FACULTY OF ENGINEERING & TECHNOLOGY

SYLLABUS

FOR

Interdisciplinary Course in
Computer Science & Computer Engg. & Technology
(UG & PG)
(Credit Based Evaluation and Grading System)

Session: 2019-20

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GURU NANAK DEV UNIVERSITY
AMRITSAR
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Interdisciplinary Course in Computer Science and
Computer Engg. & Technology (UG & PG)

CSL-001- Computer Fundamentals

Total Marks: 100   **Credits**
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                                                                          4 0 0

Mid Semester Examination: 20% weightage
End Semester Examination: 80% weightage
Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section - A
Introduction: Computer System Characteristics, Hardware - CPU, Memory, Input, Output & Storage devices, Organization of Secondary Storage Media, Software - System & Application.
Operating System Concepts: Role of an Operating System, Types of operating systems, Booting procedure and its types, Introduction to Windows and its features.

Development Tools: Editors, Translators - Compilers, Interpreters, Linkers Loaders, Debuggers.

Section B
Programming Tools: Problem Analysis, Program Constructs (Sequential, Decision, Loop), Algorithms, Flowcharts, Pseudocode. Decision table, Modular Programming, Top-down and Bottom-up Approaches.

Office Management Tools: Word processing using MS Word – Editing, Formatting, Spell Checking, Table handling, Spreadsheet - Excel – Editing, Formatting, Creating formulas, Charts. Presentation Tool: MS PowerPoint – Templates, Views, Formatting text, Slides with graphs.

Section C
Data Communications: Introduction to Data Communication: Definition and advantages, Types of Networks, Network topologies, Transmission Media, Modems.

Section D
Internet: Internet and its applications, Working knowledge of Search engines and use of electronic mail.

References:
1.   Computers Today: Suresh K. Basandra, Galgotia, 1998.
2.   Gurvinder Singh & Rachhpal Singh: A Text Book on Windows Based Computer
      Courses, Kalyani Publishers, 1999.
3.   Droomy, G: How to Solve it by Computer, Prentice Hall, 1985.
4.   V.K. Jain: Fundamentals of Information Technology.
5.   Norton, Peter: Introduction to Computers, McGraw Hill
6.   Martin, James: Telecommunications and the Computer, PHI

Interdisciplinary Course in Computer Science and
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CSL-002- Computer Programming

Total Marks: 100   **Credits**
                                                                 L T P
                                                                 4 0 0

Mid Semester Examination: 20% weightage
End Semester Examination: 80% weightage

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section - A
Introduction to Program Development: Need for program Development Life Cycle (PDLC), description of different phases of PDLC viz. defining the problem, designing the program, coding the program, testing and debugging the program, formalizing the solution, and finally implementing & maintaining the program.
Overview of C: Brief history of C, comparison of C with other programming languages, general structure of a C program, stages in the development of a C program, introduction to different versions of C.

Section B
Data Types, Operators & Expressions: Constants and variables, data types, declaring variables, storage classes, different types of expressions and their evaluation, conditional expression, assignment statement, enumerated data type, redefining/creating data types, library functions, type casting.
Console Input/Output: Standard input/output devices, unformatted input/output functions (character I/O functions and string I/O functions), formatted input/output functions (scanf( ) function and printf ( ) function).
Control Statements: Decision making using if, if - else, elseif and switch statements, Looping using for, while and do - while statements, transferring program control using break and continue statements.

Section C
Functions: Defining a function, local variables, return statement, invoking a function, specifying and passing arguments to a functions, function prototyping and use of header files, recursion

Section D
Arrays & Strings: Introduction to arrays, declaring arrays, initializing arrays, processing of arrays, passing arrays as arguments to a function, introduction to strings, Discussion on arrays is to be limited up to 2-D arrays only.

References:
1. Byron Gottfried: Programming in C, Tata McGraw Hill Publishing Company Ltd., Delhi.
2. Yashvant Kanetkar: Let Us C, BPB Publications, Delhi.
3. R.S. Salaria: Applications Programming in C, Khanna Book Publishing Co. (P) Ltd., Delhi.

Interdisciplinary Course in Computer Science and
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CSL051: Internet Applications

Total Marks: 100   **Credits**
                                                              L T P
                                                              4 0 0

Mid Semester Examination: 20% weightage
End Semester Examination: 80% weightage

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section - A

Introducing the Internet
Overview: Internet - working and development, Architecture, internet, intranet and extranet, design goals, issues and related aspects, Internet Domain Names and IP addresses, connecting LAN to Internet.

Internet Connectivity: Connection concepts, FDDI, ISDN, ADSL, PPP and ATM, web servers and browsers

Section -B

Electronic Mail and Telnet
Overview: Working of email, Advantages of email, Understanding of Internet email addresses using Telnet to access a remote machine.

FTP
Connecting to an Anonymous FTP site using FTP to retrieve a file, common FTP commands.

Section C

Search Engines
Introduction to usenet, organization of usenet articles, reading, saving, mailing, writing and posting of an article. Basic gophar commands, accessing virtual reference desk through gophar,

Section D

WWW-World Wide Web
Working of WWW, Hypertext and Hypermedia, URL, Searching the WWW.

References:
1. Learning to use the Internet by Ernest Ackermann, Franklin, Beedle Associates Inc., 2002.
2. Kris Jony & Ken Cope, Internet Programming, Galgotia Publications, 2007.

Interdisciplinary Course in Computer Science and
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CSL052: OPERATING SYSTEM

Total Marks: 100   **Credits**
                                                                         L T P
                                                                         4 0 0

Mid Semester Examination: 20% weightage
End Semester Examination: 80% weightage

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section - A

Introduction to Operating Systems, Main Functions and characteristics of Operating Systems, Types of Operating Systems.

Section B

Process Management: Process States, Process Control Block, Process Scheduling, Critical regions, Race Conditions, Deadlocks.

Section C

Memory Management: External fragmentation, Internal fragmentation, Compaction, Paging, Segmentation, Virtual memory, Demand paging.

Section D

Device Management: Dedicated devices, shared devices, virtual devices, channels, I/O traffic controller, I/O scheduler, I/o Device handlers.

TEXT / REFERENCES:
1. Madnick and Donovan: Operating System, McGraw Hill, 1973.
2. P.B. Henson: Operating System Principles, Prentice Hall, 1973.
3. P.B. Henson: Architecture of concurrent programs, Prentice Hall, 1977.
4. Peter B. Galvin, A. Silberchatz: Operating System Concepts, Addison Wesley, 6th Edi., 2003.
5. A.C. Shaw: Logic Design of operating System, Prentice Hall, 1974.
6. M.J. Bach: Design of UNIX Operating system, PHI, 1986.
7. A.S. Tenenbaum: Operating System: Design and Implementation PHI, 1989