AL-FALAH UNIVERSITY

DEPARTEMENT OF COMPUTER SCIENCE & ENGINEERING

SYLLABUS

B. Tech 7th Semester

Choice Based Credit System Scheme (CBCS)

(Applicable from Session 2015-16)

Al-Falah University, Faridabad-121004
Department of Computer Science & Engineering

AL-FALAH UNIVERSITY

Scheme of Studies & Examination
Bachelor of Technology (Computer Science & Engineering)

Semester – VII

S. No.	Course No.	Course Type	Subject	Teaching Schedule				Examination Schedule (Marks)				Credits
				L	T	P	Total	Marks of Class work	Theory	Practical	Total	
1	CSE-401	PC-1	Advanced Database Technologies	3	1	-	4	60	90	-	150	3
2	CSE-403	PC-2	Software Project Management	3	1	-	4	60	90	-	150	3
3	CSE-405	PC-3	Compiler Design	3	1	-	4	60	90	-	150	3
4	CSE-407	PC-4	Advanced Java	3	1		4	60	90	-	150	3
5	------	PE-III	Program Elective - III	3	1	-	4	60	90	-	150	3
6	------	OE–IV	Open Elective - IV	3	1	-	4	60	90	-	150	2
7	CSE-409	Lab–1	Compiler Design Lab	-	-	3	3	60	-	40	100	2
8	CSE-411	Lab–2	Advanced Java Lab	-	-	3	3	60	-	40	100	3
9	CSE-413	-----	Seminar / Colloquium	-	-	2	2	50	-	50	100	1
			TOTAL	**18**	**6**	**8**	**32**	**530**	**540**	**130**	**1200**	**23**

- PC – Program Core
- PE – Program / Departmental Elective
- OE – Open Elective
- CS – Compulsory Subject

Program Electives:

CSE-415 Advanced Computer & Architecture
CSE-417 Neural Networks
CSE-419 Real Time systems
CSE-421 Distributed Operating System
CSE-423 Software Testing

Open Electives:

MGT-307 Entrepreneurship
MGT-304 Human resource management
EC-495 Intelligent Instrumentation for Engineers
EC-491 Wireless Mobile Communication
ME-419 Total Quality Management
ME-411 Computer Integrated Manufacturing

CSE-401: ADVANCED DATABASE TECHNOLOGIES

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

a) **To understand importance of database technologies.**
b) **To understand the features of query optimization.**
c) **To study environment of parallel and distributed database.**
d) **To know about emerging technologies of database systems.**

Unit-I

Data Models: Overview of data models: Network data model, Hierarchal data model, Relational data model, Extended Entity Relationship model and relationship to the Object oriented model.

Object Oriented Databases: Overview of concepts, object identity, object structure, type constructors, encapsulation of operations, methods and persistence, type hierarchies and inheritance, object relational databases.

Unit-II

Database Transactions and recovery procedures: DBMS lifecycle, Transaction processing concepts, Transaction and System Concepts, Desirable properties of a transaction, Schedules, Serializability of Schedules, Recovery techniques, Database backup, Concurrency control, locking techniques for concurrency control, Concurrency control techniques.

Client Server Computing: Client server concepts, 2-Tier and 3-Tier client server systems, Client/Server architecture and the Internet, Client /Database Server Models, Components of client server systems, Application development in client server systems.

Unit-III

Distributed and Parallel Databases: Reliability and Commit protocols, Fragmentation and Distribution, View Integration, Distributed database design, Heterogeneous and Federated database systems. Parallel databases.

Deductive and Web Databases: Deductive database systems, Web databases: Introduction uses Building blocks of Web, tools, advantages and disadvantages.

Unit-IV

Emerging Databases: Multimedia database: Definition, need of multimedia databases, Multimedia database components and structure, Multimedia database queries and applications; Mobile database: definition, their need, characteristics, architecture, uses and limitations of mobile databases; Digital libraries: Introduction, objectives, types, components, services, advantages, limitations and comparison with traditional libraries;

Spatial databases: Basic concepts, need, types and relationships, architecture, queries, indexing techniques, advantages and disadvantages of spatial databases; Temporal database: basic concepts, characteristics, components, merits and demerits.

Text Book:

- Fundamentals of Database systems), Elmasri R. and Navathe S.B., Addison Wesley, Low Priced Edition.
- Database System concepts by A. Silbershatz, H.F. Korth and S. Sudarshan, McGraw-Hill.

CSE-403: SOFTWARE PROJECT MANAGEMENT

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

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COURSE OBJECTIVES:

a) **To understand the concept of SPM.**
b) **To understand formalities and strategies behind project planning.**
c) **To study relative methods in project execution.**
d) **To know about quality standards used in software industry.**

Unit-I

Introduction to Software Project Management (SPM): Definition of a Software Project (SP), SP Vs. other types of projects activities covered by SPM, categorizing SPs, project as a system, management control, requirement specification, information and control in organization.

Stepwise Project planning: Introduction, selecting a project, identifying project scope and objectives, infrastructure, products and activities, analyzing project characteristics, estimate efforts each activity, identifying activity risk, allocate resources.

Unit-II

Project Evaluation & Estimation: Cost benefit analysis, cash flow forecasting, cost benefit evaluation techniques, risk evaluation. Selection of an appropriate project report; Choice of process model, water fall, V-process, spiral-models. Prototyping, delivery, function point analysis.

Activity planning & Risk Management: Objectives of activity planning, project schedule, sequencing and scheduling activities, adding the time dimension, backward and forward pass, identifying critical path, activity throat.
Risk Management: Introduction, the nature of risk, managing risk. Risk identification, risk analysis, reducing the risks, evaluating risks to the schedule.

Unit-III

Resource allocation & Monitoring the control: Introduction, the nature of resources, identifying resource requirements, scheduling resources, counting the cost, the scheduling sequence.
Monitoring the control: Introduction, collecting the data, visualizing progress, cost monitoring, earned value, prioritizing monitoring.

Managing contracts and people: Types of contract, stages in contract, contract management, acceptance, understanding behavior, organizational behavior: a background, selecting the right person for the job, instruction in the best methods, becoming a team, decision making, leadership, organizational structures.

Unit-IV

Software quality: Introduction, the place of software quality in project planning, the importance of software quality, defining software quality, ISO 9126.
Practical software quality measures, product versus process quality management, external standards, techniques to help enhance software quality.

Text Book:

- Software Project Management by Bob Hughes and Mike Cotterell, TMH
- Software Engineering – A Practitioner's approach, Roger S. Pressman, MG

CSE-405: COMPILER DESIGN

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

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COURSE OBJECTIVES:

a) **To understand the concepts of compiler designing.**
b) **To understand the roles of parsers and related methodologies.**
c) **To study syntax and semantics analysis in parsing.**
d) **To gain importance of code optimization.**

Unit-I

Introduction to Compilers: Overview of the Translation Process, Need of translators, A Simple Compiler, Difference between interpreter, assembler and compiler. Overview and use of linker and loader, types of Compiler, Phases of a Compiler, Compiler construction tools.

Lexical Analysis: Role of lexical analyzer, design of lexical Analyzer, regular expressions, Specification and recognition of tokens, Language specifying lexical analyzer. Finite automata, conversion from regular expression to finite automata and vice versa, minimizing number of states of DFA, Implementation of lexical analyzer.

Unit-II

Syntax Analysis: Definition of parsing, Role of parsers and context free grammars.

Parsing techniques: Shift reduce parsing, operator precedence parsing, top down parsing and predictive parsing.

Unit-III

Parsing: LR parsers, SLR parser, LALR parser and canonical LR parser.

Syntax Directed Translation: Syntax directed definition, construction of syntax tree, syntax directed translation scheme, and implementation of syntax directed translation, three address code, quadruples and triples.

Unit-IV

Symbol Table & Error Detection and Recovery: Symbol tables, its contents and data structure for symbol tables; trees, arrays, linked lists, hash tables. Errors, lexical phase error, syntactic phase error, semantic error.

Code generation and optimization: Code generation, forms of objects code, machine dependent code, optimization, register allocation for temporary and user defined variables.

Text Books:

- Compilers Principle, Techniques & Tools - Alfread V. AHO, Ravi Sethi & J.D. Ullman.
- Theory and practice of compiler writing, Tremblay & Sorenson, 1985, Mc. Graw Hill.
- System software by Dhamdhare, 1986, MGH.

CSE-407: ADVANCED JAVA

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

a) **To understand the basic concepts used in advance java.**
b) **To understand the roles Servlet in handling server side technologies.**
c) **To study deployment issues using web servers.**
d) **To understand the importance of framework.**

Unit-I

Introduction to Java EE: The Java Programming Language Platforms: Java SE, Java EE, Java ME, Server: Web Server, Application Server. Java EE Platform and Architecture, Getting Started with Web Applications, Model View Controller (MVC) 2 Architecture.

Application Deployment: Web application development and deployment Steps, Configuring Web application – Web application deployment descriptor (web.xml file), Web Application Archive (*.WAR file) – *.WAR directory structure, Building & Deploying Applications.

Unit-II

Collections Framework: The Set Interface, Set Implementation Classes, The List Interface, List Implementation Classes, The Map Interface, Map Implementation Classes

JDBC: JDBC Fundamentals, Establishing Connectivity and working with connection interface, working with statements, Creating and Executing SQL statements, Working with Result Set Object & Result Set Meta Data.

Unit-III

Introduction to Servlet: Servlet Overview, Life cycle of Servlet, Handling Client HTTP Request & Server HTTP Response Practical (Hands-on Working Examples), Initializing Parameters & ServletContext, Initializing a Servlet, ServletContext, initialization Parameters, ServletContext Attributes (Context binder).

Practical (Hands-on Working Examples), Session Management, Request Dispatcher & Redirecting, Practical (Hands-on Working Examples)

Unit-IV

Introduction to JSP: Overview of JSP, JSP Architecture & life cycle, Components of Java Server Pages, Practical (Hands-on Examples), Implicit Objects & Standard JSP Tags: scriptlet tag, expression tag , declaration tag

Directive Elements: page directive, include directive, taglib directive, Practical (Hands-on Working Examples), Scope of JSP objects, Practical (Hands-on Working Examples), Introduction to Eclipse IDE

Text Book:

- J2EE: The Complete Reference by Keogh Publisher: Mcgraw Hill Education Pvt. Ltd.
- Programming with Java by E Balagurusam , McGraw Hill Education (India) Private Limited.

CSE-415: ADVANCED COMPUTER ARCHITECTURE

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

a) **To study advance design issues in computer architecture.**
b) **To understand the memory management in hardware designing.**
c) **To study different models used system design.**
d) **To understand the difference between concurrent processors and multiprocessors.**

Unit-I

Architecture And Machines: Some definition and terms, interpretation and microprogramming. The instruction set, Basic data types, Instructions, Addressing and Memory, Virtual to real mapping and basic instruction timing.

Time, Area and Instruction Sets: Time, cost-area, technology state of the Art, The Economics of a processor project: A Study, Instruction sets, Processor Evaluation Matrix.

Unit-II

Cache Memory Notion: Basic Notion, Cache Organization, Cache Data, adjusting the data for cache organization, write policies, strategies for line replacement at miss time, Cache Environment, other types of Cache.

Split I and D-Caches, on chip caches, Two level Caches, write assembly Cache, Cache references per instruction, technology dependent Cache considerations, virtual to real translation, overlapping the Tcycle in V-R Translation, studies. Design summary.

Unit-III

Memory System Design: The physical memory, models of simple processor memory interaction, processor memory modeling using queuing theory.

Open, closed and mixed-queue models, waiting time, performance, and buffer size, review and selection of queuing models, processors with cache.

Unit-IV

Concurrent Processors: Vector Processors, Vector Memory, Multiple Issue Machines, Comparing vector and Multiple Issue processors.

Shared Memory Multiprocessors: Basic issues, partitioning, synchronization and coherency, Type of shared Memory multiprocessors, Memory Coherence in shared Memory Multiprocessors.

Text Book:

Advance computer architecture by Hwang & Briggs, 1993, TMH.
Pipelined and Parallel processor design by Michael J. Fiynn – 1995, Narosa.

CSE-417: NEURAL NETWORK

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

a) **To study fundamentals of neural system.**
b) **To study models used in single layer classifiers.**
c) **To study feedback networks.**
d) **To understand the self organizing networks.**

Unit-I

Overview of biological neurons: Structure of biological neurons relevant to ANNs, Fundamental concepts of Artificial Neural Networks: Models of ANNs; Feedforward & Feedback networks; learning rules.

Hebbian learning rule, perception learning rule, delta learning rule, Windrow-Hoff learning rule, correction learning rule and Winner Take all learning rule.

Unit-II

Single layer Perception Classifier: Classification model, Features & Decision regions; training & classification using discrete perceptron, algorithm, and single layer continuous perceptron net works for linearly separable classifications.

Multi-layer Feed forward Networks: linearly non-separable pattern classification, Delta learning rule for multi-perceptron layer, Generalized delta learning rule, Error back-propagation training, learning factors, Examples.

Unit-III

Single layer feedback Networks: Basic Concepts, Hopfield networks, Training & Examples.

Associative memories: Linear Association, Basic Concepts of recurrent Auto associative memory: retrieval algorithm, storage algorithm; by directional associative memory, Architecture, Association encoding & decoding, Stability.

Unit-IV

Self organizing networks: Un-supervised learning of clusters, winner-take-all learning, recall mode, Initialization of weights, seperability limitations.

Text Book:

- Introduction to artificial neural systems b y Jacek M. Zurada, 1994, Jaico Publ. House.
- Neural Networks :A Comprehensive formulation", Simon Haykin, 1998, AW
- Neural Networks", Kosko, 1992, PHI.
- Neural Network Fundamentals" – N.K. Bose, P. Liang, 2002, T.M.H

CSE-419: REAL TIME SYSTEMS

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

a) **To study fundamentals of neural system.**
b) **To study models used in single layer classifiers.**
c) **To study feedback networks.**
d) **To understand the self organizing networks.**

Unit-I

Introduction: Definition, Issues in Real Time Computing, Structure of a Real Time System. Task Classes and Timing Parameters, Common myths about real time systems, Characteristics and Applications of Real time Systems, Examples of Real time systems.

Performance measures for real time systems: Traditional performance measures, Performability, Cost functions and hard Deadlines

Unit-II

Task Assignment and Scheduling: Introduction, Various types of scheduling algorithms: Cyclic, Deterministic, Capacity based Dynamic Priority, Value Function etc.

Scheduling Real time tasks in Multiprocessors, Fault tolerant Scheduling

Unit-III

Real Time Databases: Basic definitions, Real time Vs General Purpose databases, Main Memory databases, concurrency control issues, databases for hard real time systems.

Real Time Communication: Introduction, Basic Concepts, Real time communication applications, Real time Communication in LAN, Protocols: Contention based protocols, Token based protocols, Deadlines based protocols, Stop and Go Multihop protocol, The polled bus protocol, Hierarchical round robin protocol.

Unit-IV

Real Time operating System: Introduction, Features of RTOS, UNIX and Windows NT as RTOS, Comparison of UNIX and Windows NT as RTOS.

Real Time Knowledge Based Systems and Programming Languages: Introduction, Why use real time expert systems, Requirements of real time expert system, Real time Expert system applications, Expert system tools, Characteristics of a Real time Language, Case study of ADA as a Real Time Language.

Text Book:

- Real Time Systems: Liu; Pearson Education
- Real Time Systems: C. M. Krishna and Kang G. Shin; McGraw Hill
- Real Time Systems: Satinder Bal Gupta and Yudhvir Singh; University Science Press

CSE-421: DISTRIBUTED OPERATING SYSTEMS

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

a) **To study fundamentals of distributed operating system.**
b) **To study synchronization in distributed systems.**
c) **To study file systems and related methodologies.**
d) **To understand consistency models used in DOS.**

Unit-I

Introduction to Distributed System, Goals of Distributed system, Hardware and Software concepts, Design issues. Communication in distributed system: Layered protocols, ATM networks.

Client – Server model, Remote Procedure Calls and Group Communication, Middleware and Distributed Operating Systems.

Unit-II

Synchronization in Distributed System: Clock synchronization, Mutual Exclusion, Election algorithm, The Bully algorithm, Ring algorithm, Atomic Transactions.

Deadlock in Distributed Systems, Distributed Deadlock Prevention, Distributed Deadlock Detection.

Unit-III

Processes and Processors in distributed systems: Threads, System models, Processors Allocation, Scheduling in Distributed System, Real Time Distributed Systems.

Distributed file systems: Distributed file system Design, Distributed file system Implementation, Trends in Distributed file systems.

Unit-IV

Distributed Shared Memory: What is shared memory, Consistency models, Page based distributed shared memory.

Shared variables distributed shared memory.

Text Book:

1 Distributed Operating System – Andrew S. Tanenbaum, PHI.
2 Operating System Concepts, P.S.Gill, Firewall Media

CSE-423: SOFTWARE TESTING

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

a) **To study fundamentals of software testing.**
b) **To learn test case design used in software testing.**
c) **To study localization and software reliability.**
d) **To understand testing tools in automated testing.**

UNIT I

Fundamentals of Software Testing: Error, Fault, Failure, Incident and Bug. Software testing life cycle, Scope of testing and Limitations of testing.

Introduction to test case: Testing process, Purpose of test case, Test case templates, Test case specifications, designing and developing test cases, test scripts, test data, characteristics of a good test case, test summary report.

UNIT II

Types of testing: Functional vs Non Functional testing, Functional testing: Unit testing, integration testing, system testing, interface testing and regression testing.

Non Functional testing: Configuration testing, load testing, performance testing, recovery testing, reliability testing, stress testing, volume testing etc. Structural testing: Path testing, Cyclomatic Complexity, Data Flow Testing, Mutation testing and usability testing.

UNIT III

Testing methods: Static testing vs dynamic testing, Black box testing: Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing and error guessing. White Box testing: statement coverage conditional coverage and decision coverage, performing white box testing.

Graybox testing, Agile testing and Adhoc testing, Level of testing: Unit Testing, Integration Testing, System Testing, Debugging, Domain Testing and user acceptance testing.

UNIT IV

Automation testing: Introduction to automation testing, Why automation testing? Automated testing process, Scope of automation, Planning, design and development, Role of framework in automation.

Advantages and disadvantages of automation testing, Automation testing tool examples.

Text Books:

- William Perry, "Effective Methods for Software Testing", John Wiley & Sons, New York, 1995.
- Boris Beizer, "Software Testing Techniques", Second Volume, Second Edition, Van Nostrand Reinhold, New York, 1990.

MGT-307: ENTREPRENEURSHIP

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

a) **To understand the setup of business.**
b) **To learn basic terminologies of business organization.**
c) **To investigate the business processes.**
d) **To understand the challenges of stating new ventures.**

UNIT I

Entrepreneurship: Concept, knowledge and skills requirement; characteristics of successful entrepreneurs; role of entrepreneurship in economic development; entrepreneurship process.

Factors impacting: Emergence of entrepreneurship; managerial vs entrepreneurial approach and emergence of entrepreneurship.

UNIT II

Starting the venture: generating business idea–sources of new ideas, methods of generating ideas, creative problem solving, opportunity recognition; environmental scanning, competitor and industry analysis.

Feasibility study: market feasibility, technical/operational feasibility, financial feasibility: drawing business plan; preparing project report; presenting business plan to investors.

UNIT III

Functional plans: marketing plan–marketing research for the new venture, steps in preparing marketing plan, contingency planning; organizational plan–form of ownership, designing organization structure, job design,

Manpower planning: Financial plan–cash budget, working capital, Performa income statement, performa cash flow, Performa balance sheet, break even analysis

UNIT IV

Sources of finance: debtor equity financing, commercial banks, venture capital; financial institutions supporting entrepreneurs;

Legal issues: Intellectual property rights patents, trademarks, copyrights, trade secrets, licensing; franchising

Text Books:

1. Hisrich, RobertD.,Michael Peters and Dean Shephered, **Entrepreneurship,**TataMcGraw Hill, New Delhi
2. Barringer,BraceR.,andR.DuaneIreland,**Entrepreneurship**,PearsonPrenticeHall,New Jersy(USA)
3. Lall, Madhurima and Shikha Sahai, **Entrepreneurship**, Excel Books, NewDelhi

MGT-304: HUMAN RESOURCE MANAGEMENT

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

- **To provide a framework for understanding the HR policies and their impact on employees.**
- **To cover the entire range of HR functions and the strategic role of HRM in business.**

UNIT I

Human Resource Management: Evolution, Functions, HRM Policies & Principles, System Approach to Human, Resource Management; HR Relationship with other Departments; e-HRM, Human capital Management, Environment of HRM–Internal & external forces affecting the HR function. Global HRM

UNIT II

Job Analysis, Job Enrichment and Job Enlargement: Methods for Collecting Job Analysis Information.

Recruitment & Selection Process: Planning and Forecasting, Effective Recruiting, Internal and External Sources of Candidates, Recruiting a Diverse Workforce, Employee Testing and Selection.

UNIT III

Training and Development: T&D Process, Methods of Employee Training, Methods of Executive Development, Evaluating the Training Effort. Performance Appraisal Methods-Meaning, concept and significance of performance appraisal.

UNIT IV

Performance Management: Meaning, Concept and significance of performance management Components of Performance Management, Performance Counseling.

Text Books:

1. Aswathapa, K. (2008) 5th ed. Human Resource Management, Tata McGraw Hill.
2. Dipak Kumar Bhattacharyya, Human Resource Management, Excel Books.
3. French, W.L. (1990), Human Resource Manangement, 4th ed., Houghton Miffin, Boston.
4. H.J. Bernardin, Human Resource Management, Tata McGraw Hill, New Delhi, 2004.
5. Ivancevich, JM (2008), Human Resource Management, Tata McGraw Hill.

EC-495: INTELLIGENT INSTRUMENTATION FOR ENGINEERS

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

- **To provide a framework for understanding the instruments.**
- **To cover the concepts related to instruments engineering.**

UNIT I

INTRODUCTION: Definition of an intelligent instrumentation system; feature of intelligent instrumentation; Components of intelligent instrumentation; Block diagram of an intelligent instrumentation.

UNIT II

INTERFACING INSTRUMENTS & COMPUTERS: Basic issue of interfacing; Address decoding; Data transfer control. A/D converter; D/A converter; Other interface consideration.

UNIT III

INSTRUMENTATION/ COMPUTER NETWORKS: Serial & parallel interfaces; Serial communication lines; Parallel data bus; EEE 488bus; Local area networks(LANs) : Star networks, Ring &bus networks.

Fiber optic distributed networks, Field bus; Communication Protocols for very large systems: communication network rationalization.

UNIT IV

SOFTWARE FILTERS: Description of Spike Filter, Low pass filter, High pass filter etc.

Text Books:

- Principles of measurement & Instrumentation: Alan S. Moris; PHI

EC-491: WIRELESS MOBILE COMMUNICATION

L T P
3 1 0
Credits: 3
Duration of Exam: 2½ Hrs.

Internal: 60 Marks
External: 90 Marks
Total: 150 Marks

NOTE: *The question paper will have nine questions in all. Question number-1 will be compulsory and will be of conceptual nature covering the entire syllabus. There after there will be four sections and each section will have two questions. Candidates will be required to attempt at least one question from each section. All questions carry equal marks and the duration of examination will be 2.30 hrs.*

COURSE OBJECTIVES:

- **To provide a framework for understanding the instruments.**
- **To cover the concepts related to instruments engineering.**

UNIT I

Introduction to mobile radio systems: Paging systems, cordless telephone system, Cellular telephone systems-Cellular concept, frequency reuse, channel assignment strategies.

Interference and system capacity, trunking and grade of service, cell splitting, sectoring, microcell zone concept, HO strategies.

UNIT II

Mobile radio propagation: mechanism, free space path loss, log-distance path loss models, Okumara model, Hata model, PCS model, Wideband PCS microcell model, indoor propagation models, Jake's channel model.

Multi path characteristics of radio waves, signal fading, Time dispersion, Doppler spread, coherence time LCR, fading statistics, diversity techniques.

UNIT III

Introduction to spread spectrum communication, multiple access techniques used in mobile wireless communication: FDMA/TDMA/CDMA, Cellular CDMA.

Packet radio protocols, CSMA, reservation protocols, capacity of cellular CDMA, soft HO

UNIT IV

Wireless systems and standards: GSM standards, signaling and call control, mobility management, location tracing, wireless data networking, packet error modeling on fading channels.

Performance analysis of link and transport layer protocols over wireless channels, mobile data networking (mobile IP), wireless data services, IS-95, GPRS

Text Books:

- T. S. Rappaport, "wireless Communications: Principles and practices", PHI 1996.
- William C. Y. Lee, " Mobile Cellular Telecommunications, Analog and Digital Systems", 2nd ed, MGH-1995.
- Kamilo Feher: Wireless Digital communications, Modulation and Spread Spectrum Applications PHI
- Kaveh Pahlavan & Allen H. Levesque, "Wireless Information Networks", Wiley series in Telecommunications and signal processing.

CSE-409: COMPILER DESIGN LAB

L	T	P	C
0	0	3	2

Internal: 60 Marks
External: 40 Marks
Total: 100 Marks

Duration of Exam: 2 Hrs.

List of Practical's

- Write a program to check whether a string belong to the grammar or not.
- Write a program to generate e a parse tree.
- Write a program to find leading terminals.
- Write a program to find trailing terminals.
- Write a program to compute FIRST of non-terminal.
- Write a program to compute FOLLOW of non-terminal.
- Write a program to check whether a grammar is left Recursion and remove left recursion.
- Write a program to remove left factoring.
- Write a program to check whether a grammar is operator precedent.
- To show all the operations of a stack.
- To show various operations i.e. read, write and modify in a text file.

Note*: At least 10 exercise to be given by the teacher concerned.

CSE-411: ADVANCED JAVA LAB

L	T	P	C
0	0	3	3

Internal: 60 Marks
External: 40 Marks
Total: 100 Marks

Duration of Exam: 2 Hrs.

List of Practical's

- Simple Servlet Showing Different Styles of a Phrase
- Displaying Multiplication Table in Servlet for a Number Entered in Html Page
- Manipulating Strings in Servlet Entered in Html
- Designing a Login Form Using Html and Displaying the Contents of the Login Form along with Date and Time in Servlet
- Registering a New User and Displaying the Number of Visits Made by the Existing User using Cookies
- Mark List Processing in Servlet with Records Taken from MS-Access
- Applet Reading the Contents from Servlet and Changing the Colors of the Contents Using User Interfaces
- Sending Contents from a File to Servlet via Applet and Receiving the same from Servlet and Displaying in Applet's Textarea
- Servlet program to read contents from file and write the same into another file and also display the read contents on the browser
- Making a Class Serializable and Sending Data as Object from Applet to Servlet
- Simple JSP showing increased font size
- Incorporating HTML in JSP
- Client – Server Communication using RMI
- Login Form Validation using JavaBeans(Invisible Component)

Note*: At least 10 exercise to be given by the teacher concerned.

CSE-413: SEMINAR / COLLOQUIUM

L	T	P	C
0	0	2	2

Internal: 60 Marks
External: 40 Marks
Total: 100 Marks

Duration of Exam: 2 Hrs.

Students are required to appear in a seminar/colloquium in which he/she will present some technical topic related to any technology (of his/her branch). Student can also refer to latest trends of that technology going in industry.