UNIVERSITY OF CALICUT

SCHEME AND SYLLABI

FOR

SEVENTH SEMESTERS

OF

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE & ENGINEERING

FROM 2004 ADMISSION ONWARDS

CALICUT UNIVERSITY (P.O), THENHIPALAM

SEVENTH SEMESTER

Code	Subject	Hours/Week			Sessional Marks	University Examination	
		L	T	P/D		Hrs	Marks
CS04 701	Industrial Management &	3	1	-	50	3	100
CS04 702	Cryptography and Network Security	3	1	-	50	3	100
CS04 703	Distributed System	3	1	-	50	3	100
CS04 704	Design and Analysis of Algorithms	3	1	-	50	3	100
CS04 705	Elective I	3	1	-	50	3	100
CS04 706(P)	**Compiler Lab**	-	-	3	50	3	100
CS04 707(P)	**Seminar**	-	-	3	50	-	-
CS04 708(P)	**Project**	-	-	4	50	-	-
TOTAL		**15**	**5**	**10**	**400**	**-**	**600**

Elective I
CS04 705A - Digital Signal Processing
CS04 705B – Advanced Topics in Database Systems
CS04 705C - Simulation & Modeling
CS04 705D - Stochastic Processes
CS04 705E - Technical Argumentation
CS04 705F –Entrepreneurship

SEVENTH SEMESTER

CS04 701 INDUSTRIAL MANAGEMENT AND ECONOMICS
(common with IT04 701)

3 hours lecture & 1 hour tutorial per week

PART A: ENGINEERING ECONOMICS
Objective: a brief exposure of Engineering Economics necessary for engineering graduate.

Module I (13 Hours)
1. Introductory Background – Nature and scope of Economics, Science, Engineering and Technology, their relationship with economic development.
2. Basic Economic Concepts – Wants and utility, Demand and supply, Elasticity of demand and supply, concept of cost and revenue, concept of equilibrium and margin, wealth and capital.
3. Money and Banking – Functions of money – Functions of banks – Commercial and Central Banks, Monetary policy of the Reserve Bank of India.

Module II (13 Hours)
4. Industrialization and Economic Planning in India – Need for industrialization, Development of Indian Industry since independence, Role of public sector in India, Industrial Policy of the Government of India, A brief study of Five Year Plans of India.
5. Agriculture – Role of Agriculture in Indian Economy – Problems of Indian Agriculture – Green Revolution in Indian Features and effects.
6. Foreign exchange and International Trade – Determination of rate of exchange – Balance of payments and Trade – India's Foreign Trade Policy – A short note on International Monetary Fund (I.M.F.).

PART B: PRINCIPLES OF MANAGEMENT

Objective: an elementary level exposure of management principles relevant for industrial
sector.

Module III (13 hours)
Need for management – principles of management – management functions – span of control – delegation – directing – leadership and motivation (basic concepts only)Theories of scientific management (an overview only expected) - Fredric Taylor's theory – Frank Gilbreth's theory – Henry Foyal's theory – present concepts of management.

Financial management – objectives and functions – time value of money (numerical examples included) – basics of financial accounting (problem solving not required) – profit and loss account – balance sheet (only introduction) – sources of industrial finance– shares – debentures – public deposits – bank loans – financial institutions.

Module IV (13 hours)
Marketing management –concept of market and marketing – marketing mix – market research – advertising and sales promotion, Scope and objective of Human Resource Management – manpower recruitment analysis– recruitment and training – job analysis – job evaluation – wages and incentives. Decision making – Introduction and definition – techniques of decision making – decision making process – under certainty - uncertainty and risk (problems not included),
Network analysis – CPM and PERT (analysis of simple networks).

Assignments:
1. Economics: Assignment should be able to help students appreciate necessity of economics
   in engineering.
2. Management: Individual documentation of best management practices by various organizations.

Text books
1. Mazda F, Engineering management, Low priced edition, Addison Wesley.
2. O.P.Khanna, Industrial Management.
3. Kotler. P, Marketing Management: Analysis, Planning, Implementation and Control, Prentice Hall.
4. Venkata Ratnam C.S & Srivastva B.K, Personnel Management and Human Resources, Tata McGraw Hill.
5. Prasanna Chandra, Financial Management: Theory and Practice, Tata McGraw Hill.
6. K.K.Dewett, Modern Economic Theory
7. Ishwar.C.Dhingra, The Indian Economy (Resources Planning development and Problem)

Reference books
1. Koontz H, O'Donnel C & Weihrich H, Essentials of management, McGraw Hill.
2. Satya Raju R & Parthasarathy A, Management: Text & Cases, Prentice Hall.

3. Ramaswamy V.S & Namakumari S, Marketing Management : Planning, Implementation and Control, MacMillan.

Sessional work assessment

Assignments	2x7.5 = 15	
Tests	2x15 = 30	
Regularity	=	05
Total marks		= 50

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS04 702 : CRYPTOGRAPHY & NETWORK SECURITY

(common with IT04 702)

3 hours lecture and 1 hour tutorial per week

[Objective: This course introduces the principles and practice of cryptography and network security. It includes the issues related to network security and practical applications that have been implemented to provide network security. It is very relevant in the contemporary scenario of increased number and complexity of cyber-crimes such as hackers, electronic eavesdropping and electronic fraud etc .]

Module I (14 hours)

Congruence equations : properties - complete and reduced residue systems - Fermat's theorem - Euler function. *Indeterminate equations* - linear and second degree diophantine equations - congruences in one unknown - congruences of higher degree with prime and composite modulo - Wilson's theorem - quadratic residues.

Introduction to cryptography - attacks - services and mechanisms - security attacks - security services - *conventional encryption* - *classical techniques* - model - steganography - classical encryption techniques - *modern techniques* - DES - cryptanalysis - block cipher principles and design - *algorithms* - triple DES - IDEA - blowfish - *confidentiality* - placement of encryption function - traffic confidentiality - key distribution - random number generation.

Module II (14 hours)

Public key encryption - RSA algorithm - key management and exchange.*RSA Design and implementation*- Chinese Remainder theorem, Garner's formula, RSA Model Definition , Digital signatures and public Exponents, Public Key, RSA Key generating functions, Pitfalls in using RSA ,RSA encryption function, Signature functions-*Key Negotiation Protocol*- Key setting, Authentication convention, Views of the protocol, Attacker's view, Key compromise, complexity and optimization,

Implementation issues- Large integer issues, checking DH computations and RSA encryption, faster multiplication, Elliptic curve cryptography - *message authentication* - requirements - functions and codes - hash functions - security of hash functions and MACs *algorithms* - MD5 message digest algorithm , Secure Hash (SHA-1) algorithm –

Module III (14 hours)

Digital signature algorithm - DSA Decription -DSA prime generation-Security of DSA-GOST Digital Signature Algorithm-ONG-Schnorr-Shamir, ESIGN, - Identification schemes- Feige- Fiat-Shamir and its simplified form ,enhancements – Guillou-Quisquater schemes, - Schnorr schemes – Key-exchange Algorithms, Diffie-Hellman scheme and modifications- Encrypted Key exchange(EKE),- Conference Key Distribution and secret Broadcasting – Multiple-Key Public-Key cryptography, Secret-Scharing Algorithms ,Subliminal Channel ,Undeniable Digital Signatures-Computing with encrypted data, Fair Coin Flips- Fair and Failsafe Cryptosystems ,Blind Signatures- Probabilistic Encryption-Quantum Cryptography

Module IV (10 hours)

Kerberos- Model, working principle, key servers, Sesame- Common Cryptographic Architecture (CCA),ISO Authentication framework, Privacy-Enhanced Mail(PEM), Prety Good Privacy(PGP), Public-Key Cryptography Standards(PKCS).

IP Security - Architecture, Authentication Header, Encapsulating security payload, Combining security associations, Key-management, ISAKMP- Internet Protocol security - WEB Security-Socket layer and Transport layer security, Secure Electronic transaction, password selection strategies ,Intrusion detection.

Text book

1. Stallings W., *Cryptography and Network Security Principles and Practice*, Pearson Education Asia.
2. Schneier B., *Applied Cryptography: Protocols, Algorithms, and Source Code in C*, John Wiley_
3. Schneier B, Ferguson N. , *Practical Cryptography,* Wiley–Dream - tech India Pvt.Ltd.

Reference books

1. Wenbo Mao , *Modern cryptography* – Theory and Practice, Pearson Education Asia
2. Niven & Zuckerman H.S., *An Introduction to The Theory of Numbers*, John Wiley
3. Pfleeger C.P., Pfleeger S.L., *Security in Computing* ,, Pearson Education (Singapore) Pte.Ltd.
4. Michel E. Whiteman, Herbert J.Mattord, *Principles of Information Security,* Thomson, Vikas Publishing House

Sessional work assessment

Assignments	2x7.5 = 15	
Tests	2x15 = 30	
Regularity	=	05
Total marks		= 50

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
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Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS04 703 : DISTRIBUTED SYSTEMS

(common with IT04 703)

3 hours lecture and 1 hour tutorial per week

[Objective: The development of distributed systems followed the emergence of high-speed local area networks, the availability of high performance PCs, workstations and servers has resulted in a recent shift towards distributed systems, and away from centralized, multi user systems. This trend has been accelerated by the development of distributed system software designed to support the development of distributed applications. This course is to impart basic knowledge of the issues concerning distributed systems, from both software and hardware viewpoints.**]**

Module I (10 hours)

Operating system fundamentals - distributed system concepts and architectures - major design issues - distributed computing environments (DCE)

Module II (13 hours)

Concurrent processes and programming - threads and processes - client server model - time services language mechanisms for synchronization - concurrent programming languages

Module III (13 hours)

Inter-process communication and coordination - message passing communication - request/reply communication - transaction communication - name and directory services - distributed mutual exclusion - leader election

Module IV (16 hours)

Distributed process scheduling - static process scheduling, dynamic load sharing and balancing - distributed process implementation - real-time scheduling - concepts of distributed file systems - distributed shared memory - distributed computer security

Text book

Chow R. & Johnson T., "*Distributed Operating Systems and Algorithms*", Addison Wesley

Reference books

1. Sinha P.K., "*Distributed Operating Systems Concepts and Design*", PHI
2. Tanenbaum S., "*Distributed Operating Systems*", Pearson Education.
3. Coulouris G., Dollimore J. & Kindberg T., "*Distributed Systems Concepts And Design*", Addison Wesley
4. Singhal M. & Shivaratri, "*Advanced Concepts in Operating Systems, Distributed Databases And Multiprocessor Operating Systems*", McGraw Hill

Sessional work assessment

Assignments	2x7.5 = 15
Tests	2x15 = 30
Regularity	= 05
Total marks	= 50

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS04 704 : DESIGN & ANALYSIS OF ALGORITHMS

3 hours lecture and 1 hour tutorial per week

[Objective of the course is to provide a sound basis of algorithm design and analysis techniques. A background of data structures and programming languages is assumed. After completing the course, one is expected to be able to design efficient algorithms, compare different algorithms for efficiency and also to have an idea about what is computable by a machine]

Module I (13 hours)

Analysis: RAM model - cost estimation based on key operations - big Oh - big omega - little Oh - little omega and theta notations - recurrence analysis - master's theorem - solution to recurrence relations with full history probabilistic analysis - linearity of expectations - worst and average case analysis of quick-sort - merge-sort - heap-sort - binary search - hashing algorithms - lower bound proofs for the above problems - amortized analysis - aggregate - accounting and potential methods - analysis of Knuth-Morris-Pratt algorithm - amortized weight balanced trees

Module II (13 hours)

Design: divide and conquer - Strassen's algorithm, o(n) median finding algorithm - dynamic programming - matrix chain multiplication - optimal polygon triangulation - optimal binary search trees - Floyd-Warshall algorithm - CYK algorithm - greedy - Huffman coding - Knapsack, Kruskal's and Prim's algorithms for mst - backtracking - branch and bound - travelling salesman problem - matroids and theoretical foundations of greedy algorithms

Module III (13 hours)

Complexity: complexity classes - P, NP, Co-NP, NP-Hard and NP-complete problems - cook's theorem (proof not expected) - NP-completeness reductions for clique - vertex cover - subset sum - hamiltonian cycle - TSP - integer programming - approximation algorithms - vertex cover - TSP - set covering and subset sum

Module IV (13 hours)

Probabilistic algorithms: pseudo random number generation methods - Monte Carlo algorithms - probabilistic counting - verifying matrix multiplication - primality testing - miller rabin test - integer factorization - Pollard’s rho heuristic - amplification of stochastic advantage - applications to cryptography - interactive proof systems - les vegas algorithms - randomized selection and sorting - randomized solution for eight queen problem - universal hashing - Dixon’s integer factorization algorithm

Text books

1. Corman T.H., Lieserson C.E. & Rivest R.L., *Introduction to Algorithms*, Prentice Hall India, Modules I, II and III
2. Motwani R. & Raghavan P., *Randomized Algorithms*, Cambridge University Press, Module IV

Reference books

1. Basse S., *Computer Algorithms: Introduction to Design And Analysis*, Addison Wesley
2. Manber U., *Introduction to Algorithms: A Creative Approach*, Addison Wesley

3. Aho V., Hopcraft J.E. & Ullman J.D., *The Design And Analysis of Computer Algorithms*, Addison Wesley
4. Kenneth A Berman, Jerome L Paul, *Fundamentals of sequential and parallel algorithms,* Vidya Vikas Publications

Sessional work assessment

Assignments	2x7.5 = 15
Tests	2x15 = 30
Regularity	= 05
Total marks	= 50

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS04 705A : DIGITAL SIGNAL PROCESSING
(common with IT04 705A)

3 hours lecture and 1 hour tutorial per week

[Objective: Current communication technology is based on digital signal processing. Here the fundamental principles of various transforms and the tools used in analysis and design of discrete-time systems for signal processing are introduced.**]**

Module I (12 hours)

Discrete time signals and systems - discrete signal sequences - linear shift invariant systems - discrete signals - stability and casualty - difference equations - frequency domain representations - fourier transform and its properties - relationship between system representations, review of Z-transforms

Module II (15 hours)

Discrete fourier transform - representation of discrete fourier series - properties of discrete fourier series - periodic convolution - DFT - properties of DFT - computation of DFT - circular convolution - linear convolution using DFT - FFTs - DIT-FFT and DIF-FFT - FFT algorithm for composite N

Module III (13 hours)

Design of digital filters - IIR and FIR filters - low pass analog filter design - Butterworth and Chebyshev filters - design examples - bilinear transformation and impulse invariant techniques - FIR filter design - linear phase characteristics - window method

Module IV (12 hours)

Realization of digital filters - discrete form I and II - cascade and parallel form - finite word length effects in digital filters - quantizer characteristics - saturation overflow - quantization in implementing systems - zero input limit cycles - introduction to DSP processors

Reference books

1. Proakis & Manolalus, *Digital Signal Processing, Principles, Algorithm & Applications*, Prentice Hall
2. Oppenheim & Schafer, *Discrete Time Signal Processing*, Prentice Hall
3. Ludeman L.C., *Fundamentals of Digital Signal Processing*, Harper & Row Publishers
4. Van Valkenburg M.E., *Analog Filter Design*, Holt Saunders
5. Terrel T.J. & Shark L.K., *Digital Signal Processing*, Macmillan.
6. Sanjit K. Mitra, Digital Signal Processing- A Computer- Based Approach, Tata McGraw-Hill.

Sessional work assessment	
Assignments	2x7.5 = 15
Tests	2x15 = 30
Regularity	= 05
Total marks	= 50

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS04 705B : ADVANCED TOPICS IN DATABASE SYSTEMS
(common with IT04 705B)

3 hours lecture and 1 hour tutorial per week

[Objective: The course is intended to impart knowledge on the latest advancements in implementations of database management systems. This imparts sound idea on the latest methodologies such as object oriented, distributed and deductive database systems along with comparisons supported by some case studies. By the end of the course, it enables the student to analyze, design and implement modern database systems, especially for a distributed environment.**]**

Module I (11 hours)
Overview of relational database concept - object oriented database - overview of object oriented concepts - object definition language - object query languages - object database conceptional design - overview of CORBA standard for distributed objects

Module II (13 hours)
Distributed database concepts - data fragmentation replication and allocation - types of distributed database system - query process - concurrency control for distributed database - overview of client - server architecture and its relationship to distributed database

Module III (13 hours)
Deductive database - introduction to deduction database prolog/datalog notation - interpretation of rules - basic inference mechanism for logic programs - datalog programs and their evaluation - deduction database systems - data Warehousing and data mining - database on World Wide Web - multimedia database - mobile database - geographic information system - digital libraries

Module IV (15 hours)
Oracle and microsoft access - basic structure of the oracle system m database structures and its manipulation in oracle - storage organization programming oracle applications - oracle tools - an overview of Microsoft access features and functionality of access - distributed databases in oracle

Text book
1. Elmasri & Navathe, *Fundamentals of Database Systems*, Addison Wesley

Reference books
1. Ramakrishnan R. & Gehrke J., *Database Management Systems*, McGraw Hill
2. O'neil P. & O'neil E., *Database Principles, Programming, And Performance*, Harcourt Asia (Morgan Kaufman)
3. Silberschatz, Korth H.F. & Sudarshan S., *Database System Concepts*, Tata McGraw Hill
4. Theory T.J., *Database Modelling And Design,* Harcourt Asia (Morgan Kaufman)

Sessional work assessment	
Assignments	2x7.5 = 15
Tests	2x15 = 30
Regularity	= 5

Total marks	= 50

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS2K 705C : SIMULATION & MODELING

3 hours lecture and 1 hour tutorial per week

[Objective: In simulation scientists try to reproduce real-world events or process under controlled laboratory conditions, using mainly mathematical models. Some of the most important scientific discoveries stem from the use of computers to simulate the complex natural phenomena. Hence, both from research perspective and from application perspective, study of the course is inevitable.**]**

Module I (10 hours)

Introduction - systems and models - computer simulation and its applications - continuous system simulation - modeling continuous systems - simulation of continuous systems - discrete system simulation - methodology - event scheduling and process interaction approaches - random number generation - testing of randomness - generation of stochastic variates - random samples from continuous distributions - uniform distribution - exponential distribution m-Erlang distribution - gamma distribution - normal distribution - beta distribution - random samples from discrete distributions - Bernoulli - discrete uniform - binomial - geometric and poisson

Module II (12 hours)

Evaluation of simulation experiments - verification and validation of simulation experiments - statistical reliability in evaluating simulation experiments - confidence intervals for terminating simulation runs - simulation languages - programming considerations - general features of GPSS - SIM SCRIPT and SIMULA

Module III (15 hours)

Simulation of queueing systems - parameters of queue - formulation of queueing problems - generation of arrival pattern - generation of service patterns - Simulation of single server queues - simulation of multi-server queues - simulation of tandom queues

Module IV (15 hours)

Simulation of stochastic network - simulation of PERT network - definition of network diagrams - forward pass computation - simulation of forward pass - backward pass computations - simulation of backward pass - determination of float and slack times determination of critical path - simulation of complete network - merits of simulation of stochastic networks

Note to the question paper setter - programming questions must be based on `C` language or specified simulation languages in the syllabus

Reference books

1. Deo N., *System Simulation And Digital Computer*, Prentice Hall of India.
2. Gordan G., *System Simulation*, Prentice Hall of India.

3. Law A.M. & Ketton W.D., *Simulation Modelling and Analysis*, McGraw Hill.

Sessional work assessment	
Assignments	2x7.5 = 15
Tests	2x15 = 30
Regularity	= 05
Total marks	= 50

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS04 705D : STOCHASTIC PROCESSES

3 hours lecture and 1 hour tutorial per week

[Objective: Dynamic indeterminism is to be analyzed in any field of Science and Technology with reference to time, which is in other words defined as random processes. Students are introduced to various methods to model and analyze such systems.**]**

Module I (12 hours)

Markov chains and poisson processes (a brief revision) - continuous time Markov chains - definition -transition probability function - Chapman - Kolmogorov equations - rate matrix - Kolmogorov forward and backward equations - computing the transition probabilities - limiting probabilities - pure birth process - birth and death process - M/ M/ 1 queue

Module II (12hours)

Renewal theory and its applications - the renewal process N(t) - distribution of N(t) - renewal function - renewal equation - limit theorems and their applications - elementary renewal theorem (without proof) - applications of renewal theorem - central limit theorem of renewal processes (without proof) - renewal reward processes - regenerative processes - delayed renewal processes - alternating renewal processes

Module III (12 hours)

Queueing theory I: introduction - preliminaries - cost equations - Little's formula - steady state probability - exponential models - single server exponential queueing system - single server exponential - system having finite capacity - a queueing system with bulk service - network of queues - open systems - closed systems - the system M/G/ 1 - preliminaries - work and cost identity - applications of work to M/G/1 - busy periods - discussion of M/D/1 model and $M/E_k/1$ model

Module IV (12 hours)

Queueing theory II: variations on the M/G/1 - the M/G/1 with random sized batch arrivals - priority queues - the model G/M/1 - the G/M/1 busy and idle periods - multi

server queues - Erlang loss system - the M/M/k queue -the G/M/k queue - the M/G/k queue - M/G/¥ queue

Text books

Reference books

1. Ross S.M., *Introduction to Probability Models,* Sixth edition, Harcourt Asia Pvt. Ltd. and Academic Press
2. Medhi J., *Stochastic Processes*, Wiley Eastern Ltd

Sessional work assessment

Assignments	2x7.5 = 15
Tests	2x15 = 30
Regularity	= 05
Total marks	= 50

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS04 705E : TECHNICAL ARGUMENTATION

3 hours lecture and 1 hour tutorial per week

[Objective: This topic is concerned with the most fundamental aspects of academic study such as the abilities to reason with ideas and evidence, to formulate arguments effectively and to appreciate the interplay between ideas and evidence in debate. It introduces a student to the nature of good reasoning
and how to test and construct good arguments without assuming any prior knowledge of logic or philosophy. The subject may work as a much-needed guide to thinking critically for oneself.]

Module I (13 hours)

Introduction to argument – choice of topic – defining audience – defining terms – planning argument – avoiding logical fallacies – case study of classic arguments of Mahatma Gandhi, Martin Luther King Jr.

Module II (13 hours)

Understanding forms of persuasion – Reading critically – Plagiarism – documenting sources – guide to research – avoiding selective research – case study involving issue of surfing the web.

Module III (13 hours)

Searching for magazine, journal, newspaper articles – using abstracting services, internet, books, other library resources – case study involving culture and curriculum

Module IV (13 hours)

Conducting interviews, surveys, compiling bibliography – organizing, writing and preparing researched paper – case study involving gun control and immigration – case study of select classic argument of Plato.

Text book

1. Robert K Miller, *The Informed Argument,* Fifth Edition, Harcourt Brace College Publishers

References

1. John Shand, *Arguing Well*, Routledge Publishers
2. Peter J Phelan, Peter J Reynolds, *Argument and Evidence,* Routledge Publishers
3. Tracy Bowell and Garry Kemp, *Critical Thinking,* Routledge Publishers
4. David Sanford, *If P then Q,* Routledge Publishers

Sessional work assessment	
Assignments	2x7.5 = 15
Tests	2x15 = 30
Regularity	= 05
Total marks	= 50

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer

CS2K 705F : ENTREPRENEURSHIP

3 hours lecture and 1 hour tutorial per week

[Objectives: The course intends to strengthen the entrepreneurial capabilities of a student while preparing to graduate as a professional. These capabilities include identification of opportunities, studying project feasibility, and implementing business ventures. The course also exposes the intricacies of economic fundamentals of a business venture, needed for commissioning one.]

Module I (20 hours)
Entrepreneurial perspectives - understanding of entrepreneurship process - entrepreneurial decision process - entrepreneurship and economic development - characteristics of entrepreneur - entrepreneurial competencies - managerial functions for enterprise

Module II (10 hours)
Process of business opportunity identification and evaluation - industrial policy - environment - market survey and market assessment - project report preparation - study of feasibility and viability of a project - assessment of risk in the industry

Module III (12 hours)
Process and strategies for starting a venture - stages of small business growth - entrepreneurship in international environment - entrepreneurship - achievement motivation - time management creativity and innovation structure of the enterprise - planning, implementation and growth

Module IV (10 hours)
Technology acquisition for small units - formalities to be completed for setting up a small scale unit - forms of organizations for small scale units - financing of project and working capital - venture capital and other equity assistance available - break even analysis and economic ratios technology transfer and business incubation

Reference books

1. Harold Koontz & Heinz Weihrich, *Essentials of Management*, McGraw Hill International
2. Robert D Hirich & Michael P Peters Irwin, *Entrepreneurship*, McGraw Hill
3. Rao T. V., Deshpande M. V., Prayag Metha & Manohar S Nadakarni, *Developing Entrepreneurship - A Hand Book,* Learning Systems
4. Donald Kurado & Richard M Hodgelts, *Entrepreneurship A Contemporary Approach*, The Dryden Press New York
5. Dr Patel V.G., *Seven Business Crisis*, Tata McGraw Hill, New Delhi
6. Jeffry A Timmons, *New Venture Creation - Entrepreneurship for 21st Century*, McGraw Hill International, 5th Edition
7. Patel J.B., Noid S. S., *A Manual on Business Opportunity Identification*, *Selections*, EDII Ahmedabad.
8. Rao C.R., *Finance for Small Scale Industries*
9. Pandey G. W., *A Complete Guide to Successful Entrepreneurship,* Vikas Publishing, New Delhi.

Sessional work assessment

Assignments	2x7.5 = 15
Tests	2x15 = 30
Regularity	= 05
Total marks	= 50

University examination pattern

Q I - 8 short type questions of 5 marks, 2 from each module
Q II - 2 questions of 15marks from module I with choice to answer any one
Q III - 2 questions of 15marks from module II with choice to answer any one

Q IV - 2 questions of 15marks from module III with choice to answer any one Q V - 2 questions of 15marks from module IV with choice to answer any one

CS04 706(P) : COMPILER LAB

3 hours practical per week

[Objective: This practical course is introduced to familiarize the design of all phases of compilers up to a stage of intermediate code generation. This course enables the students to design and implement modern compilers for any environment.**]**

Lab 1,2 : Generation of lexical analyzer using tools such as LEX.

Lab 3,4 : Generation of parser using tools such as YACC.

Lab 5,6 : Creation of Symbol tables.

Lab 7,8 : Creation of type checker.

Lab 9,10 : Generation of intermediate code.

Reference books

1. Halub A.I., *Compiler Design in C*, Prentice Hall India
2. Appel A.W., *Modern Compiler Implementation in C*, Cambridge University Press

Sessional work assessment

Lab practicals & record	= 25
Tests	2x10 = 20
Regularity	= 05
Total marks	= 50

CS04 707(P) : SEMINAR

3 hours per week

Each student is expected to present a seminar on a topic of current relevance in Computer Science and Engineering - they are expected to refer research and review papers from standard journals like ACM, IEEE, JPDC, IEE etc. - at least three cross references must be used - the seminar report must not be the reproduction of the original paper.

Sessional work assessment	
Presentation	= 15
Regularity	= 05
Discussion	= 10
Report	= 20
Total marks	= 50

CS04 708(P) : PROJECT

4 hours practical per week

[Objective: The project is aimed at improving the professional competency by touching the areas which otherwise is not covered in theory or laboratory classes. There is a greater realization of the importance of the application of ideas to build a solution to complement the learning process. The work practice will help the students to develop ability to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.]

Guidelines

This project is for a duration of two semesters - each student group (not more than 5 members in a group) is expected to develop a complete product - the design and development may include hardware and/or software - the seventh semester is mainly for the design of the product - an interim report is to be submitted at the end of the semester - the assessment may be made individually and in groups

The project work may include the use of the following.

OS platforms: Relevant to the current state of the art with support for networked environment, distributed computing and development of multi- platform applications.

Internet technologies: Architectural concepts, XML, Scripting languages, Middleware (Component) technologies

Front end / GUI: Code development or development based on tools.

RDBMS/Back End: Relevant to current state with database connectivity to different platforms.

Languages: Qt, Glade or any similar 4GLs, Scripting languages and C & C++ in Linux (under GNU gcc) etc

Universal n/w applications development platforms such as JAVA, .NET.

OS internals: Device drivers, RPC, Threads, Socket programming etc
Networking: Mechanisms, protocols, security etc
Embedded systems: RTOS, Embedded hardware with software for an application, Code optimization, security etc.

Sessional work assessment	
Design	= 30
Regularity	= 05
Report	= 15
Total marks	= 50