Semester 6
C# (pronounced as C Sharp)
Internet Technologies
CRM
Elective III (Select one of following)
Strategic IT Management
Total supply chain Management
Project management
IT Laws and Patents
Decision support and expert systems
Project

## CLASS: B. Sc (Information technology) Semester – VI

1) Introduction to C# : Evaluation of C# , characteristics of C# , applications of C# , difference between C++ & C#, Difference between JAVA & C#.
2) Introduction to C# environment : the .NET strategy , the origins of the .NET technology, the .NET framework, the common language runtime , framework base classes, user & program interfaces, Visual Studio .NET , .NET languages, benefits of the .NET approach, C# & .NET
3) Overview of C# : Programming structure of C# , editing, compiling & executing C# programs, namespace, comments, using aliases for namespace classes, using command line argument, maths function.
4) Literals , variables & data types : literals, variables, data types, value types, reference type, declaration of variables, initialization of variables, default values, constant variables, scope of variables, boxing & unboxing.
5) Operators & expressions : arithmetic operators, relational operators, logical operators, assignment operators, increment & decrement operators, conditional operator, Bitwise operators, special operators, arithmetic expressions, evaluation of expressions, precedence of arithmetic operators , type conversions, operator precedence & associativity, mathematical functions.
6) Decision making & branching : if statement, if .else statement, nesting of if. else statement, the else if ladder, switch statement, the ?: operator.
7) Decision making & looping : while statement, do statement, for statement, foreach statement, jumps in loops.
8) Methods in C# : declaring methods, the main method, invoking methods, nesting of methods, method parameters, pass by value, pass by reference, the output parameters, variable arguments list, method overloading.
9) Arrays : 1-D array, creating an array, 2-D arrays, variable size arrays, the system. array class, ArrayList class.
10)String Handling: Creating strings, strings methods, inserting strings using systems, comparing strings, finding substrings, mutable strings, arrays of strings, regular expressions.
11)Structures & enumeration : structures, structs with methods, nested structs, differences between classes & structs, enumerations, enumerator initialization, enumerator base types, enumerator type conversion, common programming errors.
12)Classes & objects: Basic principles of OOP.s , class, objects, constructors,

static members, static constructors, private constructors, copy constructors, destructors, member initialization, the this reference, nesting of classes, constant members, read only members, properties, indexers.
13) Inheritance & polymorphism : classical inheritance, containment inheritance, defining a subclass, visibility control, defining subclass constructors, multilevel inheritance, hierarchical inheritance, overriding methods, hiding methods, abstract classes, abstract methods, sealed classes: Preventing inheritance, sealed methods, polymorphism.
14) Interfaces : Multiple inheritance : defining an interface, extending an interface, implementing interfaces, interfaces & inheritance, explicit interface implementation, abstract class & interfaces.
15)Operator overloading : Overloadable operators, need for Operator overloading, defining Operator overloading, overloading unary operators, overloading binary Operator, overloading comparison Operators.
16)Delegates & events : Delegates , Delegate declaration, Delegate methods, Delegates instantiation, Delegates invocation, using Delegates, multicast Delegates, events.
17)Managing console I/O operations : console class, console input, console output, formatted output, numeric formatting, standard numeric format, custom numeric format.
18)Managing errors & exceptions : types of errors, exceptions, syntax of exception handling code, multiple catch statement, the exception hierarchy , general catch handler, using final statement, nested try blocks, throwing our own exceptions, checked & unchecked operators, using exceptions for debugging.
References
(i) Programming in C# by E. Balagurusamy TMH
(ii) C# a beginner.s guide by Herbert Schildt TMH
Practical
Should contain at least 8 Practical from the Syllabus
Tutorial
There should be 3 tutorials or class test
Assignments
Should contain 4 assignment

## CLASS: B. Sc (Information technology) Semester - VI
## SUBJECT: Internet Technologies

1) Basic Networking:
i) Network Protocols :
a) TCP / IP (Transmission Control / Internet protocol )
b) ARP (Address Resolution Protocol)
c) RARP (Reverse Address Resolution Protocol)
d) RIP (Routing Information Protocol)
e) OSPF (Open Shortest Path First ) Protocol
f) BGP (Border Gateway Protocol)
2) Introduction to Network Programming
i) Socket Programming (using TCP and UDP socket)
ii) RMI
a) Introduction to Distributed Computing with RMI

b) RMI Architecture
c) Naming remote Object
d) Using RMI : Interfaces , Implementations, Stub, Skeleton, Host Server Client, Running RMI Systems
e) Parameters in RMI : Primitive, Object, Remote Object
f) RMI Client .side Callbacks
g) Distributing & Installing RMI Software
iii) Introduction to CORBA
a) What is CORBA?
b) CORBA Architecture
c) Comparison between RMI and CORBA
3) Introduction to Wireless LAN
i) How does WLAN work?
ii) WLAN setups (Ad-hoc, infracture LAN)
iii) Use of WLAN
iv) Benefits of WLAN
v) Restrictions and Problems with WLAN
Refrences
http://www.ietf.org , Various RFC.s and articles
RFC 1010 . ARP
RFC 1058 . RIP
RFC 1131 . OSPF
RFC 1105 . BGP
http://java.sun.com , for RMI and CORBA tutorials.
http://keskus.hut.fi/opetus/s38118/s00/tyot/25/ for wireless LAN
Tutorial
There should be 3 tutorials or class test
Assignments
Should contain 4 assignment
Case Study or Project : Present a report of 10 . 15 pages on any topics from syllabus.
e.g. Project could be on RMI implementation
Case Study could be based on Understanding development in Internet Technologies. A student would be required to submit 10 .20 pages report.
e.g.(Understanding wireless LAN, Mobile , Ipv6 Addressing Architecture, Ipv6 Implementation, Basic Mobile Computing, etc)

CLASS: B. Sc (Information technology) Semester - VI
SUBJECT: CRM (Customer Relations Management)

1. Introduction to CRM : what is a customer? How do we define CRM? CRM technology, CRM technology components, customer life style, customer interaction.
2. Introduction to eCRM : difference between CRM & eCRM, features of eCRM.
3. Sales Force Automation(SFA) : definition & need of SFA, barriers to successful SFA, SFA:functionality , technological aspect of SFA: data synchronization , flexibility & performance , reporting tools.
4. Enterprise Marketing Automation (EMA) : components of EMA, marketing camping, camping, planning & management, business analytic tools. ,EMA

components( promotions ,events , loyalty & retention programs), response management.
5. Call Centers Mean Customer Interaction: the functionality, technological implementation, what is ACD(automatic call distribution),IVR(interactive voice response), CTI(computer telephony integration),web enabling the call center, automated intelligent call routing, logging & monitoring.
6. Implementing CRM: pre implementation, kick off meeting, requirements gathering, prototyping & detailed proposal generation, development of customization, Power User Beta Test & Data import, training, roll out & system hand off, ongoing support , system optimization, follow up.
7. Introduction to ASP( application service provider): who are ASP.s?, their role & function, advantages & disadvantages of implementing ASP.
References:
1.CRM at the speed of light by Paul Greenberg,TMH.
2. Customer R elations Management by Kristin Anderson & Carol Kerr. TMH.
Tutorial
There should be 3 tutorials or class test
Assignments
Should contain 4 assignment
Case Study: Present a report of 10 . 15 pages on any topics from syllabus.

Elective III (Select one of following)
CLASS: B. Sc (Information technology) Semester - VI
SUBJECT: Strategic IT Management

i) Changing Paradigm and Strategic Learning
ii) Changing face of Strategic Thinking: Strategic Management Paradigm, Emergent strategy, Strategic flexibility.
(1) Readings: Getting off the Treadmill. & Exploring Framework of Strategic Flexibility & Managing for Strategic Flexibility. Cases: The Global Computer Industry and APPLE.
iii) Changing Strategic Situation: paradoxes, complexity, chaos, turbulence, and uncertainty.
(1) Readings: Crafting Strategy in New Environment. & In search of New Strategy Paradigms - A Survey of Emerging Thoughts. With Case study.
iv) Special models and tools of strategic management. Strategy making as a journey.
(1) Readings: Meta-strategy: The new Strategic Management. & The challenge: Turning Turmoil into Customer Centered Growth. & The Journey of Strategy Making. With Case study
(2) Building Core Competence and Strategic Capability, Culture and stake-holder expectation.

(1) Readings: Competence based Strategic Management. Cases: Indian Cases on Core Competence.
vi) Globalization Strategy, Strategy of Transnational Corporations.
(1) Readings: Do you really have a global strategy? & Global Strategy in a World of Nations.
(2) Presentations: Global Strategy of Select Corporations/Industries.
vii) Strategy Evolution and Alliances.

viii) Strategic Intent and Architecture. With Case study
ix) Strategic Alliances and Joint Ventures. Readings: The Global Logic of Strategic Alliances & Collaborate with your Competitors and win. Presentations: Analysis of Strategic Alliances and Joint Ventures.
x) Mergers and Acquisitions. Presentations: Analysis on mergers and Acquisitions.
xi) Screening Strategic Options. Cases: Swiss Air Alliances With Case study
xii) Comparative Strategies and Strategic profile of Indian Business Houses.
(1) Readings: Are Private Basic Telecom Projects Viable in India? Presentations: Entry in Indian market from various Regions: US/Europe/Japan/SE Asia.
xiii) Strategy Implementation and Change Management. Corporate Restructuring.
(1) Cases: ABB Operationalizing Strategy: Policies, Budgets, Support Systems, and Rewards.
(2) Cases: ALIP: Entering Indian Market. Issues of culture and leadership in strategy implementation, Corporate Governance. With Case study
xiv) Managing Strategic Change and Transformation.
xv) Functional Strategies/ Tactics: Marketing, Finance, HR, R&D.
Reference:
(a) Strategic Management: Formulation, Implementation and Control, Pearce II,J.A. and Robinson R.B., Irwin
(b) Strategic Management and Business Policy: Entering 21st Century Global Society, Whellen T.L. and Hunger J.D., Addison-Wesley
(c) The Paradox Principles: How High Performance Companies Manage Choas, Complexity and Contradiction to Achieve Superior Results, The Price Waterhouse Change Integration Team, Irwin.
(d) Competing for the Future, Hamel G. & Prahalad C.K., Harvard Business School Press
(e) Mergers, Restructuring, and Corporate Control, Weston J.F., Chung K.S. and Hoaf S.E., Prentice Hall of India
(f) Cases in Strategic in Strategic Management, Budhiraja S.B. and Athreya M.B., Tata McGraw Hill

Case Study : Present a report of 10 . 15 pages on any topics from syllabus.
Tutorial
There should be 3 tutorials or class test
Assignments
Should contain 4 assignment

## CLASS: B. Sc (Information technology) Semester - VI
## SUBJECT: Total supply chain Management

1) Introduction to supply chain management -
Do we have the best suppliers at the lowest possible prices?
Are we getting and sending materials as quickly as possible?
Can the voices of our customers be heard in our processes?
Are customers satisfied with our products?
2) Creating outcome-driven tasks and processes
Retooling the structure and business strategy of the organization
Setting up effective people/responsibility charts
Incorporating technology for maximum benefit
Creating performance-based rewards

Measuring results
3) Materials Management, Scope, importance, classification of materials, Procurement, Purchasing policies, vendor development and evaluation, Inventory control systems of stock replenishment, Cost elements, EOQ and its derivative models. Use of computers for materials function.
4) Logistics and competitive strategy, System view of logistics . Coordination and management of transportation, Inventory Order processing, Purchasing, warehousing materials handling, packaging and customer service standards
5) Supply Chain management, Distribution network design, channels of Distribution, Plant and warehouse location.
6) Transportation Systems . Individual Freight and passenger modes, intermodal transportation and third party transportation services, economic social, and political roles of transportation, demand, cost and service characteristics of different transport services, carrier selection and evaluation methods, contracting for transportation services, freight rate structure, Private fleet management, Claim management, International transportation, Ocean carrier management, port administration and regulation, costing and pricing issues of international transportation, logistics, cost transport mode choice, Dispatch decisions, routing decisions, routing Models, packaging to suit mode of Transport.
7) Total distribution Cost analaysis
8) Logistic Information Systems.
References
Materials Managemet and purchasing, Ammer DS Taraporewala
Logistics and Supply Chain Management, Martin Christopher, Richard Irwin
Case Study : Present a report of 10 . 15 pages on any topics from syllabus.
Tutorial
There should be 3 tutorials or class test
Assignments
Should contain 4 assignment

CLASS: B. Sc (Information technology) Semester - VI
SUBJECT: Project Management

i) Projects & Project management, The project, Project Management., Types of projects, Contractual Arrangements.
(1) Readings: Basic Project Management- There are Four Types. & Making Project Management Work.
ii) The Nature of Project Management, Management principles, Some Factors in Project Management, The Project Manager. Factors for Project Success and Failure.
(1) Readings: The New Managerial work & Where does Project Cost Really Go Wrong? What it takes to be A Good Project Manager.
iii) Organizational Structures, The Project Organization, The Functional Organization,
The Matrix organization, Designing an Organization, Building the Team, Leadership.
(1) Readings: Selection of the Team. & Matrix management: Contradiction and Insights.
iv) Project Administration: Project Authority & Project Control, Principles of Project Administration., TQM.
(1) Readings:

Skunk Works - Management Style- It's No Secret. & Executive Focus on Quality.
v) Defining and Financing the Project. How Project Evolve- the Client Brief., Financing the Project. Sources of Finance and Cash Flow.
(1) Readings:
(a) Structural Scale Models: Beyond The Computer.Clear Project Definition is Crucial. Construction Cost estimating in the Design Process.Meeting the Infrastructure Challenge.
(b) Three Perceptions of Project Cost - Cost Is More than A Four-Letter Word.
vi) Feasibility Studies and Approvals, Conducting a Feasibility Study, The Regulations Controlling Projects, Decision-Making, Economic Analysis.
(1) Readings:
(a) Project Management and Environmental Issues.
(b) Obstacles Encountered by a New Industrial Development.
(c) Environmental Planning and Engineering Decisions.
(d) Intellectual Sources of the Ideas of " acceptable Risk" in Public Policy.
(e) Speaking of Risk. Humble Decision-Making. Finding a Way to Measure Technology's Benefits. Justification Techniques for Advanced Manufacturing Technologies.
vii) The Management of Design, Documentation and Tendering: The Management of Design, Project Documentation, The Calling and Assessment of Tenders, Negotiation.
viii) The Planning of Project Implementation, The Plan of Execution, Planning the Time Scale
(1) Readings: Managing Software Development Projects.Balancing Strategy and Tactics in Project Implementations.
ix) On Time Project Completion- Managing the Critical Path.Resource Constrained Scheduling Capabilities of Commercial Project Management Software. Project Implementation and Control, Project Implementation, Project Execution, Project Control, Commercial Aspects.
(1) Readings: Managing Suppliers up to a Speed. Cost and Schedule Control in Naval Projects.Contract Negotiations, Dispute and Settlement. Project Management Control Problems: An Information Systems Focus.
x) Criteria for Controlling Projects According to Plan. Commissioning and Review, The Commissioning phase, The Completion of a Project.
(1) Readings: The Project Management Audit: Its Role and Conduct. & Knowing when to pull the Plug.
Reference
Project Management, Meridth & Mantel, McGraw Hill
Project Management - Principles and Practices, M. Pete Spinner, Prentice Hall
Essentials of Project management by Dick Billows
Projects: Planning Analysis, Selection , Implementation and Review by Chandra, Prasanna , TMH publication
Case Study : Present a report of 10 . 15 pages on any topics from syllabus.
Tutorial
There should be 3 tutorials or class test
Assignments
Should contain 4 assignment

CLASS: B. Sc (Information technology) Semester - VI
SUBJECT: IT Laws and Patents

1) Copyright Basics
2) Basic Patent Information
3) Basic Facts About Trademarks
4) Fair Use Harbor
5) Software Piracy -- Don't Copy That Floppy
6) How To Intellectual Property Rights, Copyright, Trademark, Patent ...
7) Intellectual Property MANAGEMENT - Net Links
8) Patent and Trademark Office Home Page
9) Intellectual Property Issues Affect Entrepreneurs
10) Government Law: Intellectual Property
11) Lists of Links to Intellectual Property Law Sites
12) Basic Business Research Methods
13) Creativity and Innovation
14) Legal Information
15) Naming and Branding
16) Non-Compete Agreements
17) Nonprofits (additional information for nonprofit organizations)
18) Product Selection and Development

References

How To Register Your Own Copyright by Marx Warda, Sphinx Publishing
Licensing Art & Design by Caryn R. Leland, Allworth Press
A Professional's Guide to Licensing and Royalty Agreements by Caryn R. Leland Allworth Press
IT2000 Bill

Case Study : Present a report of 10 . 15 pages on any topics from syllabus.

Tutorial
There should be 3 tutorials or class test
Assignments
Should contain
4 assignment

CLASS: B. Sc (Information technology) Semester - VI
SUBJECT: Project
Project . 200 Marks

- This is to be a group project with a maximum 4 students in one group.
- The project can be .in-house project. (project done within one.s institution) or can be done in the industry.
- In case the project is in industry the group will be guided by External Project guide (from industry) and Internal Project Guide (from the institution).
- In case the project is .in-house. the group will be guided by the Internal Project guide.

Marks Distribution
Item Marks How to conduct Exam

Project report 100 Assessed jointly by
internal and External
examiner.
Viva Voce of the report 100 Assessed jointly by
internal and External
examiner.

Term Work evaluation

Whereever Practicals / Tutorials / Case Studies / Tests are shown they are to be treated as part
of Term Work (Journal) Submitted for evaluation as a single unit.

Marks distribution for TermWork

| Item | Marks | How to conduct Exam |
|---|---|---|
| Practical / Case Study | 25 | Internal assessment |
| Tutorial / Assignment / Test | 25 | Internal assessment |