Bechelor of technology (Computer Engineering)
Schemes of Studies / Examination
(Semester-7th)

S.No.	Course No.	Subject	Teaching Schedule				Examination Schedule				Durati. of Exam (Hours)
			L	T	P	Total	Theory	Sessional	Practical	Total marks	
1	*	Departmental Elective-II	3	1	-	4	75	50	-	125	3
2	**	Departmental Elective-III	3	1	-	4	75	50	-	125	3
3	CSE-401	Compiler Design	4	1	-	5	100	25	-	125	3
4	CSE-403	Web Engineering	3	1	-	4	75	25	-	100	3
5	CSE-405	Statistical Models for Computer Science	4	1	-	5	100	25	-	125	3
6	CSE-407	Unix & Linux Programming (Pr)	-	-	*1+2	3	-	50	50	100	3
7	CSE-409	Web Engineering (Pr)	-	-	2	2	-	25	25	50	3
8	CSE-411	Minor Project	-	-	6	6	75	50	-	125	3
9	CSE-413	Seminar	-	2	-	2	-	50	-	50	-
10	CSE-415	Training Viva	-	-	-	-	-	75	-	75	-
Total			17	7	11	35				1000	

Department Elective-II
1. CSE-441 Software Project Management
2. CSE-443 Embedded System Design   3. CSE-445 Artificial Intelligence 4. CSE-447 Image Processing

Departmental Elective-III
1. CSE-471 Unix & Linux Programming   2. CSE-473 Security & Cryptography
B.TECH VIITH SEMESTER
Compiler Design
CSE-401

Theory : 100

L T P   Sessional : 25
4 1 -

Unit-I

Assemblers, linkers, loaders, compilers and translators, the structure of compiler, different states in the construction of a compiler, Design of lexical analyzer, Basic Parsing Techniques, Parsers, shift-reduce parsing, operator-precedence parsing, top-down parsing predictive parsers, L.R. Parsers, the canonical collection of L.R (O) items, construction of SLR parsing tables, construction canonical L.R. Parsing tables, Constructing LALR parsing tables implementation of L.R. Parsing tables.

Unit-II

Syntax-Directed Translation: Syntax-directed translation schemes, implementation of syntax directed translators, intermediate code, postfix notation, parse trees and syntax trees, three address code, quadruples, and triples, translation of assignment statements. Boolean expressions, control statements. Symbol Labels :The contents of a symbol table data structures for symbol tables representing scope information.

Unit-III

Run time storage Administration : Implementation of a simple stack allocation scheme, implementation of block structured languages, storage allocation in block structured languages.
Error Detection and Recovery : Error, Lexical-phase errors, syntactic-phase errors, semantic errors.

Unit-IV

Code Optimization: The Principle sources of optimization, loop optimization, the DAG representation of basic blocks, value number and algebraic laws, global dataflow analysis.
Code Generation: Object programs, problems in code generation, a machine model, a single code generator, register allocation and assignment, code generation from DAGs, peephole optimization.

Note: - There will be 8 question in all. Two questions will be set from each unit students are3 required to attempt five questions selecting at least one question from each unit.

Books :
1. Aho A.V. and ullaman J.D.Principles of Compiler Design, Addison Wesley
2. Donovan, j, System Programming, TMH
3. D.M. Dhamdhere: Compiler Construction- Principles and practice Mc Milan India
4. David Grics : Compiler Construction for digital computer

B.TECH VIITH SEMESTER
WEB DESIGNING
CSE-403

Theory : 75
L T P   Sessional : 25
3 1 -

Unit-I

Information Architecture : The role of information Architect, Collaboration and communication, Organizing information, organizational challenges, Organizing web sites and Intranets, Creating cohesive organization systems, designing navigation systems, types of navigation systems, Integrated navigation

elements, designing elegant navigation systems, Searching systems, Searching your web site, designing the search interface, Indexing the right stuff, To search or not to search grouping content, conceptual design, High level Architecture Blueprint, Architectural Page Mockups, Design Sketches.

Unit-II

Dynamic HTML and Web Designing : HTML Basic concepts, Good web design, process of web publishing phases of web site development, STRUCTURE OF HTML documents, HTML elements-Core attributes, Language attributes, Core events, Block level events, Text level events, Linking basics, Linking in HTML, Images and Anchors, Anchor Attributes, Image maps, Semantic linking meta information, image preliminaries, Image download issues, Images and buttons, introduction to layout: Backgrounds, color and text, fonts, layout with tables, Advance layout: frames and layers, HTML and other media types. Audio support in browsers, video support, other binary formats. Style sheets, positioning with style sheets. Basic interactivity and HTML: FORM, form control, new and emerging form elements.

Unit-III

CGI Using PERL: Introduction to CGI, Alternative technologies, the Hypertext transport protocol , URLs, HTTP, Browser requests, Server responses, proxies, connects negotiation, the common gateway interface , the CGI environment, Environment variables, CGI output, forms and CGI, sending data to the server , form Tags ,Decoding from input, Architectural Guidelines ,Coding Guidelines Efficiency and optimization .

Unit –IV

Java server pages : Basics, Integrating Scripts n JSPs, JSP object and components , comforting and troubleshooting, JSP : Request and response objects, retrieving the contents of an HTML format, retrieving a Query string, Working with Beans, Cookies, Creating and Reading Cookies, Using Application Objects and Events

XML : Relationship between HTML, SGML and XML, Basic XML, Valid documents, ways to use XML, XML for data files, embedding XML into HTML documents, Converting XML to HTML for Display, Displaying XML using CSS and XSL, rewriting HTML as XML, the future of XML.

Note: - There will be 8 questions in all. Two questions will be set from each unit students are3 required to attempt five questions selecting at least one question from each unit.

Books :-1. Thomas A Powell, HTML The Complete Reference, Tata McGraw Hill Publications.

2. SCSEt Guelich, Shishir Gundavaram, Gunther Birzneik; CGI Programming with PERL 2/e, O'
     Reilly.

3. Doug Tidwell, James Snell, Pavel Kulchenko; Programming web services with SOAP, O' Reilly.

4. Pardi, XML in Action, Web Technology, PHI

5. Yong, XML step by step, PHI

6. Aaron, Weiss, Rebecca Taply, Kim Daniels, Stuven Mulder, Jeff Kaneshki, Web Authoring Desk reference. Techmedia publications

B.TECH VIITH SEMESTER
STATISTICAL MODELS FOR COMPUTER SCIENCE
CSE-405

Theory : 100
L T P   Sessional : 25
4 1 -

Unit-I

Probability Models, Sample Space, Events, their algebra, graphical methods of representing events, Probability Axioms and their applications, Condition probability, Independence of Events, Bayes' Rule and Bernoulli Trials.

Unit-II

Random variable, and their event space, probability mass function, Distribution functions, some discrete distributions (Bernoulli, Binomial, Geometric, Negative Binomial, Poisson, Hyper Geometric and Uniform), Probability Generating Function, Discrete random vectors. Continuous random variables: some continuous distributions (Exponential, Hyperexponential, Erlang, Gamma, Normal), Functions of random variables, jointly distributed random variables, Expectation, Expectation of functions of more than one random variable, Brief introduction to Conditional pmf: pdf and expectation, Moments and transforms of some distributions (Uniform, Bernoulli, Binomial, Geometric, Poisson, Exponential, Gamma, Normal), Computation of mean time to failure.

Unit –III

Stochastic Processes,Classification of stochastic processes,the Bernoulli process,the possion process,renewal process,renewal model of program behaviour

Unit-IV

Markov Chains, Computation of n-step transition probabilities, Stat classification and limiting distributions, Distribution of times between state changes, Irreducible finite chains with aperiodic states, M/G/I queuing system, Discrete parameter Birth-Death processes, Analysis of program execution time. Continuous parameter Markov Chains, Birth-Death process with special cases, Non-Birth-Death Processes.

Note: - There will be 8 questions in all. Two questions will be set from each unit students are3 required to attempt five questions selecting at least one question from each unit.

BOOKS
1. K.S. Trivedi, Probability, Statistics with Reliability, Queuing and Computer Science Applications, PHI, 2001.
2. J.F. Hayes Modeling of Computer Communication Networks, Khanna Publishing, Delhi
3. W. Feller, An Introduction to Probability Theory and its applications. 2vols. Wiley Eastern, 1975
4. L. Kleinroek, Queuing Systems, 2vols, John Wiley, 1976.

B.TECH VIITH SEMESTER
UNIX AND LINUX PROGRAMMING(PR)
CSE-407

Theory : 50
L T P   Sessional : 50
- - *1+2

1. Familiarize with Unix/Linux logging/logout and simple commands.

2. Familiarize with vi editor.

3. Using Bash shell develop simple shell programs.

4. develop advanced shell programs using grep, fgrep & egrep.

5. Comile and debug various C programs using different options.

6. learning of installation and upgradation of Linux operating system.

7. Install, Linux on a PC having some other previously installed operating system. All Oss should be usable.

8. As supervisor create and maintain user accounts, learn package installation, taking backups, creation of scripts for file and user management, creation of startup and shutdown scripts using at, cron etc.

Note: Atleast 5 to 10 more exercises are to be given by the teacher concerned. Teacher are supposed to devote I period for giving instructions to clear the concepts UNIX & Linux and 2 periods for the lab work.

B.TECH VIITH SEMESTER
Web Engineering(pr.)
CSE-409

Theory : 25

L T P   Sessional : 25

- - 2

1. Chalk out the storyboard and design of Diary Food Limited. As the name reflects your site diary products and aims at opening an online store. Your story board should cover all the features that you plan to have on the site.

2. Create your own page with your favorite hobbies.

3. Create a menu or a table of content web page. Each menu item or section of the table of content should load a different web page. For example, if the user clicks on menu one or section I then the link should take him to respective menu html or section and so on.

4. Create a web site for your college.

5. Create a frameset that is divided into three sections. The frameset should have three zones.
The Topmost section of the frameset should take up about just 15% of the browser window. Name this frame title.
The middle section should be 70% of the browser window. Name this frame title.
The lower section should be 15% of the browser window. Name this frame menu. Crteate pages for each section. For the lowermost section, create page that loads the content into the middle section. The topmost section should contain a page describing the web page itself.

6. Create a web page, which displays the map of your country Link, each city/state on the image map, such that the respective HTML page of the city/state is displayed when the user selects an area.

7. Add the tickertape applet to your page by customizing it for the following settings:
        Increase the count by one.
        Accordingly update the message count.
        Change the text color to (237, 192, 171)
        Experiment with changing the scrolling speed.
        Customize the message text as per your page requirement.

8. Incorporate a quest book into the Diary Food Webpage and use Java Script to build validations into the form.

9. Use Style sheet to modify the following:
        Change background to modify the following.
        Change font type, face and color.
        Align Text.
        Remove underlines from hyperlinks.

10. Use Microsoft's Personal Web Server to set up your Website.

B.TECH VIITH SEMESTER
Software Project Management
CSE-441
(Departmental Elective II)

L T P   Theory : 75
3 1 -   Sessional : 50

Unit-I

Conventional Software Management : Evolution of software economics, Improving software economics: reducing product size, software processes, team effectiveness, automation through, Software environments, Principles of modem software management.

Unit-II

Software Management Process : Framework,: Life cycle phases- inception, elaboration, construction and training phase. Artifacts of the process- the artifact sets, management artifacts, engineering artifacts, and pragmatics artifacts, Model based software architectures, Workflows of the process, Checkpoints of the process.

Unit-III

Software Management Disciplines : Iterative process planning, Project organizations and responsibilities, Process automation, Project control and process instrumentation core metrics, management indicators, life cycle expectations, Process discriminates.

NOTE : There will be 8 questions in all. Two questions will be set from each unit.

Books
1. Software Project Management, Walker Royee, Addison Wesley, 1998
2. Project management 2/e, Maylor.
3. Managing the Software Process, Humphrey.
4. Managing Global Software Projects. Ramesh, TMfH, 2001

B.TECH VIITH SEMESTER
Embedded System Design
CSE-443
(Departmental Elective II)

L T P   Theory : 75
3 1 -   Sessional : 50

Unit-I

Introduction to an embedded systems and its design : Introduction to ES & its applications. Design parameters of an ES and its significance (with respect to all parameter), Present trends in ES, Embedded system design life cycle, product specifications and hardware, software partitioning, Co-design.

RTOS & its overview: Spell of OS 2 difference between OS 2 RTOS, Role of RTOS in ES 2 its process models (Process transition diagram), Course structure, Overview Window, CE, Unix, Mino Kernnel, UCOs & RT linux, Interrupt Roatining in RTOS & Inblow response cycle, Different IPC machines in RTOS, Scheduling construm in RTOS (hand 2 soft), Memory sowing and its protechan, Encapsulation of Semephores and Queues, Timon in RTOS (Watch dog timer)

Unit-II

Processor Selection : Role of processor selection in ES (MP V/s Uc), Mino control-8051, 16232 bit mino controller 2 its processor, More about micro controller applications with respect to embedded system design, DSP's in ES, New trends in processing and DSP's. Cost Compiler and cross assembly for embedded systems. Why we need cross compiler/ Assemble, Embedded software development take chain and software development tool chain, Compiler linker, locators, cross assembles, GCC compiler.

Unit-III

Basic Concepts of Device Driving : Device drives introduction & how device are different from the normal ports, Sevical Communication enterface device drivers.

System Synthesis and Debugging Techniques:Introduction to system synthesis & Hardware and Software, Biomulation & methods to improve to speed of simulations, Emulators (ICE) and its type, How emolutors an difference for simulations, Introduction JTAG and OCP (on chich and debugging)

Unit-IV

Communication Protocols with reference to ES: Introduction to protocol, why we need in Es, Overview TCP(IP), UDD< wings protocols, IrDA, Blue Box, IEEE 8811,Other design issues and current trends on its application of ES ,Memory optimization, Poorer optimization. Co-similation of its system on chip and SOS (System on Slices), Revision of Cost

Note: - There will be 8 questions in all. Two questions will be set from each unit students are3 required to attempt five questions selecting at least one question from each unit.

Books
1. John Catosulis, "Designing Embedded Hardware", O' reilly
2. An Embedded Software Primer", David E. Simon, Pearson Education
3. Frank Vahid, Tony Givargis, "Embedded System Design" John Wiley & Sons, Inc
4. Karim Yaghmour, "Building Embedded Linux System", O'reilly
5. Michael Barr, "Programming Embedded Systems", O'reilly.
6. Aian C. Shaw, "Real-time system & Software", John Wiley & sons, Inc.
7. Wayne Wolf, "Computers as Components", Harcourt India Pvt. Ltd.

Artificial Intelligence
CSE-445
(Departmental Elective II)

L T P   Theory : 75
3 1 -   Sessional : 50

Unit-I

Introduction: Definition of Artificial Intelligence (AI), Evolution of Computing History of AI, Classical Romantic and modern period, Subject area, Architecture of AI machines, logic family, classification of logic.

Production System: Production rules, the working memory, Recognize-act cycle, conflict resolution by meta rules, Architecture of production system.

Unit-II

Propositional Logic: Proposition, tautologies, Theorem proving, Semantic method of theorem proving, forward chaining, backward chaining standard theorems, method of substitution, Theorem proving using Wang's algorithm.

Predicate Logic: Alphabet of first order logic(FOL), predicate, well formed formula, clause form, algorithm for writing sentence into clause form, Unification of predicates, unification algorithm, resolution Robinson's interface rule, Scene interpretation using predicate logic.

Unit-III

Default and Non monotonic Logic: Axiomatic theory, Monotonicity, non-atomic reasoning using McDermott's NML-I, problems with NML-I, reasoning with NML-II, Case study of Truth Maintenance System(TMS), neural network fundamentals.

Imprecision and Uncertainty: Definition, Probabilistic techniques, Certainty factor based reasoning, conditional probability, Medical diagnosis problem, Baye's Theorem and its limitations, Bayesian belief network, propagation of belief, Dumpster-Shafer theory of uncertainty management, belief interval, Fuzzy relation, inverse Fuzzy relations, Fuzzy post inverse, Fuzzy Inversion,

Unit-IV

Intelligent Search Techniques: Heuristic function, AND-OR graph, OR Graph, Heuristic search, A* algorithm and examples.

Logic Programming with Prolog: Logic program, Horn clause, program for scene interpretation, unification of goals, SLD resolution, SLD tree, flow of satisfaction, controlling back track using CUT, Command use of CUT, implementation of backtracking using stack, risk of using cuts, fail predicate, application of cut-fail combination, replacing cut-fail by not.

Note: - There will be 8 questions in all. Two questions will be set from each unit students are3 required to attempt five questions selecting at least one question from each unit.

Books
1. A.Konar: Artificial Intelligence and Soft Computing-Behavioral and Cognitive Modeling of Human Brain, CRC Press, USA.
2. E. Charniak and D.McDermott: Introduction to Artificial Intelligence, Addison Welley Longman.
3. Rich and Knight: Artificial Intelligence, 2/e 1992

Image Processing
CSE-447
(Departmental Elective II)

L T P   Theory : 75
3 1 -   Sessional : 50

Unit-I

Image Processing Fourier Transform and Z-Transform, Causality and Stability, Toeplit and Circulate Metrics, orthogonal and unitary Matrices and Kroenker product, Markov Processes KI Transform Mean Square Estimates and Orthogonal Principles.

Image Sampling quantization, Band Limited Image Sampling Versus Replication, Reconstruction of image from samples Sampling Theorem, Sampling Theorem for Random Fields, Sampling Optimal Sampling, Nonrectangular Grid Sampling, Sampling Aperture, Display Aperture/Interpolation Functions, Lang range Interpolation, Moire Effect, Image Quantization Uniform Optimal Quantizer, Properties of Mean Square Quantizer, Commands Design Visual Quantization.

Unit-II

Image Transforms: Two Dimensional Orthogonal and Unitary Transforms and their properties. One Dimensional and Two Dimensional DFT Cosine and Sine Transforms Iiadmard, slant, IIARR and KI, Transforms and their properties, Approximation to KI Transforms. Image representation by stochastic model, One Dimensional Causal Models, AR and ARMA models, Non Causal Representation Spectral factorization, Image Decomposition

Unit-III

Image Enhancement and Restoration: Point Operation, Histogram Modeling, Spatial Operations, Transform Operations. MultiSpeciral Image Enhancement. Image Observation Models, Inverse and Wiener Filtering FIR wiener Filters, Filtering using Image Transform Casual Models and recursive filtering Maximum entropy restoration. Extrapolation of band limited signal.

Unit-IV

Image Analysis and Image Compression: Spatial feature extraction, Edge detection and boundary extraction boundary, region and moment representations structures, Texture, Image Segmentation, Reconstruction from Projections, Pixel Coding, Productive Techniques, Transform Coding Theory, Coding of Image, Coding of two-tone image.

Note:- There will be 8 questions in all. Two Questions will be set from each unit. Students are required to attempt five questions selecting at least one question from each unit.

BOOKS
1. Anil Jain: Digital Image Processing
2. Gonzalez Woods: Image Processing

B.TECH VIITH SEMESTER
Unix & Linux Programming
CSE-471
(Departmental Elective - III)

L T P T   Theory : 75
3 1 -   Sessional : 25

Unit-I

Linux Startup: User accounts, accessing Linux – starting and shutting processes, Logging in and Logging out, Command Line, simple commands.

Shell Programming: Unix file system: Linux/Unix files, I-nodes and structure and file system related commands, Shell as command processor, shell variables, creating command substitution, scripts, functions, conditionals, loops, customizing environment.

Unit-II

Regular Expressions and Filters: Introducing regular expressions patterns, syntax, character classes, quantifiers, introduction to egrep, sed, programming with awk and perl.

Unit-III

The C Environment: The C compiler, vi editor, compiler options, managing projects, memory management, use of makefiles, dependency calculations, memory management – dynamic and static memory, building and using static and dynamic libraries, using ldd, soname, dynamic loader, debugging with gdb.

Unit-IV

Processes in Linux : Processes, starting and stopping processes, initialization processes, re and init files, job control – at, batch, cron, time, network files, security, privileges, authentication, password administration, archiving, Signals and signal handlers, Linux I/O system.

Note:- There will be 8 questions an all. Two Questions will be set from each unit. Students are required to attempt five questions selecting at least one question from each unit.

BOOKS
1. John Goerzen: Linux Programming Bible, IDG Books, New Delhi, 2000.
2. Sumitabha Das: Your Unix – The Ultimate Guide, TMH, 2000.
3. Mathew Professional Linux Programming, vol. 1 & 2, Wrox-Shroff, 2001.
4. Welsh & Kaufimanm Running Linux, O'Relley & Associates, 2000.

B.TECH VIITH SEMESTER
Security and Cryptography
CSE-473

Theory : 75

L T P   Sessional : 50
3 1 -

Unit-I
Traditional Cryptography: Crypto analysis, substitution and transposition ciphers, eryptographic principles, secret-key algorithms: DES, DES chaining, Breaking DES, IDEA, Differential and Linear crypto analysis Public-key algorithms: RSA, Knapsack.

Unit-II
Authentication protocols: KDC protocols, shared secret key, Diffle-Hellman key exchange, Needham-n Schroeder protocol, Using Kerbros, interlock protocol, digital signatures-Secret key and public key signatures, DSS, message digest, MD5 and Secure Hash algorithms.

Unit-III
Computer security Mechanisms: Role of different security mechanisms, passwords-technology and administration, principles of database system security, epidemic of viruses: types of viruses, study of different virus codes, means of spread, prevention from virus. Life cycle of a virus, immunization, Trojan horse and bombs with examples, writing antivirus/ Trojan codes.

Unit-IV
Network security: Basics, Security Function, preventing loss and damage, securing local area network-authorization, security plan and policy, Securing enterprise network-setting priorities, Security plans, securing network components, hardware security, levels of access control and authorization.

Note:- There will be 8 questions an all. Two Questions will be set from each unit. Students are required to attempt five questions selecting at least one question from each unit.

BOOKS:
1. Richard H.Backer, Network Security, Mcgraw Hill International Ed. 1996
2. D.Schneier, Applied Cryptography, John Wiley, New York, 1996
3. C.Kaufman et. AI, Network Security, Prentice Hall International, 1998