List of OPEN ELECTIVES OFFERED BY UIET MDU ROHTAK

16CSEO1 Computer Science Principles
(Open Elective)
MM:T80+IA20
Credit 3
Time: 3 Hr
COURSE OUTCOMES:
At the end of the course the student shall be able to
CO1 understand the fundamentals of computers, date representation and related aspects of Information Technology
CO2 write a web program using HTML and also able to format using Style Sheets
CO3 know the basics of Data Mining and its features
CO4 appreciate the basics of Computer Networks and operating systems

Instructions for setting of paper: Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 20 marks

UNIT I
Fundamental of computer science and computational thinking: logical reasoning, problem solving, data representation, processing of data, abstraction, managing complexity, operation of computers and networks, effective Web searching, ethical, legal and social aspects of information technology.

UNIT II
HTML and XTML basics- LIST – unordered list – nested and ordered list – Basic HTML Tables – Intermediate HTML table and Formatting – basic HTML Forms and Formatting –More Complex HTML Forms – Frameset Element – Nested Frameset. Style Sheets and Graphics: Introduction to Style sheets – Formatting Text by Using Style Sheets – Formatting Paragraphs by Using Style Sheets, Java Script Basics.

UNIT III
Data Mining: Introduction: Motivation, Importance, Knowledge Discovery Process, KDD and Data Mining, Data Mining vs. Query Tools, Kind of Data mining, kind of data, Functionalities, interesting patterns, Classification of data mining systems, Major issues, from Data warehousing to data Mining.

UNIT IV
Computer Networks: Network fundamentals: Local Area Networks (LAN), Metropolitan Area Networks (MAN), Wide Area Networks (WAN), Wireless Networks, Inter Networks. Reference Models: The OSI model, TCP/IP model.
Operating Systems: Main functions of operating systems. Multi Prograrnming, multiprocessing, and multitasking. Deadlock and CPU scheduling algorithms

TEXT BOOKS
1. Blown To Bits: Your Life, Liberty and Happiness After The Digital Explosion by Hal Abelson, Ken Leeden and Harry Lewis, 2010
2. Thomas A. Powell, McGraw-Hill "HTML & CSS: The Complete Reference", Fifth Edition (Complete Reference Series) Osborne Media; 5 edition, 2010.
3.Krzysztof J. Cios, Witold Pedrycz, Roman W. Swiniarski, "Data mining: a knowledge discovery approach", Springer, 2007

16CSEO2 Software Engineering Practices
(Open Elective)
MM:T80+IA20
Credit 3
Time: 3 Hr
COURSE OUTCOMES:
At the end of the course the student shall be able to
CO1 understand the fundamentals of software engineering and other software development models
CO2 understand the building blocks of Requirements Engineering
CO3 know the basics of Software Design and Quality
CO4 apply the testing techniques to a software

Instructions for setting of paper: Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 20 marks
UNIT I
Software Engineering-Software Process- Generic process model-Prescriptive process model-specialized, unified process-Agile development-Agile Process- Extreme Programming- Other agile Process models-Software engineering Knowledge-core Principles-Principles that guide each framework Activity,
UNIT-II
Requirements Engineering-Establishing the Groundwork-Eliciting Requirements-Developing use cases- Building the requirements model- Negotiating, validating Requirements- Requirements Analysis- Requirements Modeling Strategies.
UNIT III
Design Process- Design concepts: Abstraction, Architecture, patterns, Separation of Concerns, Modularity, Information Hiding, Functional Independence, Refinement, Aspects, Refactoring, Object Oriented Design Concepts, Design Classes- Design Model: Data, Architectural, Interface, Component, Deployment Level Design Elements, Software Quality- Software Quality Dilemma- Achieving Software Quality .
UNIT IV
Testing: Strategic Approach to software Testing- Strategic Issues- Testing: Strategies for Conventional Software, Object oriented software, Web Apps-Validating Testing- System Testing- Art of Debugging, Software Maintenance-Software Supportability-Reengineering- Business Process Reengineering- Software Reengineering- Reverse Engineering- Restructuring- Forward Engineering- Economics of Reengineering
TEXT BOOKS
1. Roger S. Pressman, "Software Engineering – A Practitioner's Approach", seventh edition, 2010.
2. Ian sommerville, "Software Engineering" Pearson Edu, 9th edition, 2010.
3. Hans Van Vliet "Software Engineering: Principles and Practices", 2008.

16MBTO1 Business skills for Biotechnologists
(Open Elective)
MM:T80+IA20
Credit 3
Time: 3 Hr
COURSE OUTCOMES:
At the end of the course the student shall be able to
CO1 understand the possibilities and traits of an Entrepreneur in the field of Biotechnology
CO2 understand the life cycle of a Project
CO3 know the basics of a financial analysis of a project
CO4 know the various aspects of Marketing in the field of Biotechnology

Instructions for setting of paper: Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 20 marks

Unit - I
Introduction: Creativity & Entrepreneurial personality and Entrepreneurship in Biotechnology, Concept and theories of Entrepreneurship, Entrepreneurial traits and motivation, Nature and importance of Entrepreneurs, Government schemes for commercialization of technology (e.g. Biotech Consortium)

Unit - II
Project management: Search for a business idea, concept of project and classification, project identification, project formulation, project design and network analysis, project report, project appraisal.

Unit - III
Financial analysis: Ratio analysis, Investment process, Break even analysis, Profitability analysis, Budget and planning process.
Sources of finance: Source of development finance, Project financing, Institutional financing to Entrepreneurs, Financial institutions, Role of consultancy organizations.

Unit - IV
Marketing channels: Methods of marketing, marketing channels, Marketing institutions and assistance.
Biotech enterprises: Setting up Small, Medium & Large scale industry, Quality control in Biotech industries, Location of an enterprise, steps for starting a small industry, incentives and subsidies, exploring export possibilities.

Text/References:
1. Innovation and entrepreneurship in biotechnology: Concepts, theories & cases by D. Hyne & John Kapeleris, 2006.
2. The Business of Biotechnology: From the Bench of the Street: By Richard Dana Ono Published Butterworth- Heinemann, 1991.
3. Entrepreneurship in Biotechnology: Managing for growth from start-up By Martin Grossmann, 2003.
4. Best Practices in Biotechnology Education: By Yali Friedman, Published by Logos Press,2008.
5. Plant Development and Biotechnology: by Robert Nicholas Trigiano, Dennis John Gray; Published by CRC Press, 2004,
6. Dynamics of Entrepreneurial Development and Management, Vasant Desai, Himalaya Publishing House, 2005.
7. Projects: Planning Analysis, Selection, Implemantation & Review, Prasannan
8. Chandra, Tata Mc Graw-Hill Publishing Co.

16MMEO1 OPERATIONS RESEARCH
MM:T80+IA20
Credit 3
Time: 3 Hr
COURSE OUTCOMES:
At the end of the course the student shall be able to
CO1 understand the fundamentals of operations research and role of OR in decision making
CO2 know about transportation model, LP models
CO3 know the basics of Waiting line models including PERT and CPM
CO4 appreciate the normal mode vibration of the continuous system

Instructions for setting of paper: Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 20 marks
Unit I
Introduction : Definition, role of operations research in decisionmaking, applications in industry. Concept on O.R.model building - Types & methods. Linear Programming (LP) : Programing definition, formulation, solution - graphical simplex Gauss Jordan reduction process in simplex methods, BIG-M methods computational, problem.
Unit II
Deterministic Model : Transportation model-balanced & unbalanced; orth west rule, Vogel's Method, Least cost or matrix minimal, Stepperg stone method, MODI methods, degeneracy, assignment, travelling salesman, problem.
Advanced Topic of LP : Duality, PRIMAL-DUAL, reactions-its solution, shadow price, economic interpretation, dual simplex, post-optimality & sensitivity analysis, problems.
Unit III
Waiting Line Models : Introduction, queue parameters, M/M/1 queue, performance of queuing systems, applications in indutries, problems. Unit VI Project Line Models : Network diagram, event activity, defects in network, PERT & CPM, float in network, variance and probability of completion time, project cost-direct, indirect, total optimal project cost by crashing of network, resources leveling in project problems. Coupling Principal Coordinates, Free Vibrations in Terms of Initial Conditions, Forced Harmonic Vibrations, Vibrations Absorber, Centrifugal Vibration Absorber, Vibration Damper.
Unit IV
Multi degrees of Freedom systems and Numerical Methods: Introduction Influence Coefficients, Stiffness Matrix, Flexibility Matrix, Naural frequancies and Normal Modes, Orthpgonality of Normal Modes, Dunkerley's Equation,Method of Matrix Iteration, The Holzer Type Problem Geared and Branched Systems, Beams.
Normal Mode Vibrations of Continuous System : Vibrating String, Longitudinal Vibrations of Rod, Torsional Vibrations of Rod, Lateral Vibrations of Beam.
Text Books :- 1. Theory of Vibration with Aplications W.T. Thomson, Prentice Hall of India.
2. Mechanical Vibration : G.K. Grover and S.P. Nigam, Nem Chand and Sons.
References Books : 1. Theory and Practice of Mecahnical Vibrations J.S. Rao and K. Gupta , Wiley Eastern Ltd.
2. Mecahnical Vibrations S.S. Raop, Addision - Wesley Publishing Company.

OPEN ELECTIVE COURSE
16ECEO1 MULTIMEDIA COMMUNICATION
MM:T80+IA20
Credit 3
Time: 3 Hr
COURSE OUTCOMES:
At the end of the course the student shall be able to
CO1 understand the fundamentals of multimedia and information representation in multimedia
CO2 know the text and image compression algorithms
CO3 know the basics of audio and video compressions
CO4 know the Internet and design for www using HTML

Instructions for setting of paper: Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 20 marks

UNIT I
Multimedia & Information Representation Multimedia Introduction: multimedia networks, Telephone networks, Data networks, Broadcast television networks, Integrated services digital networks, Broadband multiservice networks, types of Multimedia Applications: Movie on Demand, Near Movie on Demand, communication modes, multipoint conferencing, network QOS, Application QOS. Multimedia Information Representation: Digitization principles, Encoder Design, Decoder Design, Unformatted Text, Formatted Text, Hypertext, Images: Graphics, Digitized documents, Digitized pictures; Audio: PCM speech, CD-quality audio, Synthesized audio; Video: Broadcast television, Digital video, PC video, video content.

UNIT II
Text and Image Compression Compression Principles & Text Compression: Compression Principles: Source encoders and Destination decoders, Lossless and lossy compression, Entropy encoding, Source encoding; Text Compression: Static Huffman coding, Dynamic Huffman Coding, Arithmetic Coding. Image Compression: Graphics Interchange Format, Tagged image file format, digitized documents, digitized pictures.

UNIT III
Audio and Video compression: Audio Compression: Differential Pulse Code Modulation, Adaptive Differential PCM, Adaptive predictive coding, Linear Predictive coding, Code excited LPC, Perceptual Coding, MPEG Audio coders, Dolby audio coders Video compression: video compression principles, Motion Pictures Expert Group (MPEG), MPEG1, MPEG2.

UNIT IV
INTERNET AND DESIGNING FOR THE WORLD WIDE WEB The internet and multimedia: The internet, Internetworking: Internet addresses, connections, The Bandwidth Bottleneck, Internet services, MIME-Types, The world wide web and HTML, Dynamic web pages and XML, multimedia on the web, Tools for the World Wide Web: web browsers, web servers, web page makers and site builders, plug-ins and delivery vehicles. Designing For The World Wide Web: Developing for the web: HTML is a Markup Language, The Desktop Workspace, The Small Device Workspace, nibbling, Text for the web: making columns of text, flowing text around images; images for the web: GIF and PNG Images, JPEG Images, Using Photoshop, Backgrounds, clickable buttons, Client side image maps, sound for the web, animation for the web.

Text Books:
1. Fred Halsall, Multimedia Communications , Pearson
2. Tay Vaughan, Multimedia, making it work Eighth edition, Tata McGraw-Hill Edition
Reference Books
1. Rao, Bojkovic & Milovanovic, Multimedia Comm. System: Technology , Std. &Network , PHI
2. JohnF. Koegel Bufod, Multimedia Systems , Addison Wesley, Edition. 2000