory of Equations: Relation between roots & coefficients – Transformations of Equations – Diminishing ,Increasing & multiplying the roots by a constant- Forming equations with the given roots –Rolle's Theorem, Descarte's rule of Signs(statement only) –simple problems.

UNIT II

Matrices : Singular matrices – Inverse of a non-singular matrix using adjoint method - Rank of a Matrix – Consistency - Characteristic equation, Eigen values, Eigen vectors – Cayley Hamilton's Theorem (proof not needed) –Simple applications only

UNIT III

Differentiation: Maxima & Minima – Concavity , Convexity – Points of inflexion - Partial differentiation – Euler's Theorem - Total differential coefficients (proof not needed) –Simple problems only.

UNIT IV

Integration : Evaluation of integrals of types

1] $\int \frac{px+q}{ax^2+bx+c}dx$ $\int \frac{px+q}{\sqrt{ax^2+bx+c}}dx$ $\int \frac{dx}{a+b\sin x}$

$\int \frac{dx}{a - b\cos x}$ Evaluation using Integration by parts – Properties of definite integrals – Fourier Series in the range (0 , 2) – Odd & Even Functions – Fourier Half range Sine & Cosine Series

UNIT V

Differential Equations: Variables Separables – Linear equations – Second order of types ($a D^2 + b D + c) y = F (x)$ where a,b,c are constants and F (x) is one of the following types (i) $e^{K x}$ (ii) sin (kx) or cos (kx) (iii) x^n , n being an integer (iv) $e^{K x} f (x)$

TEXT BOOK(S)

T.K. Manickavasagam Pillai & others, Algebra, Volume I, S.V Publications , 1985 Revised Edition (Units I, II)

S. Narayanan, T.K. Manicavachagam Pillai, Calculus, Vol. II, S. Viswanathan Pvt Limited, 2003. (Units III, IV and V)

REFERENCE(S)

1. M.L. Khanna, Differential Calculus, Jaiprakashnath and Co., Meerut-2004.

HUMAN VALUES

I SEMESTER COURSE CODE: 22UGVED
PART IV - VALUE EDUCATION

Objectives:

- To understand the philosophy of life and values through Thirukural
- To analyse the components of values education to attain the sense of citizenship
  To understand different types of values towards National Integration and international understanding
- To learn yoga as value education to promote mental and emotional health
- To understand human rights, women rights and other rights to promote peace and harmony

Unit I Philosophy of Life and Social Values
Human Life on Earth (Kural 629) -Purpose of Life (Kural 46) -Meaning and Philosophy of Life (Kural 131, 226) -Family (Kural 45), Peace in Family (Kural 1025) Society (Kural 446), The Law of Life (Kural 952), Brotherhood (Kural 807) Five responsibilities / duties of Man (a) to himself (b) to his family (c) to his environment (d) to his society, (e) to the Universe in his lives (Kural 43, 981).

Unit II Human Values and Citizenship
Aim of education and value education: Evolution of value oriented education, Concept of Human values: types of Values- Character Formation – Components of Value education- A P J Kalam's ten points for enlightened citizenship- The role of media in value building

Unit III Value Education towards National and Global Development
Constitutional or national values: Democracy, socialism, secularism, equality, Justice, liberty, freedom and fraternity - Social Values: Pity and probity, self-control, universal brotherhood - Professional Values - Knowledge thirst, sincerity in profession, regularity, punctuality and faith -Religious Values: Tolerance, wisdom, character - Aesthetic Values- Love and appreciation of literature and fine arts and respect for the same- National Integration and International Understanding.

Unit IV Yoga and Health
Definition, Meaning, Scope of Yoga - Aims and objectives of Yoga - Yoga Education with modern context - Different traditions and schools of Yoga - Yoga practices: Asanas, Pranayama and Meditation.

Unit V Human Rights

Concept of Human Rights: Indian and international perspectives- Evolution of Human Rights- definitions under Indian and International documents -Broad classification of Human Rights and Relevant Constitutional Provisions: Right to Life, liberty ad Dignity- Right to equality- Right against exploitation-Cultural and Educational Right- Economic Rights- Political Rights- Social Rights - Human Rights of Women and Children – Peace and harmony.

Unit VI Current Contours: (for continuous internal assessment only):

Books for References

1. Thirukkural with English Translation of Rev. Dr. G.U. Pope, Uma Publication, 156, Serfoji Nagar, Medical College Road, Thanjavur 613004
2. Leah Levin, Human Rights, NBT,1998
3. V.R. Krishna Iyer, Dialetics and Dynamics of Human Rights in India, Tagore Law Lectures.
4. Yogic Thearpy - Swami Kuvalayananda and Dr.S.L.Vinekar, Government of India, Ministry of Health, NewDelhi.
5. SOUND HEALTH THROUGH YOGA - Dr. K.Chandrasekaran, Prem Kalyan Publications, Sedaptti,1999.
6. Grose. D. N – "A text book of Value Education' New Delhi (2005)
7. Gawande. EN – "Value Oriented Education" – Vision for better living. New Delhi (2002) Saruptsons
8. Brain Trust Aliyar- "Value Education for Health, Happiness and Harmony" Erode (2004) Vethathiri publications

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First Year **CORE COURSE II** **Semester II**

PROGRAMMING IN JAVA

Code: 22SCCIT2 **(Theory)** **Credit: 5**

COURSE OBJECTIVES:

- To acquire the programming skills with java.
- To implement the object-oriented concepts with java language
- To learn the art of GUI programming with Applet.

UNIT - I:

Foundation, Essentials, Control Statement and Classes & Objects, Stage of Java – origin of Java – challenges - features - Object-Oriented Programming; Java Essentials: Elements - API - variables - primitive data types – String Class - operators –combined assignment operators - conversion –scope – comments - keyboard input; Control Statements: if ,if-else, nested if & if-else-if statements – logical operators – comparison – conditional operator – switch – increment and decrement – while, do-while & for loops – nested loops – break and continue; Classes and Objects: classes and objects -modifiers - passing arguments– constructors - package & import - static class members –method overloading– constructor overloading –returning objects – this variable – recursion – nested & inner classes – abstract classes & methods.

UNIT - II:

Arrays, String Handling, Inheritance, Interface and Packages, Introduction – processing array – passing arrays – returning arrays – String arrays – two Dimensional Arrays - Arrays with Three or More Dimensions; String Handling
: String class – concatenation – comparison – substring – methods – other methods–String Buffer, String Builder & String Tokenizer classes; Inheritance: basics –inheriting and overriding superclass methods – calling superclass constructor – polymorphism – inherit from different classes – abstract classes – final Class; Interfaces: Basics – multiple Interfaces – multiple inheritance using interface – multilevel interface – Packages – Create and access packages in Net Beans IDE – static Import and package class – access specifiers.

UNIT - III:

Exception Handling, I/O and File Handling and Multithreading, Introduction
- try and catch block - multiple catch block - nested try - finally Block – throw Statement – exception propagation – throw Clause - custom exception
– built-in exception; Multithreading: Introduction – threads – thread creation
– life cycle – joining a thread – scheduler &priority – synchronization – inter-thread communication – thread control – thread Pool – thread group – daemon thread; Files and I\O Streams: file Class – streams – byte streams –

filtered byte streams – Random Access File class – character streams.

UNIT - IV:
Applet and GUI Part I, Fundamentals – applet class – life cycle – steps for applet program – passing values through parameters – graphics – event handling; GUI I:GUI – creating windows – dialog boxes – layout managers – AWT component classes – Swing component classes – applications of AWTcontrols.

UNIT - V:

GUI Part II and Java Database Connectivity, Event handling – AWT components – AWT graphics classes – Swing controls – application using Swing and AWT; Java Database Connectivity: types of drivers – JDBC architecture – JDBC classes &interfaces – steps in JDBC applications – creating a new Database and table with JDBC.

UNIT – VI CURRENT CONTOURS (For continuous internal assessment only):
Contemporary Developments Related to the Course during the Semester Concerned.

REFERENCES:

1. S. Sagayaraj, R. Denis, P. Karthik & D. Gajalakshmi, "Constructive Java Programming", Universities Press, 2021.
2. E. Balagurusamy, "Programming with JAVA", Tata McGraw Hill, New Delhi, 2019.
3. C. Muthu, "Programming with JAVA", Vijay Nicole Imprints Private Limited, Chennai, Second Edition, 2011.
4. Bruce Eckel, Chuck Allison, "Thinking in Java", Prentice Hall Publications, 2006
5. Malina Pronto, "Java: How To Learn Java Programming: How To Improve Your Java Coding In 2020/2021: 5 Programming Languages To Learn For Beginners In Tech", Independently Published, 2020.
6. Nick Samoylov, "Learn Java 12 Programming: A Step-by-step Guide to Learning Essential Concepts in Java", Packt Publishing, 2019.
   https://www.javatpoint.com/java-tutorial

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Understand the concept of OOP as well as the purpose and usage principles of inheritance, polymorphism, encapsulation and method overloading.
- Identify members of a class and to implement them
- Create Java application programs using sound OOP practices (e.g., interfaces and APIs) and proper program structuring (e.g., by using

access control identifies, and create user define package for specific task,(reusability concepts) error exception handling)

- Develop programs using the Java standard class library.
- Develop software using Java programming language, (using applet, AWT controls, and JDBC).

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First Year **CORE PRACTICAL II** **Semester II**

PROGRAMMING IN JAVA LAB

Code: 22SCCIT2P **(Practical)** **Credit: 4**

COURSE OBJECTIVES:

- To understand the basics of JAVA programs and their execution.
- To learn concepts like inheritance, packages and interfaces.
- To understand the life cycle of the applets, database connectivity and their functionality.

1. Write a program to sort the given numbers using arrays.
2. Write a program to implement the FIND and REPLACE operations in the given text.
3. Write a program to implement a calculator to perform basic arithmetic Operations, doing with constructers
4. Write a program to find the student's percentage and grade using command line arguments.
5. Write a program to draw circle or triangle or square using polymorphism and inheritance.
6. Implement multiple inheritance concepts in java using interface, you can choose your own example of a company or education institution or a general concept which requires the use of interface to solve a particular problem.
7. Write a program to create threads and perform operations like start, stop, suspend, resume
8. Write a program to develop an applet to play multiple audio clips using multithreading.
9. Write a program to retrieve employee data from a file
10. Write a program to retrieve student data from a Database

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Develop java programs to understand the OOP concepts.
- Write java programs for classes and objects
- Develop simple programs with multiple threads
- Write java programs using Applets
- Develop java programs to connect databases and files.

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PROFESSIONAL ETHICS

II SEMESTER COURSE CODE: 22SCACMM2B

ALLIED COURSE II NUMERICAL ANALYSIS AND PROBABILITY

Objectives:

- To learn knowledge about an algebraic and transcendental equations.
- To make the students gain wide knowledge in probability which plays a main role in solving real life problems.

Unit I

Algebraic & Transcendental equations: Bisection Method, Newton Raphson Method, Iteration method - Finite differences – Forward, Backward differences – Newton's forward & backward difference interpolation formulae – Lagrange's interpolating polynomial.

Unit II

Numerical differentiation - Numerical Integration using Trapezoidal rule and Simpson's first & second rules (proof not needed) - Solutions to Linear Systems – Gaussian Elimination Method – Jacobi & Gauss Siedal iterative methods – Theory and problems.

Unit III

Numerical solution of ODE: Solution by Taylor Series Method, Euler's Method, Runge - Kutta 2nd order method- Adam's Predictor Corrector Method and Milne's Predictor Corrector Methods.

Unit IV

Arithmetic Mean – Geometric Mean – Harmonic Mean - Median, Mode , Standard Deviation - Quartile Deviation – Percentiles - Expectation – Variance and covariance.

Unit V

Correlation and Regression –Properties of Simple Correlation and regression coefficients – Simple Numerical Problems only.

Unit VI
Current Contours (For Continuous Internal Assessment Only): An introduction to MATLAB

References

- S.S. Sastry, Numerical Analysis (Unit 1 , 2 , 3)
- Gupta. S.C & Kapoor, V.K, Fundamentals of Mathematical Statistics, Sultan Chand & sons, New Delhi -1994. (Units 4 & 5)
- M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Private Limited, 1999.
- C.E. Froberg, Introduction to Numerical Analysis, II Edn., Addison Wesley, 1979.

PROFESSIONAL ETHICS

II SEMESTER COURSE CODE: 22SCACMM2C

ALLIED COURSE III – OPERATIONS RESEARCH

Objectives:

- To learn the basic concepts about Linear Programming Problem, Transportation Problem Assignment Problem, Sequencing Problem and Network.
- To make students solve real life problems in Business and Management.

Unit I

Operations Research: Introduction - Basics of OR – OR & decision making – Role of Computers in OR - Linear programming formulations & graphical solution of two variables – Canonical & standard forms of LPP

Unit II

Simplex Method: Simplex Method for <, =, > constraints – Charne's method of penalties– Two phase Simplex method.

Unit III

Transportation problem: Transportation algorithm –Degeneracy algorithm – Degeneracy in Transportation Problem, Unbalanced transportation problem-Assignment algorithm – Unbalanced Assignment problem

Unit IV

Sequencing problem: Processing of n jobs through two machines – Processing of n jobs through 3 machines – processing of two jobs through m machines.

Unit V

Networks: Network – Fulkerson's rule - measure of activity – PERT computation – CPM computation - Resource scheduling.

Unit VI

Current Contours (For Continuous Internal Assessment Only): Integer and Dynamic programming.

References

Manmohan & Gupta , Operations Research, Sultan Chand Publishers, New Delhi
Prem Kumar Gupta and D.S. Hira, Operations Research : An Introduction,
S. Chand and Co., Ltd. New Delhi,
Hamdy A. Taha, Operations Research (7th Edn.), McMillan Publishing Company, New Delhi, 1982.

PROFESSIONAL ETHICS

II SEMESTER COURSE CODE: 22PELPS1

Part III - PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES-I

Objectives:

- To develop the language skills of students by offering adequate practicein professional contexts.
- To enhance the lexical, grammatical and socio-linguistic and communicative competence of first year physical sciences students
- To focus on developing students' knowledge of domain specific registers and therequired language skills.
- To develop strategic competence that will help in efficient communication
- To sharpen students' critical thinking skills and make students culturally aware ofthe target situation.

Unit I COMMUNICATION

Listening: Listening to instructions
Speaking: Telephone etiquette and Official phone conversations
Reading short passages (3 passages, one from each – Physics, Chemistry, Mathematics /Computer Science)
Writing: Letters and Emails in professional context
Grammar in Context: Wh and yes or no, Q tags Imperatives 7, Vocabulary in Context: Word formation - .Creating antonyms using Prefixes
Intensifying prefixes (E. g inflammable) Changing words using suffixes
Noun Endings
Adjective Endings
Verb Endings

Unit II - DESCRIPTION
Listening – Listening to process description
Speaking - Role play
Formal: With faculty and mentors in academic environment, workplace communication
Informal: With peers in academic environment, workplace communication
Reading –Reading passages on products, equipment and gadgets

Writing – Writing sentence definitions (e.g. computer) and extended definitions(e.g. artificial intelligence) Picture Description – Description of Natural Phenomena
Grammar in Context: Connectives and linkers.
Vocabulary – Synonyms (register) - Compare & contrast expressions.

Unit III - NEGOTIATION STRATEGIES

Listening - Listening to interviews of specialists / inventors in fields (Subjectspecific) Speaking – Brainstorming. (mind mapping). Small group discussions (subject-specific) Reading – longer Reading text. (Comprehensive passages)
Writing – Essay Writing (250 word essay on topics related to subject area, like pollution, use of pesticides in cultivation, merits and demerits of devices like mobile phones, merits and demerits of technology in development)
Grammar in Context: Active voice & Passive voice – If conditional -Collocations – Phrasal verbs

Unit IV - PRESENTATION SKILLS

Listening - Listening to presentation. Listening to lectures. Watching –documentaries (discovery / history channel)
Speaking –Short speech - Making formal presentations (PPT)
Reading – Reading a written speech by eminent personalities in the relevantfield /Short poems / Short biography.
Writing - Writing Recommendations
Interpreting visuals - charts / tables/flow diagrams/charts
Grammar in Context – Modals
Vocabulary (register) - Single word substitution

Unit IV - CRITICAL THINKING SKILLS

Listening - Listening to advertisements/news and brief documentary films (withsubtitles)
Speaking – Simple problems and suggesting solutions.
Reading: Motivational stories on Professional Competence, Professional Ethicsand Life Skills (subject-specific)
Writing Studying problem and finding solutions- (Essay in 200 words)
Grammar-Make simple sentences
Vocabulary -Fixed expressions

SUGGESTED ACTIVITIES

Unit I
Listening: Links for formal conversation can be given - Gap filling exercises –Multiple Choice questions – Making notes.
Speaking - Role play activity
Reading – Note making. Note-Taking. Writing: Guided Writing (developing hints)Email
Grammar: Vocabulary – Worksheets – Games.

Unit II Listening-
Process Descriptions (Processes of Condensation and Evaporation./Process of Measuring the thickness of a wire using a Screw -Gauge./process of Exaction of sugar from sugarcane)
Speaking – Role Play
Reading – Multiple choice questions - Evaluative answers – Classifying and labeling Writing - Picture description – Description of natural phenomena (rainbow, earthquake, volcanic eruption, erosion, natural disasters in 150 to 200 words).
Vocabulary: Expansion of compound nouns

Unit III
Listening- Gap fill exercises – Listening comprehension
Speaking -Debates
Reading -Reading comprehension
Writing – Essay Writing
Grammar - Vocabulary, Activities, Worksheets & Games.

Unit IV
Listening - Note taking (of listening & viewing items) - Filling a table based onthe listening item.
Speaking – JAM, Presentations. (PPT-TECHNICAL)
Reading-Reading comprehension
Writing– Difference between recommendations and instructions Questions/MCQs based on graphs/flow diagrams/charts

Grammar: Vocabulary – Activities, Worksheets & Games.

Unit V
Listening – Radio News/ TV-News telecast /
Speaking - Watch or listen to documentaries and ask questions

Reading - Readingmotivational stories (success stories in subject area)

Writing - Essaywriting.
Grammar -Vocabulary –Activities, Worksheets & Games

PROFESSIONAL ETHICS

II SEMESTER COURSE CODE: 22UGCES

CORE COURSE: ENVIRONMENTAL SCIENCE

Objectives:

- To appreciate the scope of Environmental Studies, Community ecology and the interdisciplinary nature of environmental issues
- To have a basic knowledge of Natural resources its classification, concepts, and natural resources of India.
- The course designed to gain knowledge on values of biodiversity and conservation on global, national, and local scales
- To study about sources and effects of environmental pollution like air, water, soil, thermal, marine, nuclear and noise
- To understand the concerns related to Sustainable Development on environment and health
- To introduce the students in the field of Law and Policies and Acts both at the national and international level relating to environment.

Unit 1 The Multidisciplinary nature of environmental studies
Definition, scope and importance. (2 lectures)
Need for public awareness

Unit 2 Natural Resources:

Renewable and non-renewable resources: Natural resources and associated problems.
Forest resources: use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems.
Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
Land resources: Land as a resources, land degradation, man induced Landslides, soil erosion and desertification.
Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles. (8 lectures)

Unit III Ecosystems:

Concept of an ecosystem.
Structure and function of an ecosystem.
Producers, consumers and decomposers
Energy flow in the ecosystem
Ecological succession.
Food chains, food webs and ecological pyramids
Introduction, types, characteristic features, structure and function of the following ecosystem:-
a. Forest ecosystem

b. Grassland ecosystem

c. Desert ecosystem
d. Aquatic ecosystems, (ponds, streams, lakes, rivers, oceans, estuaries) (6 lectures)

Unit IV Biodiversity and its conservation

Introduction – Definition : Genetic, species and ecosystem diversity
Biogeographical classification of India
Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values
Biodiversity at global, National and local levels
India as a mega-diversity nation
Hot-spots of biodiversity
Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
Endangered and endemic species of India
Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
Biological Diversity Act 2002/ BD Rules, 2004 (8 lectures)

Unit V Environmental Pollution

Definition
Causes, effects and control measures of Air Pollution
Water Pollution
Soil Pollution
Marine Pollution
Noise pollution
Thermal Pollution
Nuclear hazards
Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
Role of an individual in prevention of pollution
Pollution case studies
Disaster management: floods, earthquake, cyclone and landslides.
Ill-Effects of Fireworks: Firework and Celebrations, Health Hazards, Types of Fire, Firework and Safety
(8 lectures)

Unit VI Social Issues and the Environment

From Unsustainable to Sustainable development.
Urban problems related to energy.
Water conservation, rain water harvesting, watershed management.
Resettlement and rehabilitation of people; its problems and concerns. Case studies
Environmental ethics: Issues and possible solutions.
Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.
Case studies.
Wasteland reclamation.
Consumerism and waste products.
Environment Protection Act.
Air (Prevention and Control of Pollution) Act.
Water (Prevention and Control of Pollution) Act.
Wildlife Protection Act.
Forest Conservation Act.
Issues involved in enforcement of environmental legislation
Public awareness. (7 lectures)

Unit VII Human Population and the Environment

Population growth, variation among nations.
Population explosion – Family Welfare Programmes
Environment and human health
Human Rights - Value Education
HIV/ AIDS - Women and Child Welfare
Role of Information Technology in Environment and human health
Case studies.

Unit VIII Field Work

References:

- Visit to a local area to document environmental assets-river / forest/ grassland/ hill / mountain
- Agarwal, K.C. 2001 Environmental Biology, Nidi Public Ltd Bikaner.
- Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt ltd, Ahamedabad – 380013, India, E-mail: mapin@icenet.net(R)
- Brunner R.C. 1989, Hazardous Waste Incineration, McGraw Hill Inc 480 p
- Clark R.S. Marine Pollution, Clanderson Press Oxford (TB)
- Cunningham, W.P.Cooper, T.H.Gorhani E & Hepworth, M.T. 2001.
- De A.K. Environmental Chemistry, Wiley Eastern Ltd
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- Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford University, Press 473p.
- Hawkins, R.E. Encyclopedia of India Natural History, Bombay Natural History Society, Bombay (R)
- Heywood, V.H & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge University Press 1140 p. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws Himalaya Pub. House, Delhi 284 p. Mckinney, M.L. & Schoch R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition 639 p. Mhaskar A.K. Matter Hazardous, Techno-Science Publications (TB)
- Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- Odum, E.P. 1971 Fundamentals of Ecology. W.B. Saunders Co. USA. 574 p
- Rao MN & Datta, A.K. 1987 Waste Water treatment, Oxford & IBH Publication Co. Pvt Ltd 345 p.
- Sharma B.K. 2001 Environmental chemistry Goel Publ House, Meerut.
- Survey of the Environment, The Hindu (M).
- Townsend C. Harper, J and Michael Begon, Essentials of Ecology, Blackwell science (TB)
- Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media (R).
- Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno-Science Publications (TB).
- Wagner K.D. 1998 Environmental Management. W.B. Saunders Co. Philadelphia USA 499 p
- (M) Magazine (R) Reference (TB) Textbook

http://nbaindia.org/uploaded/Biodiversityindia/Legal/33%20Biological%20Diversity%Rules,%202004.pdf.

Second Year **CORE COURSE III** **Semester III**

DATABASE MANAGEMENT SYSTEMS

Code: 22SCCI3 **(Theory)** **Credit: 5**

COURSE OBJECTIVES:

- To impart the basic database concepts, applications, data models, schemas and instances.
- To familiarize Entity Relationship model for a database.
- To Demonstrate the use of constraints and relational algebra operations.

UNIT - I:

Introduction: Database-System Applications- Purpose of Database Systems - View of Data -Database Languages - Relational Databases - Database Design -Data Storage and Querying Transaction Management -Data Mining and Analysis - Database Architecture - Database Users and Administrators - History of Database Systems.

UNIT - II:

Relational Model: Structure of Relational Databases -Database Schema - Keys – Schema Diagrams - Relational Query Languages - Relational Operations Fundamental Relational-Algebra Operations Additional Relational-Algebra Operations- Extended Relational-Algebra Operations - Null Values - Modification of the Database.

UNIT - III:

SQL Overview of the SQL Query - Language - SQL Data Definition - Basic Structure of SQL Queries - Additional Basic Operations - Set Operations - Null Values Aggregate Functions - Nested Subqueries - Modification of the Database -Join Expressions - Views - Transactions - Integrity Constraints - SQL Data Types and Schemas – Authorization.

UNIT - IV:

Relational Languages: The Tuple Relational Calculus - The Domain Relational Calculus Database Design and the E-R Model: Overview of the Design Process - The Entity-Relationship Model - Reduction to Relational Schemas - Entity-Relationship Design Issues - Extended E-R Features - Alternative Notations for Modeling Data - Other Aspects of Database Design

UNIT - V:

Relational Database Design: Features of Good Relational Designs - Atomic Domains and First Normal Form - Decomposition Using Functional Dependencies - Functional-Dependency Theory - Decomposition Using Functional Dependencies - Decomposition Using Multivalued Dependencies-More Normal Forms - Database-Design Process

UNIT - VI: CURRENT CONTOURS (for Continuous Internal Assessment Only): Contemporary Developments Related to the Course during the Semester Concerned.

REFERENCES:

Database System Concepts, Sixth edition, Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill-2010.
Jagdish Chandra Patni, Hitesh Kumar Sharma, Ravi Tomar, Avita Katal., "Database Management System: An Evolutionary Approach", CRC Press, 2022.
Abraham Silberschatz, Hendry F. Korth, S Sudharshan," Database System Concepts", 6th Edition, McGraw Hill International, 2019.
Blokdyk, Gerardus, and Blokdyk, Gerardus, "RDBMS Relational Database Management System a Complete Guide", 2020 Edition, Emereo Pty Limited, 2019.
Wilfried Lemahieu, Seppevanden Broucke, Bart Baesens, "Principles of Database Management: The Practical Guide to Storing, Managing and Analyzing Big and Small Data", Cambridge University Press, 2018.
C.J. Date, "An Introduction to Database Systems" Addison Wesley, 2000.
https://tutorialspoint.dev/computer-science/dbms

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Understand the basic concepts of Database Systems
- Know about SQL queries to interact with Database
- Design a Database using ER Modelling
- Apply normalization on database design to eliminate anomalies
- Analyze database transactions and to control them by applying ACID properties.

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Second Year **CORE PRACTICAL III** **Semester III**

DATABASE MANAGEMENT SYSTEMS LAB

Code : 22SCCIT3P **(Practical)** **Credit: 4**

COURSE OBJECTIVES:

- To understand the basic concepts and the applications of database systems using MYSQL.
- To create and perform basic operation with MYSQL.
- To interact with MYSQL by using nested queries, set of aggregate operations and views.

- Create a table and perform the following basic mysql operations

  Set the primary key
  Alter the structure of the table
  Insert values
  Delete values based on constraints
  Display values using various forms of select clause
  Drop the table

- Develop mysql queries to implement the following set operations
  Union
  Union all
  Intersect
  Intersect all

- Develop mysql queries to implement the following aggregate functions

  Sum
  Count
  Average
  Maximum
  Minimum
  Group by clause & having clause

- Develop mysql queries to implement following join operations:
  Natural join
  Inner join
  Outer join-left outer, right outer, full outer
  Using join conditions

- Develop mysql queries to implement nested sub-queries

  Set membership (int, not int)
  Set comparison (some, all)
  Empty relation (exists, not exists)
- Check for existence of Duplicate tuples(unique, not unique)

- Develop mysql queries to create a view and expand it.

- Develop mysql queries to implement

  String operations using %
  String operations using '_'
  Sort the element using asc,desc
  [*create necessary reletions with requires attribute]

- Consider the following database for a banking enterprise

  BRANCH (branch-name:string, branch-city:string, assets:real) ACCOUNT (accno:int, branch-name:string, balance:real) DEPOSITOR (customer-name:string, accno:int)
  CUSTOMER (customer-name:string, customer-street:string, customercity: string)
  LOAN (loan-number:int, branch-name:string, amount:real) BORROWER (customer-name:string, loan-number:int)

  Create the above tables by properly specifying the primary keys and the foreign keys
  Enter at least five tuples for each relation
  Find all the customers who have at least two accounts at the Main branch.
  Find all the customers who have an account at all the branches located in a specific city.
  Demonstrate how you delete all account tuples at every branch located in a specific city.
  Generate suitable reports.
  Create a suitable front end for querying and displaying the results.

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Write SQL queries to manipulate data.
- Demonstrate the aggregate functions and set operations.
- Apply the join operations.
- Know about usage of nested subqueries
- Understand the method to create views

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PROFESSIONAL ETHICS

II YEAR – III - SEMESTER
(For the candidates admitted from the academic year 2016 – 2017 onwards)
SECOND ALLIED PHYSICS I
(For B.Sc. Information Technology Student only)
DIGITAL COMPUTER FUNDAMENTALS – 22SCACAP1

Unit I Number Systems and Codes
Binary Number System – Binary to Decimal Conversion – Decimal to Binary Conversion – Binary Addition and Subtraction – Binary Multiplication and Division – Octal Numbers – Hexadecimal Numbers – Binary Codes – Error Detecting and Correcting Codes.

Unit II Boolean Algebra and Logic Gates
Boolean Algebra: Definitions – Fundamentals of Boolean Algebra – Laws and Theorems of Boolean Algebra -Boolean Functions – Minterms and Maxterms — DeMorgan's Theorems. Logic Gates: AND,OR,NOT,NAND,NOR and Exclusive OR Gates – Applications of XOR Gate – The Exclusive NOR Gate – Positive and Negative Logic – Logic Chararcteristics – Bipolar Logic Families – Integrated Circuits — Universal Building Blocks (UBB) – NAND Gate as UBB – NOR Gate as UBB.

Unit III K Map Techniques
Karnaugh Map with 2, 3 and 4 variables -Sum of Products - AND-OR Network and Product of Sum - NAND and NOR Implementation — AND-OR-INVERT Implementation – OR-AND-INVERT Implementation – Don't Care Conditions – Overlapping Groups – Rolling the Map – Eliminating Redundant Groups.

Unit IV Combinational Logic Circuits
Binary Adders - Half and Full Adders – BCD Adder - Binary Subtractors – Half and Full Subtractors – Multiplexers (4:1 line) – 1 to 4 line Demultiplexers – Decoders: BCD to decimal ,BCD to Seven Segment. Encoders: 4:2 line, Octal to Binary - Floating Point Number System – Range of Stored Numbers.

Unit V Sequential Logic Circuits:
Flip Flops – RS Flip Flop – Clocked RS Flip Flop – D Flip Flop – JK Flip Flop – T Flip Flop – Triggering of Flip Flops – Master Slave Flip Flop – Conversion of D Flip Flop and T Flip Flop – Clock – Counters and Shift Registers: Counters – Asynchronous or Ripple Counter – Ring Counter – Twisted Ring Counter – State Diagrams and State Tables – Magnitude Comparator – Programmable Arrays of Logic Cells – Shift
Registers-SISO – SIPO – PIPO – PISO.

Text Book:
1. Principles of Digital Electronics, Dr. K. Meena, PHI Learning Private Limited, New Delhi, 2009.

Reference Book:
1. Digital Logic Design, M. MorrisMano, Pearson Education, 2010
2. Digital Technology, Virendrakumar, New Age international (P) Ltd., publisher, New Delhi, 2001.

PROFESSIONAL ETHICS

Second Year **NON MAJOR ELECTIVE COURSE - I** **Semester – III**

1. E-COMMERCE

Code:22BNMEBB1 **(Theory)** **Credit: 2**

COURSE OBJECTIVES:

- To understand the conceptual foundations of marketing management as a functional area of business.
- Analyze the impact of E-commerce on business models and strategy.
- Explain the process that should be followed in building an E-commerce presence.

UNIT- I:

Introduction to E-Commerce– Electronic Commerce Framework– Electronic commerce and Media convergence – The anatomy of E-Commerce Applications – Components of the I Way – Network Access Equipment – Global Information Distribution Networks – Internet Terminology –NSF NET: Architecture and Components- National Research and Educational Network.

UNIT- II:

Electronic Commerce and World Wide Web: Architectural Frame work for E-Commerce – WWW Architecture – Hypertext Publishing – Consumer Oriented Applications–Mercantile Process Models – Consumer's Perspective – Merchant's Perspective – Electronic Payment Systems (EPS) –Types- Designing EPS -Smart Cards and EPS – Credit Cards and EPS.

UNIT- III:

Electronic Data Interchange (EDI): Applications – Security and Privacy Issues–Software Implementations – Value Added Networks – Internal Information System – Work-flow Automation and Coordination – Customization– Supply Chain Management.

UNIT- IV:

Marketing on the Internet: Advertising on the Internet – Charting the On-Line Marketing Process –E- Commerce Catalogs or Directories – Information Filtering – Consumer-Data Interface: Emerging Tools.

UNIT- V

Multimedia and Digital Video: Concepts – Digital Video and E-Commerce – Video Conferencing–Frame Relay– Cell Relay – Mobile Computing -Frame Work –Wireless Delivery Technology –Cellular Data Communication Protocols.

UNIT-VI CURRENT CONTOURS (For Continuous Internal Assessment Only) :

Contemporary Developments Related to the E - Commerce- Studying: Electronic data interchange, Security and Privacy Issues - Group Discussion ethical issues on E – Commerce.

TEXT BOOKS:

1. Turban, E., Outland, J., King, D., Lee, J. K., Liang, T., & Turban, D. C. Electronic Commerce: A Managerial and Social Networks Perspective (Springer Texts in Business and Economics) Springer, 2017.
2. Chaffey, D., Hemphill, T., & Edmundson-Bird, D. (2019). Digital Business and E-Commerce Management (7th ed.). Pearson 2018.

REFERENCES BOOKS:

1. Pribyl, I., & Pribyl, R. From Nothing: Everything You Need to Profit from Affiliate Marketing, Internet Marketing, Blogging, Online Business, e-Commerce and More. The Free Internet Marketing Project, 2019.
2. Frontiers of Electronic Commerce- Ravi Kalakota, Andrew Winston, 2018.
3. Chakraborty, S., & Tyagi, P. E-Commerce for Entrepreneurs. BPB PUBN, 2021.

E - RESOURCES

1. https://www.edx.org/learn/ecommerce/
2. https://www.coursera.org/courses?query=e-commerce/
3. https://www.udemy.com/topic/e-commerce/

COURSE OUTCOMES:

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

- To identify core concepts of marketing and the role of marketing in business and society. Knowledge of social, legal, ethical and technological forces on marketing decision-making.
- Appreciation for the global nature of marketing and appropriate measures to operate effectively in international settings.
- Ability to develop marketing strategies based on product, price, place and promotion objectives.
- Ability to create an integrated marketing communications plan which includes promotional strategies and measures of effectiveness.
- Ability to communicate the unique marketing mixes and selling propositions for specific product offerings.

PROFESSIONAL ETHICS

Second Year | **CORE COURSE IV ASP DOT NET** | **Semester IV**

Code : 22SCCIT4 | **(Theory)** | **Credit: 5**

COURSE OBJECTIVES:

- To enable the students to learn about ASP.NET to develop web forms
- To develop the skills to do session tracking and management.
- To learn and create web services and the role of ADO in developing applications.

UNIT - I:

Introduction to ASP – Active Server Pages Model – ASP File – the process of serving an Active Server Page – Using Scripting Languages – Setting the Primary Scripting Language – Including other files – Understanding objects.

UNIT - II:

Understanding components – Working with users – working with HTML forms – retrieving form data – using text boxes and text areas.

UNIT - III:

Cookies – working with cookies – applications of cookies – addressing the drawbacks of using cookies – using cookies in ASP applications. Working with connections and data sources – creating connections with OLEdb and ODBC – connecting to Microsoft SQL server – connecting to a Microsoft access database.

UNIT - IV:

About the connection object – executing a SQL statement with the connection object – understanding session and connection pooling – working with record sets – retrieving a record set – record set cursor and locking types – understanding ADO cursors – paging through a record set

UNIT-V:

Working with the command object – creating stored procedures – executing stored procedures with the connection object – executing stored procedures with the command object – retrieving parameter information.

UNIT - VI CURRENT CONTOURS (for Continuous Internal Assessment Only):

Contemporary Developments Related to the Course during the Semester Concerned.

REFERENCES:

Practical ASP – Ivan Bayross, BPB Publications, 2000

Scot Johnson, Using Active Server Pages, Prentice Hall of India Private Limited 2001.
Jones, A. Russell. Mastering Active Server Pages 3, SYBEX, 2000.
Dino Esposito, Programming ASP.NET Core, PHI Learning Pvt. Ltd., Microsoft Press, 2019
Ragupathi, Mugilan T. S. Learning ASP.NET Core MVC Programming, Packt Publishing, 2016.
Andreas Helland, Vincent Maverick Durano, Jeffrey Chilberto, Ed Price, ASP.NET Core 5 for Beginners, Packt Publishing, 2020.
Lock, Andrew, ASP.NET Core in Action, Manning, 2021.

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Acquire fundamentals of ASP.Net.
- Understand the concepts of Components in ASP.Net.
- Know about Cookies and Database Connectivity.
- Write Applications using Connection Objects.
- Implement the Concepts of Command Objects.

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PROFESSIONAL ETHICS

Second Year	**CORE COURSE IV ASP DOT NET LAB**	**Semester IV**
Code: 22SCCIT4P	**(Practical)**	**Credit: 4**

COURSE OBJECTIVES:

- To understand the fundamentals of ASP.Net.
- To write simple programs using Components and Command Objects.
- To design and Implement database connectivity using ADO.NET in window based applications and Web-based applications.

- Create an ASP file to display the message "Have a Good Weekend" if it is a Saturday otherwise "Hang in there, the week will get better".
- Write a program to get the name and favorite ice cream flavor. Respond with the price of the corresponding ice cream.
- Create a login form, to expire, if the user does not type the password within 100 seconds.
- Create an advertisement for a bookshop using Ad Rotator component.
- Create a course registration form with name, address and list of available course. Reply with the corresponding course fees on selection of a single course or a collection of courses.
- Write a program to manipulate cookies with the information between HTTP sessions such as
- Last Date visited
- Last Time visited
- Number of visits
- Create a student database and manipulate the records using the connection object in ASP.
- Create an employee database and manipulate the records using command object in ASP.

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Acquire skills in fundamentals of ASP.Net programming.
- Develop simple programs using Components.
- Know the art of programming using HTTP Sessions
- Use cookies in ASP applications.
- Write programs using Connection and Command objects.

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II YEAR – IV - SEMESTER
SECOND ALLIED PHYSICS II

COMPUTER AND ORGANIZATION ARCHITECTURE – 22SCACAP2

UNIT I Computer Organization, Architecture and Functions
Organization and Architecture – Structure and function – Computer Component – Computer Function – Interconnection Structures – Bus Interconnections.

UNIT II Memory organization
Computer Memory System Overview – Cache Memory principles – Semiconductor Main Memory: Organization – DRAM and SRAM – Types of ROM – Error Correction.

UNIT III I/O Modules
External Devices - I/O Modules – Programmed I/O – Direct Memory Access – I/O Channels and Processors.

UNIT IV Instruction sets, processor organization and control unit
Machine Instruction Characteristics – Types of operands – Addressing – Instruction formats – processor organization – Register Organization – instruction cycle. Control Unit: Micro Operations – Control of the processor.

UNIT V Parallel Processing
Parallel Organization – Multiprocessor Organization – Symmetric multiprocessors – Multithreading and Chip Microprocessor – Non uniform memory Access - Vector Computation.

Text Book :
Computer Organization & Architecture Designing for Performance – William Stallings, Pearson Education, 2014

Reference Book :
Computer Architecture and Organization : From 8085 to Core 2 Duo and Beyond, Subrata Ghoshal, Pearson Education, 2011

PROFESSIONAL ETHICS

Second Year **NON MAJOR ELECTIVE COURSE - II** **Semester-IV**

BUSINESS ETHICS

Code : 22BNMEBB3 Theory Credit 2

COURSE OBJECTIVES:

To understand the concept of Ethical value
Analyze the ethical issues involved in business
The best way to manage ethical conduct in business

UNIT – I:

Business Ethics - Meaning – Definition – Nature – Importance – Ground Rules – Myths – Methodology – Characteristics of Managerial Ethics - Factors Influencing Business Ethics Types Of Ethical Issues- Corruption In Businesses.

UNIT – II:

Ethical Values - Work Ethics – Work Culture – Ethical Theories – Ethical values Environmental Ethics – Consumer Protection..

UNIT – III:

Managing Ethical Conduct - Skills for Managers - Whistle Blowing - Individual differences and Ethical Judgments – Cognitive Barriers to Ethical Judgment- Corporate Social Responsibility towards the community.

UNIT – IV:

Corporate Governance - Issues – need - corporate governance code - transparency & disclosure role of auditors - board of directors and share holders - corporate scams - Committees in India.

UNIT – V:

Consumerism – unethical issue in sales, marketing and technology – competitive strategy.

UNIT-VI CURRENT CONTOURS (For Continuous Internal Assessment Only) :

Practical: Collection of data about unethical strategy followed in the products 34

TEXT BOOKS:

1. Dr. S. Sankaran., Business Ethics & Values, 2010, Margham Publication.
2. Fernando. A. C., Business Ethics – An Indian Perspective, 3rd Edition, Pearson Publication

REFERENCE BOOKS:

1. Hasnian Baber, Business Ethics and Corporate Governance, 2nd Edition, Global Vision Publishing House
2. Chakraborty, S.K., Management by Values, 2014, Oxford Univ.Press.
3. Velasquez, Business Ethics - Concepts and Cases, Prentice Hall, 5th Edition.

E – RESOURCES:

https://www.economicsdiscussion.net/business/business-ethics/31798
https://tsubakimoto.com/sustainability/governance/corporate/control-policy/
https://elink.io/p/consumerism-9a251f9

To outline the significance of ethics in business.
To known the culture of organisation
To appreciate the best ethical practices in every actions of organization
To recognize the importance of Corporate Social Responsibility.
Students can the understand the unethical issues in the environment

PROFESSIONAL ETHICS

Third Year **CORE COURSE V** **Semester V**

PRINCIPLES OF INFORMATION TECHNOLOGY

Code: 22SCCIT5 (Theory) **Credit: 5**

COURSE OBJECTIVES:

- To learn the basics of Information Technology
- To understand the fundamentals of Internet Connections and Web Page designing using HTML.
- To acquire Knowledge on Multimedia and the Internet.

UNIT - I:

Internet: The wired world of the internet – Information travels across the internet – TCP/IP – Understanding internet addresses and domains – Anatomy of web connections – Internet file types. Internet's Underlying Architecture: Domain name system – Routers – The internet's client/server architecture.

UNIT - II:

Connecting to the internet: Connecting your computer – Connecting to the internet from online services – ISDN – The internet/television connection – Network computers – DSL (Digital Subscriber Line). Communicating on the internet: E-mail – Usenet and newsgroups – Internet chat and instant messaging – Making phone calls on the internet.

UNIT - III:

World Wide Web: Web pages – Web browsers – Markup Languages – Hypertext – Image maps and interactive forms – Web host servers – Websites with databases. Common Internet Tools: Gophers – Telnet – FTP and downloading files – Searching the internet.

UNIT-IV:

Multimedia on the Internet: Audio on the internet – Video on the internet – Intranet and shopping on the internet.

UNIT - V:

Safeguarding the internet: Firewalls – Viruses – Digital certificates.

UNIT - VI CURRENT CONTOURS (for Continuous Internal Assessment Only):
Contemporary Developments Related to the Course during the Semester Concerned.

REFERENCES:

- Preston Gralla, "How the Internet Works", 10th Edition, Que Publishers, 2014.
- Raj Kamal, "Internet and Web Technologies", Tata McGraw Hill, 2002. 2. C Xavier, "World Wide Web design with HTML", Tata Mc-Graw Hill, 2008.
- Bergkvist, Lorraine N., and Austin, Kathleen M.. Principles of Information Technology, Goodheart-Willcox Company, 2015.
- Stair, Ralph, and Reynolds, George, Fundamentals of Information Systems, Cengage Learning, 2015.
- Principles of Information Technology - Texas. United Kingdom, Pearson Education, 2016.
- Rajaraman, V, Introduction to Information Technology, PHI Learning Pvt. Ltd., 2018.

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Understand the terms related to Information Technology
- Know the usage of E-Mail and ISDN
- Acquire the concepts of Markup Languages and Common Internet Tools
- Develop Knowledge about Multimedia on the internet
- Recall the concepts of firewalls and viruses.

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PROFESSIONAL ETHICS

Third Year	**CORE COURSE VI OPERATING SYSTEMS**	**Semester V**
Code : 22SCCIT6	**(Theory)**	**Credit: 5**

COURSE OBJECTIVES

- To understand the basics of Operating systems and their working
- To Learn and understand operating system services and methods
- To understand the different types of devices connected with Operating systems.

UNIT - I:

Introduction - What Is an Operating System-Operating System Software -A Brief History of Machine Hardware -Types of Operating Systems - Brief History of Operating System Development-Object-Oriented Design

UNIT - II:

Early Systems: Single-User Contiguous Scheme -Fixed Partitions-Dynamic Partitions-Best-Fit versus First-Fit Allocation -Deallocation - Relocatable Dynamic Partitions. Virtual Memory: Paged Memory Allocation-Demand Paging-Page Replacement Policies and Concepts -Segmented Memory Allocation-Segmented/Demand Paged Memory Allocation - Virtual Memory-Cache Memory

UNIT - III:

Overview-About Multi-Core Technologies-Job Scheduling Versus Process Scheduling-Process Scheduler-Process Scheduling Policies-Process Scheduling Algorithms –A Word About Interrupts-Deadlock-Seven Cases of Deadlock -Conditions for Deadlock- Modeling Deadlock-Strategies for Handling Deadlocks –Starvation- Concurrent Processes: What Is Parallel Processing-Evolution of Multiprocessors- Introduction to Multi-Core Processors-Typical Multiprocessing Configurations--Process Synchronization Software.

UNIT - IV:

Types of Devices-Sequential Access Storage Media-Direct Access Storage Devices-Magnetic Disk Drive Access Times- Components of the I/O Subsystem- Communication among Devices-Management of I/O Requests

UNIT - V:

The File Manager -Interacting with the File Manager -File Organization – Physical Storage Allocation -Access Methods-Levels in a File Management System – Access Control Verification Module

UNIT - VI CURRENT CONTOURS (for Continuous Internal Assessment Only):
Contemporary Developments Related to the Course during the Semester Concerned
REFERENCES:
Ann McIver Mc Hoes, Ida M. Flynn, "Understanding Operating Systems", Course Technology, Cengage Learning, 2011.
Greg Tomsho,"Guide to Operating Systems", Cengage Learning, 2020.

Cesar Herrera, Darrell Hajek,Flor Narciso, "Principles of Operating Systems", Amazon Digital Services LLC - KDP Print US, 2020.
Cesar Herrera, Darrell Hajek,"Principles of Operating Systems", Independently Published, 2019.
Remzi H. Arpaci-Dusseau, Andrea C. Arpaci-Dusseau,"Operating Systems: Three Easy Pieces", Create Space Independent Publishing Platform, 2018.
Abraham Silberschatz, Peter B. Galvin, Greg Gagne, "Operating System Concepts", Wiley Publisher, 2018.
https://www.guru99.com/os-tutorial.html

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Recall the basic principles and importance of the operating system in a computer
- Illustrate the objectives and functions of the operating system components
- Identify the various operating system techniques
- Analyse the issues and challenges of the operating system and security mechanisms

Evaluate the functions and features of file management in operating systems

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PROFESSIONAL ETHICS

Third Year	**CORE COURSE VII SOFTWARE ENGINEERING**	**Semester V**
Code : 22SCCIT7	**(Theory)**	**Credit: 5**

COURSE OBJECTIVE

- To impart knowledge in the life cycle of software engineering
- To learn about Requirements Analysis Modeling, Basic Issues in Software Design and Software coding
- To acquire exposure in Web Engineering

UNIT - I:

Introduction: Introduction to Software Engineering - Software Process – Software Process Models - Software Model - Requirements Engineering Principles: Requirements Engineering - Importance of Requirements - Types of Requirements
- Steps involved in Requirements Engineering.

UNIT - II:

Requirements Analysis Modeling: Analysis Modeling Approaches - Structured Analysis - Object Oriented Analysis - Design and Architectural Engineering : Design Process and Concepts - Basic Issues in Software Design - Characteristics of Good Design - Software Design and Software Engineering - Function Oriented System vs Object Oriented System - Modularity, Cohesion, Coupling, Layering - Real Time Software Design - Design Models - Design Documentation.

UNIT - III:

Object Oriented Concepts: Fundamental Parts of Object Oriented Approach – Data Hiding and Class Hierarchy Creation - Relationships - Role of UML in OO Design -Design Patterns - Frameworks - Object Oriented Analysis - Object Oriented Design - User Interface Design : Concepts of User Interface - Elements of User Interface -Designing the User Interface - User Interface Evaluation - Golden Rules of User Interface Design - User Interface Models - Usability

UNIT - IV:

Software Coding - Introduction to Software Measurement and Metrics – Software Configuration - Project Management Introduction - Introduction to Software Testing - Software Maintenance

UNIT - V:

Web Engineering : Introduction to Web - General Web Characteristics – Web Application Categories - Working of Web Application - Advantages and Drawbacks of Web Applications - Web Engineering - Emerging Trends in Software Engineering – Web 2.0 - Rapid Delivery - Open Source Software Development - Security Engineering - Service Oriented Software Engineering - Web Service - Software as a Service – Service Oriented Architecture - Cloud Computing - Aspect
Oriented Software Development - Test Driven Development - Social Computing

UNIT - VI CURRENT CONTOURS (for Continuous Internal Assessment Only):

Contemporary Developments Related to the Course during the Semester Concerned

REFERENCES:

- Chandramouli Subramanian, Saikat Dutt Chandramouli Seetharaman, B.G. Geetha, Software Engineering, Pearson Publications, 2015.
- Software Engineering, Jibitesh Mishra, Pearson Education, 2011.
- Ian Sommerville,"Software Engineering", Pearson, 2011.
- Rod Stephens, "Beginning Software Engineering", Wiley, 2015.
- Ashfaque Ahmed, Bhanu Prasad,"Foundations of Software Engineering", CRC Press, 2016.
- Titus Winters, Tom Manshreck, Hyrum Wright, "Software Engineering at Google", O'Reilly Media, 2020.

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Recall the various techniques of software process models.
- Understand the requirements for a software project.
- Develop frameworks for software projects.
- Apply the knowledge, techniques, and skills in the development of a software product.
- Make use of web engineering concepts for software development.

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PROFESSIONAL ETHICS

Third Year	**CORE PRACTICAL V LINUX LAB**	**Semester V**
Code	**(Practical)**	**Credit: 4**

COURSE OBJECTIVES:

- To understand the basic commands of Linux operating system.
- To enable the students to write simple shell programs using Linux utilities, pipes and filters.
- To relate the various commands used by Linux shell which makes the users interact with each other.

1. Check whether the given number is prime or not.
2. Find the biggest of given two numbers.
3. Write a program to check the given number is odd or even.
4. Write a program to generate Fibonacci Series.
5. Write a program to prepare electric bill for domestic consumers. For first 100 units - Rs.0.75/ unit For next 100 units - Rs.1.50/unit Above 200 units - Rs.3.00/unit.
6. Prepare the bill for the following format:
7. Customer No. ----------
8. Customer Name ----------
9. Pre.Reading ----------
10. Cur.Reading ----------
11. Units Consumed ----------Charge
12. Signature----------
13. Write a program to display the result PASS or FAIL using the information given below:
14. Student Name, Student Reg. No., Mark1, Mark2, Mark3, Mark4. The minimum pass for each subject is 50.
15. Write a program to prepare a Payroll with Basic Pay, DA, Allowances, PF and Gross Pay.
16. Using Case Statement, write a program to check the files ending with vowels.
17. Write a single program to sort the names and numbers in alphabetical, ascending and descending order.
18. Write a menu driven program to print Bio-data for five persons.

COURSE OUTCOMES:

- Upon successful completion of this course the students would be able to:
- Acquire skills in fundamentals of Linux and Shell Programming.
- Use Linux utilities to perform File processing, Directory handling, User Management and display system configuration
- Apply skills in the working environment of Linux
- Apply and change the ownership and file permissions using advance UNIX commands.
- Know the advanced tools of LINUX write programs using Connection and Command objects.

PROFESSIONAL ETHICS

Third Year | **MAJOR BASED ELECTIVE I 1) INTERNET OF THINGS** | **Semester V**

Code : 22SMBEIT1A | **(Theory)** | **Credit: 4**

COURSE OBJECTIVE

- To learn the concepts of IoT and its protocols.
- To learn how to analyse the data in IoT.
- To study IoT& Security infrastructure for popular applications.

UNIT - I:

INTRODUCTION - Definition & characteristics of IoT - physical design of IoT - logical design of IoT - IoT enabling Technologies - IoT levels & Deployment templates. Domain specific IoT : Home Automation - cities - Environment - Energy - retail - logistics - Agriculture - Industry Health and life style.

UNIT - II:

IOT and M2M - Deference between Iot and M2M - SDN and NFV for lot - IoT systems management - SNMP - YANG – NETOPEER.

UNIT - III:

IOT SPECIFICATION IoT platforms design Methodology - purpose and specification - process specification - Domain model specification - Information model specification - Service specification - IoT level specification - functional view specification - operational view specification - Device and component Integrators - Application Development.

UNIT - IV:

LOGICAL DESIGN USING PYTHON Logical design using python - Installing python - type conversions - control flow - functions - modules - File handling - classes. IoT physical devices and End points, building blocks of IoT device - Raspberry Pi - Linux on Raspberry Pi - Raspberry Pi interfaces.

UNIT - V:

IOT AND CLOUD COMPUTING IoT physical servers & cloud computing - WAMP - Xively cloud for IoT - python Web application frame work - Amazon web services for IoT.

UNIT - VI CURRENT CONTOURS (for Continuous Internal Assessment Only):
Contemporary Developments Related to the Course during the Semester Concerned

REFERENCES:

- Arshdeep Bahga, Vijay Madisetti, Internet of Things - A hands on Approach, Universities Press.2015.
- Samuel Greengard, The Internet of Things MIT Press, 2015.
- BK Tripathy, J Anuradha, Internet of Things (IoT): Technologies, Applications, Challenges and Solutions,CRC Press, 2017.

- Srinivasa K.G., Siddesh G.M. Hanumantha Raju R, Internet of Things, Cengage Learning India pvt. Ltd 2018
- Jamil Y. Khan, Mehmet R. Yuce, Internet of Things (IoT): Systems and Applications, Jenny Stanford Publishing, 2019.
- Kumar, Sudhir, Fundamentals of Internet of Things, CRC Press, 2021.

https://www.tutorialspoint.com/internet_of_things/index.htm#:~:text=IoT%20(Internet%20of%20Things)%20is,to%20any%20industry%20or%20system.

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Understand the fundamentals of Internet of Things.
- Know the basics of communication protocols and the designing principles of Web connectivity
- Gain the knowledge of Internet connectivity principles
- Design and develop smart city in IoT
- Analyse and evaluate the data received through sensors in IoT.

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Third Year **SKILL BASED ELECTIVE I PROGRAMMING IN PYTHON** **Semester V**

Code : 22SSBEIT1 (Theory) **Credit: 2**

COURSE OBJECTIVES:

- To develop programs using functions and pass arguments in Python.
- To write programs using loops and decision statements in Python.
- To design and program Python applications.

UNIT - I:

Introduction to Python: Features of Python - How to Run Python - Identifiers - Reserved Keywords - Variables - Comments in Python - Indentation in Python - Multi-Line Statements - Multiple Statement Group (Suite) - Quotes in Python - Input, Output and Import Functions - Operators. Data Types and Operations: Numbers – Strings – List – Tuple – Set – Dictionary – Data type conversion.

UNIT - II:

Flow Control: Decision Making – Loops – Nested Loops – Types of Loops. Functions: Function Definition – Function Calling - Function Arguments - Recursive Functions - Function with more than one return value.

UNIT - III:

Modules and Packages: Built-in Modules - Creating Modules - import Statement - Locating Modules - Namespaces and Scope - The dir() function - The reload() function - Packages in Python - Date and Time Modules. File Handling- Directories in Python.

UNIT - IV:

Object-Oriented Programming: Class Definition - Creating Objects - Built-in Attribute Methods - Built-in Class Attributes- Destructors in Python – Encapsulation - Data Hiding – Inheritance - Method Overriding- Polymorphism.

UNIT - V:

Exception Handling: Built-in Exceptions-Handling Exceptions-Exception with Arguments - Raising Exception - User-defined Exception - Assertions in Python. Regular Expressions: The match() function - The search() function - Search and Replace - Regular Expression Modifiers: Option Flags-Regular Expression Patterns-Character Classes-Special Character Classes - Repetition Cases - findall() method - compile() method.

UNIT – VI CURRENT CONTOURS (For continuous internal assessment only):

An Introduction to Interactive Programming in Python - Study on Julia – an high level language approach.

REFERENCES:

- Jeeva Jose and P. Sojan Lal, "Introduction to Computing and Problem Solving with PYTHON", Khanna Book Publishing Co, 2016.
- Mark Summerfield. — Programming in Python 3: A Complete introduction to the Python Language, Addison-Wesley Professional, 2009.
- Martin C. Brown, —PYTHON: The Complete Reference‖, McGraw-Hill, 2001
- Wesley J. Chun, "Core Python Programming", Prentice Hall Publication, 2006.
- Timothy A Budd, "Exploring Python", Tata McGraw Hill, New Delhi, 2011
- Jake Vander Plas, "Python Data Science Handbook: Essential Tools for Working with Data", O'Reilly Media, 2016.
- Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist, 2nd edition, Updated for Python 3, Shroff/O Reilly Publishers, 2016
- Guido van Rossum and Fred L. Drake Jr, —An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011.

COURSE OUTCOMES:

Upon successful completion of this course the students would be able:

- To recall and understand the features of python programming language
- To illustrate various programming mechanism used in python
- To apply various language construct to write simple programs in python
- To examine the application of object oriented concept in python
- To distinguish the various constructs used in python.

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PROFESSIONAL ETHICS & HUMAN VALUES

V SEMESTER
COURSE CODE: RUGSDC
CORE COURSE : Soft Skills Development

COURSEOBJECTIVES:

- To Develop communicative competence among the Students.
- To enhance the learner's soft skills by giving adequate exposure in LSRW and sub skills.
- To enable learners to put the life skills into practice with confidence.

UNIT- I : KNOWTHYSELF / UNDERSTANDINGSELF:

Introduction to Soft skills - Self discovery - Developing positive attitude - Improving perceptions - Forming values.

UNIT- II: INTERPERSONAL SKILLS / UNDERSTANDING OTHERS:

Developing interpersonal relationship - Team building - group dynamics - Net working - Improved work relationship.

UNIT- III: COMMUNICATION SKILLS / COMMUNICATION WITH OTHERS:

Art of listening – Art of reading – Art of speaking – Art of writing - Art of writing e-mails e-mail etiquette.

UNIT- IV: CORPORATE SKILLS / WORKING WITH OTHERS:

Oral Presentation – Memos – Note taking – Note making and preparing Minutes - Reports, Proposals ,Abstracts - Technical Writing.

UNIT- V: SELLINGSELF/JOBHUNTING

Writing resume /cv – interview skills – Group discussion – Mock interview – Mock GD – Goal setting - Career planning.

UNIT-VI: CURRENT CONTOURS: (for continuous internal assessment only):

REFERENCES:

1. N. Krishnasamy, Manju Dhariwel and Lalitha Krishnasamy(2015).Mastering Communication Skills and Soft Skills – Bloomburg.
2. Meena.K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills : A Road Map to Success), P.R. Publishers & Distributors,
3. Meera Banerjee and Krishna Mohan: Developing Communication Skills, Trinity Publishers- (Lakshmi Publications.
4. Alex K.(2012) Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, New Delhi- 110 055.

COURSEOUTCOMES:

- Develop listening, speaking, reading and writing skills in English.
- Enhance soft skills and engage in arrange of communicative tasks and activities.
- Comprehend a text and identify specific and global information.
- Promote communicative ability in both spoken and written form of the language.
- Develop interpersonal skills to maintain human relationship.
- Develop corporate skills to promote leadership qualities and team spirit.

PROFESSIONAL ETHICS

Third Year	**CORE COURSE VIII COMPUTER NETWORKS**	**Semester VI**
Code : 22SCCIT8	**(Theory)**	**Credit: 5**

COURSE OBJECTIVES

- To describe the general principles of Computer Networks.
- To describe how the different layers in a computer network work
- To know about Wired LAN: IEEE Standards and Satellite networks.

UNIT - I:

Data Communication – Networks – The Internet – Protocols and Standards – OSI Model-Layers in OSI Model - TCP/IP Protocol Suite – Addressing.

UNIT - II:

Analog and Digital – Digital Signals – Transmission Impairment – Performance – Multiplexing – Guided Media – Unguided Media. Switching: Circuit Switched Networks – Datagram Networks – Virtual Circuit Networks

UNIT -III:

Data Link Layer: Error Detection and Correction -Introduction – Block Coding: Error detection, Error correction – Data Link Control: Framing – Flow and Error Control – Protocols – Noiseless Channels – Noisy channels – HDLC – Point to Point Protocol.

UNIT - IV:

Wired LAN: IEEE Standards – Standard Ethernet. Wireless LAN: IEEE 802.11 – Bluetooth. Connecting LANs: Connecting Devices – Virtual LANs. Wireless WAN: Cellular Telephony – Satellite Networks. Network Layer-Logical Addressing: IPv4 Addresses – IPv6 Addresses.

UNIT - V:

Transport Layer: Process to Process Delivery – User Datagram Protocol - TCP. Application Layer: Domain Name Space – DNS in the Internet – Electronic Mail – File Transfer. WWW: Architecture – HTTP.

UNIT - VI CURRENT CONTOURS (for Continuous Internal Assessment Only):
Contemporary Developments Related to the Course during the Semester Concerned.

REFERENCES:

- Behrouz A. Forouzan, "Data Communications and Networking", McGraw-Hill Companies, New York, 5th Edition, 2017.
- William Stallings "Data and computer communications", Prentice Hall of India, 7th Edition, 2004.
- Andrew S Tanenbaum, "Computer Networks", Prentice Hall of India, New Delhi, 2013.

- Dr M. P. Vani, "Data Communication and Computer Network", Notion Press, 2019
- Hazim Gaber, "Understanding Computer Networks 2020", Independently Published, 2020.
- Grigorios N. Beligiannis, Ram Palanisamy, S. Smys, Álvaro Rocha, "Computer Networks and Inventive Communication Technologies", Springer, 2021.

https://www.guru99.com/data-communication-computer-network-tutorial.html

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Recall the basic concepts of computer networks
- Summarize the technical specifications of various layers of the OSI model in a computer network
- Identify the appropriate protocols and standards for computer networks
- Classify technical factors of cellular networks and satellite communication
- Know about the different functionalities of an application layer.

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PROFESSIONAL ETHICS

Third Year **CORE COURSE IX** **Semester VI**

MEAN STACK WEBAPP DEVELOPMENT

Code : 22SCCIT9 **(Theory)** **Credit 5**

COURSE OBJECTIVES:

- To create, and analyze the data with MongoDB.
- To provide knowledge on creating MEAN Project
- To provide the basics of angularJS

UNIT - I:
Introducing Full Stack Development: Brief History of Web Development – Towards Full Stack Development – Benefits of Full Stack Development –MEAN Stack – Node.js: The Web Server/Platform – Express: The Framework – MongoDB: The Database – Angular JS: The Front End Framework. Designing a MEAN Stack Architecture: Common MEAN Stack Architecture – Designing a Flexible MEAN Architecture

UNIT - II:
Creating and Setting up MEAN Project: Creating an Express Project – Modifying Express for MVC – Import Bootstrap for Responsive Layouts. Static Site with Node and Express: Defining Routes in Express – Building Basic Controllers – Creating Some Views – Adding Rest of Views – Take Data out of Views and Make Smarter

UNIT - III:
Data Model with MongoDB: Connecting Express Application to MongoDB using Mongoose – Model the Data – Simple Mongoose Schema – MongoDB Shell to create MongoDB Database Writing REST API: Expose MongoDB database to Application: Setting up API in Express – GET Methods: Reading Data from Mongo DB – POST Methods: Adding Data to MongoDB. PUT Methods: Updating Data in MongoDB. DELETE Method: Deleting Data from MongoDB

UNIT - IV:
Consuming a REST API: Call API from Express – List of Data from an API – Getting Single Document from API – Adding Data to Database via API. Adding Angular Component to an Express Application: Getting and Running Angular – Displaying and Filtering the Homepage List – Getting Data from API – Ensuring Forms work as Expected

UNIT - V:
Single Page Application with Angular: Groundwork for an Angular SPA – Switch from Express Routing to Angular Routing – Adding First Views, Controllers and Services. Building SPA with Angular: Full SPA – Adding Additional Pages and dynamically injecting HTML – Complex Views and Routing Parameters – Angular UI Components to create Modal Popup

UNIT - VI CURRENT CONTOURS (for Continuous Internal Assessment Only):
Contemporary Developments Related to the Course during the Semester Concerned

REFERENCES:

- Simon Holmes, "Getting MEAN with Mongo, Express, Angular, and Node, Manning Publications, 2016.
- Jeff Dickey, "Write Modern Web Apps with the MEAN Stack: Mongo, Express,

AngularJS,
- and Node.js", Peachpit Press, 2015.
- Brad Dayley,Brendan Dayley, "Node.js, MongoDB and Angular Web Development",
- Addison Wesley, 2017.
- Amos Q. Haviv, Adrian Mejia,"Web Application Development with MEAN", Kindle, June 15, 2017.

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Understand the fundamentals of Full Stack Development and MEAN Stack Architecture
- Create and Setup a MEAN Project with Node and Express
- Build a Data Model with Mongo DB using REST API
- Demonstrate how to consume REST API
- Ability to develop applications using AngularJS

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Third Year **CORE PRACTICAL VI** **Semester VI**

MEAN STACK WEBAPP LAB

Code : 22SCCIT6P **(Practical)** **Credit: 4**

COURSE OBJECTIVES:

- To provide complete knowledge of web application development
- To learn the UI interface design aspects with AngularJS and the serverside development with MongoDB, Express.js, and Node.js
- To develop a simple web app and deploy frontend and backend together

JavaScript

1. Document Object Model
2. JavaScript Frameworks – jQuery, AngularJS, BootStrap

Angular JS

3. Directives, Expressions, Controllers and Filters
4. AngularJS Modules and Forms

Node JS

5. Call Backs, Events, Global Objects
6. Buffers, Streams and File System

Express

7. Express Framework
8. RESTFul API

MongoDB

9. Data Modeling – Create Database, Drop Database
10. CRUD Operations
11. Document Querying and Functions

Project

12. Simple Web Application connecting component of MEAN Stack

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Execute Programs based on DOM and JavaScript Frameworks
- Execute programs using basic functionality available in AngularJS and NodeJS
- Demonstrate how to consume REST API using Express
- Perform basic data access operations in MongoDB
- Ability to develop simple web application connecting all the components of MEAN Stack

PROFESSIONAL ETHICS

Third Year **MAJOR BASED ELECTIVE II** **Semester VI**

CLOUD COMPUTING

Code: 22SMBEIT2B **(Theory)** **Credit: 4**

COURSE OBJECTIVES

- To describe the concepts in Cloud Computing and its Security
- To explain the cloud modeling and design
- To explore the virtualization and cloud

UNIT - I:

Cloud Computing Foundation: Introduction to Cloud Computing – Move to Cloud Computing – Types of Cloud – Working of Cloud Computing

UNIT - II:

Cloud Computing Architecture: Cloud Computing Technology – Cloud Architecture – Cloud Modeling and Design - Virtualization: Foundation – Grid, Cloud and Virtualization – Virtualization and Cloud Computing

UNIT - III:

Data Storage and Cloud Computing: Data Storage – Cloud Storage – Cloud Storage from LANs to WANs – Cloud Computing Services: Cloud Services – Cloud Computing at Work

UNIT - IV:

Cloud Computing and Security: Risks in Cloud Computing – Data Security in Cloud – Cloud Security Services – Cloud Computing Tools: Tools and Technologies for Cloud – Cloud Mashaps – Apache Hadoop – Cloud Tools

UNIT - V:

Cloud Applications – Moving Applications to the Cloud – Google Cloud Applications – Amazon Cloud Services – Cloud Applications

UNIT - VI Current Contours (for Continuous Internal Assessment Only):

Contemporary Developments Related to the Course during the Semester Concerned.

REFERENCES:

1. A. Srinivasan and J.Suresh, "Cloud Computing – A Practical Approach for Learning and Implementation", Pearson India Publications, 2014. (Unit 1: Chapter1, Chapter2, Chapter3, Chapter4; Unit 2: Chapter5, Chapter6, Chapter7, Chapter8, Chapter9, Chapter10; Unit 3: Chapter11, Chapter12, Chapter13, Chapter14, Chapter16, Chapter17; Unit 4: Chapter18, Ch4a6pter19, Chapter20, Chapter24, Chapter25, Chapter26,Chapter 27; Unit 5: Chapter28, Chapter30, Chapter31, Chapter32)

2. Rajkumar Buyya, James Broberg, Andrzej, "Cloud Computing: Principles and Paradigms", Wiley India Publications, 2011.
3. Anthony T.Velte , Toby J. Velte Robert Elsenpeter, "Cloud computing a practical approach", TATA McGraw- Hill , New Delhi – 2010
4. Michael Miller, "Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online" - Que 2008
5. Judith Hurwitz , Robin Bloor , Marcia Kaufman ,Fern Halper, "Cloud computing for dummies", Wiley Publishing, Inc, 2010
6. Comer, Douglas, The Cloud Computing Book: The Future of Computing Explained, CRC Press, 2021.

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Describe various types of cloud
- Identify the cloud computing basics and its architecture
- Implement data storage and security
- Explore various cloud applications
- Describe various cloud services.

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Third Year PROJECT Semester-VI Code: 22SMBEITPW Credit: 3

The candidate shall be required to take up a Project Work by group or individual and submit it at the end of the final year. The Head of the Department shall assign the Guide who, in turn, will suggest the Project Work to the students in the beginning of the final year. A copy of the Project Report will be submitted to the University through the Head of the Department on or before the date fixed by the University.

The Project will be evaluated by an internal and an external examiner nominated by the University. The candidate concerned will have to defend his/her Project through a Viva-voce.

ASSESSMENT/EVALUATION/VIVA VOCE:

1. PROJECT REPORT EVALUATION (Both Internal & External)

   Plan of the Project - 20 marks

   Execution of the Plan/collection of - 45 marks Data / Organisation of Materials / Hypothesis, Testing etc. and presentation of the report.

   Individual initiative - 15 marks

2. Viva-Voce / Internal & External- 20 marks
   TOTAL - 100 marks

PASSING MINIMUM:

Project	Vivo-Voce 20 Marks 40% out of 20 Marks (i.e. 8 Marks)	Dissertation 80 Marks 40% out of 80 marks (i.e. 32 marks)

A candidate who gets less than 40% in the Project must resubmit the Project Report. Such candidates need to defend the resubmitted Project at the Viva-voce within a month. A maximum of 2 chances will be given to the candidate.

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PROFESSIONAL ETHICS

Third Year **SKILL BASED ELECTIVE II** **Semester VI**

MOBILE APPLICATION DEVELOPMENT

Code : 22SSBEI 2 **(Theory)** **Credit: 2**

COURSE OBJECTIVES:

- To gain a basic knowledge of Android application development
- To understand about user Interfaces for the Android platform.
- To familiarize of the Android Studio development tool.

UNIT - I:

Introduction to Android: The Android Platform, Android SDK, Eclipse Installation, Android Installation, building you First Android application, Understanding Anatomy of Android Application, Android Manifest file

UNIT - II:

Android Application Design Essentials: Anatomy of an Android applications, Android terminologies, Application Context, Activities, Services, Intents, Receiving and Broadcasting Intents, Android Manifest File and its common settings, Using Intent Filter, Permissions

UNIT - III:

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

UNIT - IV:

Testing Android applications, Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, working with different types of resources.

UNIT - V:

Using Common Android APIs: Using Android Data and Storage APIs, managing data using Sqlite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs, Using Android Telephony APIs, Deploying Android Application to the World.

UNIT - VI CURRENT CONTOURS (for Continuous Internal Assessment Only):

Contemporary Developments Related to the Course during the Semester Concerned

REFERENCES:

- Lauren Darcey and Shane Conder, "Android Wireless Application Development", Pearson Education, 2011.
- Reto Meier, "Professional Android 2 Application Development", Wiley India Pvt Ltd,2010
- Mark L Murphy, "Beginning Android3", Apress Publications, 2011.
- Bill Phillips, Chris Stewart, Kristin Marsicano, Brian Gardner, "Android Programming", Big Nerd Ranch, 2019.

- Barry Burd, John Paul Mueller, “Android Application Development All in one for Dummies",Wiley Publications, 2020.
- NamrataBandekar, Darryl Bayliss, Fuad Kamal, "Android Apprentice (Fourth Edition) Beginning Android Development with Kotlin", R R BOWKER LLC, 2021.

https://www.javatpoint.com/android-tutorial

COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Identify various concepts of mobile application programming in Android platform
- Implement the business logic in an app with java
- Understand Android User Interface Design with XML
- Know about Common Android APIs
- Deploy applications to the Android marketplace for distribution.

HUMAN VALUES

Third Year **Semester VI**
Credit: 2

COURSE CODE: Gender Studies CORE
COURSE : UGGS

COURSEOBJECTIVES:

- To make students to aware of Gender constructions and gendering Process.
- To explore existing gender biases in the society and to understand the need to work towards the inclusive society.
- To inculcate sensitivity and build gender perspectives.
- To use the course to bring attitude in alcum behavioral changes towards gender neutral ambience and promote the humanistic values.

UNIT- I: INTRODUCTION TO GENDER STUDIES CONCEPTS:

Gender Spectrum.- Sex – Gender distinction – Biological Determinism – Patriarchy – Feminism – Gender Socialization and Stereotyping-Gender Discrimination – Gender Division of labour and roles– Gender Sensitivity and awareness – Gender Equity – Equality – Gender Main streaming and Gender Analysis.

UNIT- II: UGCINITIATIVES ON WOMEN'S STUDIES:

Definition of Women's Studies –Gender Studies –UGC Initiatives and guidelines on Women's Studies – Beijing Conference, UN Initiatives – Convention on Elimination of All forms of Discrimination Against Women (CEDAW)- Sustainable Development Goals on Gender Equality (SDG 5) and targets.

UNIT- III: AREAS OF GENDER DISCRIMINATION:

Gender Socialization- Sex Ratio– Health and Nutrition– – Literacy and Education- Employment- Governance – participation in decision making - politics- property rights and access to credit- gender based violence- Social institutions –Family, Caste, Class, religion, gender, State. Market – Media – Politics – Judiciary.

UNIT- IV: WOMEN DEVELOPMENT AND GENDER EMPOWERMENT:

Towards Equality Report of Status of Women in India 1974– International Women's Decade – International Women's Year –National Policy for Empowerment of Women 2001.

UNIT – V: WOMEN'S MOVEMENTS AND SAFEGUARDING MECHANISM:

In India National /State Commission for Women(NCW) – All Women Police Station – Family

Court Legislations safeguarding women –Transgender Policy — Constitutional amendments for women's political participation.

UNIT – VI: CURRENT CONTOURS : (for continuous internal assessment only):

Tamil Nadu State Policy for Women 2021- National Policy for Women 2015 – Prevention of Sexual Harassment at Work places Act 2013- Protection of Children from Sexual Offences Act, 2012 - Analysis of regressive and progressive High court and supreme court judgments- women proactive policies, programmers' , interventions

REFERENCE:

- Bhasin Kamala, Understanding Gender: Gender Basics, New Delhi: Women Unlimited,2004.
- Bhasin Kamala, Exploring Masculinity: Gender Basics, New Delhi: Women Unlimited
- ,2004
- Bhasin Kamala,What is Patriarchy?:Gender Basics, NewDelhi:WomenUnlimited,1993
- Arya Sadhna Women, Gender Equality and the State, New Delhi: Deep & Deep Publication
- ,2000
- Mishra.O.P,Law Relating toWomen & Child,Allahabad: Central Law Agency, 2001
- Uma Chakravarti,Gendering Caste Througha Feminist Lens, Sage Publication 2003
- Bhattacharya Malini, Sexual Violence and Law, Kolkata; West Bengala Commission for Women, 2002
- Sexual Harassment at the Workplace–AGuide, NewDelhi; Sakshi,1999
- https://www.schooloflegaleducation.com/women-and-law-in-india-e-book/.

COURSEOUTCOMES:

- Students would have gained a perspective and understood the social reality of gender society understood the differences of gender and sex and may resort to building alternative perspectives and critical thinking.
- Gained knowledge on the various social institutions governing gender and the Inter sectionality.
- Exposed to the kind of initiative soft the State towards gender equality.