Learners' Guide
and
Admission Form

FOR

**DIPLOMA IN COMPUTER SCIENCE AND
APPLICATION**

SCHOOL OF SCIENCE AND TECHNOLOGY

BANGLADESH OPEN UNIVERSITY

LEARNERS′ GUIDE AND ADMISSION FORM

DIPLOMA IN COMPUTER SCIENCE AND
APPLICATION

W elcome to Open Learning system at the Bangladesh Open University. Through a wide variety of distance education programs, Bangladesh Open University extends learning opportunities to people across the country. It allows you to choose your home as your campus and integrate learning into an adaptable, self-determined schedule. We hope that our commitment to distance learning will facilitate your pursuit of knowledge relevant to your life and career.

What is Conventional vs. Open and Distant Learning System of Education?

In conventional education system, you are being educated in an on-campus environment where teachers deliver lectures as per regular class schedule in a face-to-face situation. That is a teacher-centered approach and you enjoy little or no flexibility in the class and examination schedules. You are being controlled closely by the institution. You have to go to the campus on every working day and attend classes regularly. You have to be a regular student and probably have to depend on others to support you. There you can enjoy frequent face-to-face contact with teachers but you have to complete specific courses in a specific time period. Whereas in Distance Education System, you need not attend classes regularly. This off-campus system facilitates your learning at your home/workplace through providing you with specially designed learning materials. Audio and video programs will help you to understand the difficult sections of your text. In near future, you will also be able to get the facilities of learning management system (LMS), video-conferencing etc. In this multi-media based education system, you will be able to use your own time and devotion. You can also enjoy the benefits of tutorial services where students come to solve their problems while studying learning materials and/or while preparing assignments.

Bangladesh Open University

Established in 1992 by an Act of Parliament, Bangladesh Open University (BOU) has opened up a new era in distance education in the country.
The main campus of the University is situated at Gazipur about 18 kilometers north of Dhaka. The Prime objective of Bangladesh Open University is to transform the country's vast human resources into an educated and trained workforce by

extending them a wide range of academic programs both formal and non-formal. BOU's programs are aimed at everyone, particularly working people and women and those socially disadvantaged groups who cannot enroll in traditional educational institutions.

School of Science and Technology

School of Science and Technology is one of the six schools of Bangladesh Open University. To create scientific and technically skilled manpower in the country is the main objective of this school. The extended activities of this school are developing scientific awareness and degree awarding. Advance research programs for M.Phil and Ph.D are on process. SST has already launched B. Sc in Computer Science and Engineering program.

Diploma in Computer Science and Application Program

School of Science and Technology offers **Diploma in Computer Science and Application**. The aims of the Diploma are to make computer professionals meet the recent increasing demand in the field of information technology. The objectives of the programs are to develop skills in-

♦ using a computer and its areas of application.
♦ using computers for office automation, desktop publishing, computer networking, multimedia etc.
♦ using databases and database management systems, computer-aided design and associated packages, etc.
♦ analyzing digital logic, computer organization, microcomputers and their maintenance and troubleshooting, etc.
♦ computer programming and software development.

Program Plan

A learner should complete 35 Credits consisting of the courses listed below to receive the **Diploma in Computer Science and Application** including a project work as part of the requirement for successful completion of the diploma.

The syllabus of the program is being revised and brought up-to-date continuously. Some new courses have been included in

the syllabus recently. Semester wise course distribution is given below.

Recommended Credits Distribution

Semester	Credits
1st Semester	11
2nd Semester	12
3rd Semester	12
Total	35

Program Design

1st Semester

Course Code	Name of the Courses	Credits
DCSA 1201	Computer Basics	2
DCSA 1302	Office Automation and MS Office	3
DCSA 1303	Computer Programming	3
DCSA 1304	Visual Programming	3

2nd Semester

Course Code	Name of the Courses	Credits
DCSA 2301	Digital System and Computer Organizations	3
DCSA 2302	Operating Systems	3
DCSA 2303	Internet Technology and Web Designing	3
DCSA 2304	Database Management System	3

3rd Semester

Course Code	Name of the Courses	Credits
DCSA 3301	Graphics Design	3
DCSA 3302	Microcomputer Troubleshooting	3
DCSA 3303	Computer Networks	3
DCSA 3304	Project Works	3

Duration of the Program and Admission

The duration of the Diploma in Computer Science and Application (DCSA) program shall ordinally be one and half academic years divided into three (3) semesters, each of six (6) months period, **student shall, however be allowed a maximum period of five (5) academic years (i.e consecutive 10 semesters) to complete the program to obtaining her/his Diploma.**

What is Credit?

One credit hour in distance education implies approximately 15 hours of study (consisting of textbooks, audio-visual supports, Laboratory works etc.).

What is Tutorial Service?

In BOU system all classes are arranged in the particular institutions. An institution selected by the BOU for *counseling* is called a study center (SC). In BOU system tutorial class is optional. Students come to the study center to solve their course-related problems and to get necessary information of the program.

Who is a Tutor?

According to the BOU concept, a teacher who delivers lectures and tutorial services is called a tutor. For each course, there is a tutor in a particular study center, which is selected by the BOU authority. He/she delivers lectures, tutorial service related information, evaluates assignments (TMA) and conducts the examinations.

How will you Contact with the Tutor?

For any query about tutors and tutorial service, you can contact with respective Regional Center (RC) or respective SC coordinator. For any problem don't hesitate to contact the Dean office of the School of Science and Technology (SST).

Is it Necessary to Attend in the Tutorial Classes?

DCSA program is a technical and practical based program, we recommend you to attend all tutorial classes.

Tutorial Class Time

The tutorial classes are conducted according to the academic calendar of the program. We recommend the learners to follow the academic calendar.

Will the Tutor teach us the Full Course?

The tutor will teach you only relatively complicated topics or lessons of the course and will solve your problems of

understanding anything. If you have any question or face any problem, tutor will explain and help to solve them. You must study yourself at home or in the library.

Tutor Evaluation Report (TER)

The performance of a tutor is evaluated by the school at the end of each semester.

Method of Teaching

Learners will be provided with printed text materials prepared in a self-learning style of distance education by Bangladesh Open University. The learning procedure also includes tutorial supported audio-visual programs.

Assignment: Tutor Marks Assignment (TMA)

Learners have to submit two TMAs for each course in every semester. According to the academic calendar and class routine, you have to submit them to the coordinator of your own SC. TMA submission is recommended. If a learner fails to submit TMA s/he will obtain zero for the TMA of that course. However, if a learner submits TMA but fails to appear at the examination, then s/he doesn't need to submit all TMAs again for that course before appearing examination again in the upcoming semester. The tutor will provide assignment topics and will evaluate them.

Attention!

♦ Suppose a learner has not submitted TMA for a specific semester and have not appeared at the examination at all. S/he will not get the opportunity to register for the next semester.

♦ TMA must be submitted before the examination. Learners should follow the schedule. Late submission will be considered as unmarked.

♦ The school or tutor of the respective course will prepare questions for TMA. The tutors of respective course will evaluate TMA and sent the mark sheet to the Controller of Examination of BOU through SC coordinator.

♦ Coping TMA is strictly prohibited. If found the respective TMA will not be evaluated.

Examination

At the end of a semester, learners will have to appear at the examination for evaluation. Examination consists of theory and practical. Evaluation will be made by the sum of marks obtained in theory, practical and TMA of a course (please see evaluation).

Attention!

- You will be promoted to the next semester and allowed to register if you appear at least one of the examinations mentioned for a semester. But for awarding the degree of diploma you have to complete all the courses successfully.

- BOU authority does not consider prayer of changing examination center.

- Learners who pass the theoretical part of a course but do not pass the practical one or do not appear at the practical examination or vice versa, will be considered as fail. In that case, students have to reappear at both the theoretical and the practical examinations of that course in order to pass.

Types of Questions

All questions will consist of MCQ and essay type (short and analytical). A model exercise is given in the last section of the lesson for each course. The marks and time distributions are as follows -

Type	Marks	Time	Number of Questions
MCQ	20	20 m	40
Essay type	50	2:40 h	Short: 8 out of 10 Analytical: 5 out of 8
Practical	20	30 m (for each course)	To be informed
TMA (for each courses)	10	-	To be informed

Distribution of Practical Marks

Experiment	10 marks
Record book	5 marks
Viva Voice	5 marks

8

Evaluation of Project

Total Marks 100
Pass Marks 50 (50%)

Distribution of Marks

(a) Real life Project report	80 marks
(b) Viva Voice	20 marks
Total	**100 marks**

Evaluation Procedure

Each course will be evaluated through written test (70%), Practical (20%) and TMA (Tutor's Mark Assignment 10%). The pass marks for the practical examinations will be 10 (50% out of the total practical marks). To successfully complete a course learner must obtain a total of 40 (40% of the total marks) marks out of 100 including TMA, written test and practical examination. The results will be given in accordance with BOU's existing rules of Grade Point Average.

How will you know the Result?

After publishing the result, you must contact with the SC and collect your result from the SC and BOU website.

Transcript

Learner will receive marks sheet for each semester. Learner will also be provided transcripts and provisional certificate after s/he passes all the courses.

Attention!

♦ If a learner wants to continue the program after a break, BOU will allow for registration for the next semester on payment of all necessary fees at present rate.
♦ If a learner is unable to appear at the examination due to illness or any unavoidable circumstance in scheduled time, s/he will be allowed to continue the next semester by showing appropriate reason. But if s/he does not attend the classes, submit TMA and also does not appear at the examination then s/he will not be allowed to register for the next semester. Learner must at least partially complete a semester.

♦ If learner unable to register within the prescribed period of registration, then s/he must apply for permission to the Dean, SST with necessary documents.

✍ Reexamination

If you do not pass in the examination of one or more courses of a semester then BOU will allow you to sit for reexamination on payment of necessary reexamination fees at present rate.

How many times will a learner be permitted to sit for the examination on a particular course?

If a learner does not appear at the examination for anyone of the course or s/he appears but fails then s/he will be allowed to appear in the examination within the duration of the Program. After this s/he will be considered as unsuccessful and will not be allowed for further registration.

Recommendation

♦ **Formation of Study Groups**

Learners are advised to form study groups among themselves for discussion of the course materials and solution of technical problems. By taking part in the activities of the study group the learners can enrich their performance.

♦ **E-mail to Program Coordinator**

For further query, learners are advised to contact the program coordinator through e-mails given below.
E-mail: mahmudul_hasan@bou.edu.bd

For answers to the questions related to your course, please contact the Dean of SST.

♦ **Quiz and Class Test**

Tutors will conduct quiz and class tests and will convey your performance periodically to the school.

Admission Requirements

To be eligible for admission as a student of **Diploma in Computer Science and Application** the applicant must have passed the HSC or an equivalent examination.

Admission Procedure

♦ **Collection of Admission Form**

Admission form and learner guide should be collected from the local Regional Center (RC) by paying necessary fees after advertisement of the program in national dailies, radio, TV and BOU website.

♦ **Submission of Admission Form**

After filling up the prescribed form properly it should be submitted with necessary documents to the local Regional Center.

♦ **Necessary Documents**

- Attested copies of certificates and mark sheets of the SSC & HSC or equivalent examinations.
- One copy of an attested passport size photograph.

♦ **Selection of Candidates**

Candidates for the program will be selected after proper scrutiny of the application form along with the educational certificates and other relevant documents. Regarding admission, BOU's decision will be considered as final. Selected candidates are to get them admitted to the program within the stipulated time by paying necessary fees to the entitled Bank or mobile banking prescribed by the local RC.

Selection Criteria

Learners will be selected on the basis of points calculated as follows–

1. Degree

Degree	Point		
	1st Division	2nd Division	3rd Division
S.S.C	5	3	x
H.S.C	5	3	x
Higher Degree (Undergraduate/ Postgraduate)	1 Point		

Degree	GPA 3 & above	Below GPA 3 & upto GPA 2.5	Below GPA 2.5
SSC	5	3	x
HSC	5	3	x

2. Age

For every 10 years of age of the learner, 1 (One) extra point will be added.

Registration

A list of selected applicants will be available in the local RC. Selected applicants should have to pay the course, practical and other necessary fees to the entitled Bank/mobile banking

as prescribed by local RC. By showing the paid receipt of the Bank to the RC a selected applicant should have to-

    a. Collect the Registration Form.
    b. Fill up the Registration Form and deposit it to the same RC.
    c. Submit two copies of attested passport size photographs.
    d. Collect student ID card from the same RC.
    e. Collect study materials from the same RC.

☞ **Attention !**

A learner who does not register for the successive two (2) semesters will be considered as a discontinued learner and her/his registration shall automatically be cancelled.

Course and others Fees

Learners' Guide and Admission Form Fee	Tk.	100/-
Academic Calendar Fee	Tk.	50/-
Registration Fee (each semester)	Tk.	200/-
Course Fee (each course)	Tk.	850/-
Laboratory Fee (each course)	Tk.	350/-
Reexamination Fee (for each course)	Tk.	250/-
Program Transcript Fee	Tk.	200/-
Testimonial	Tk.	50/-
Main Certificate Fee	Tk.	400/-
Provisional Certificate Fee	Tk.	200/-
Marks sheet	Tk.	200/-
Semester Marks sheet	Tk.	70/-

Study Materials

To be collected from the local RC after paying all necessary fees to the entitled Bank/Mobile banking Account as prescribed by the RC.

List of Study Center with center code

SL. No.	Stuy Center Name	Study Center Code
1.	Department of CSE, Dhaka University of Engineering and Technology (DUET), Gazipur	020
2.	Institute of Science and Technology (IST)	812
3.	Institute of Science and Information Technology (ISIT), Dhaka	818
4.	Muslim Aid Institute of Technology (MAIT), Dhaka, Mirpur, Dhaka	819
5.	Department of CSE, Rajshahi University, Rajshahi.	370
6.	Department of CSE, International Islamic University of Chittagong (IIUC), Chittagong	890
7.	Department of CSE, Chittagong University of Engineering and Technology (CUET), Chittagong	891
8.	Department of CSE, Khulna University of Engineering Technology (KUET), Khulna	471
9.	Muslim Aid Institute of Technology (MAIT), Jessore	871
10.	College of Buseness Science and Technology 17/2, Pandithpara, Mymonshing.	160
11.	Bogra Polytechnic Institute, Bogra.	861
12.	Rangpur Polytechnic Institute, Rangpur	300
13.	Sylhet Engineering College, Sylhet.	591
14.	Infra Polytechnic Institute, Barishal.	501

Addresses for Communication with the Regional Resource Center of BOU

1. Regional Director
    Dhaka Regional Resource Center
    Bangladesh Open University
    (Northern side of Dhaka College)
    Dhanmondi, Dhaka–1205
    Phone: 96 73 669;
    Fax: 86 16 065
    Email: shahabuddin@bou.edu.bd

2. Regional Director
    Comilla Regional Resource Center
    Bangladesh Open University
    Dhaka Chittagong Traunk Road
    Noapara, Durgapur, Comilla
    Phone: 081-77 557
    Fax: 081-63 352
    Email: bou_rrccom@yahoo.com

3.   Regional Director
Chittagong Regional Resource Center
Bangladesh Open University
CRB Road, Kotoali, Chittagong
Phone: 031-619 633
Fax: 031-633-102
Email: rrcchittagong@bou.edu.bd

4.   Regional Director
Sylhet Regional Resource Center
Bangladesh Open University
Pirijpur, Surma (S), Sylhet
Phone: 0821-719 523
Fax: 0821-722 758
Email: rrcsylhet@bou.edu.bd

5.   Regional Director
Rajshahi Regional Resource Center
Bangladesh Open University
Nawhata, Poba, Rajshahi- 6203
Phone: 0721-800 008
Fax: 0721-800 009
Email: rrcrajshahi@bou.edu.bd

6.   Regional Director
Barisal Regional Resource Center
Bangladesh Open University
Rupatoli, Barisal
Phone: 0431-2176 282
Fax: 88-0431- 71 371
Email: rrcblbou@yahoo.com

7.   Regional Director
Jessore Regional Resource Center
Bangladesh Open University
Upashahar (Near BRTC Campus), Jessore
Phone: 0421-68 526
Fax: 0421-61 892
Email: rrcjessore@bou.edu.bd

8.   Regional Director
Mymensingh Regional Resource Center
Bangladesh Open University
Firoza Manson, 26, C.K Ghosh Road, Mymensingh
Phone: 091-65 298
Fax: 88-091-61 051
Email: rrcmymensingh@bou.edu.bd

9.   Regional Director
      Bogra Regional Resource Center
      Bangladesh Open University
      Bisho Road, Banani, Bogra-5800
      Phone: 051-62 794
      Fax: 051-68 058
      Email: rrcbogra@bttb.net.bd

10.   Regional Director
      Rangpur Regional Resource Center
      Bangladesh Open University
      RK Road (Near Bus Terminal), Rangpur
      Phone: 0521-63 593
      Fax: 0521-65 199
      Email: rrcrangpur@tistaonlone.com

11.   Regional Director
      Faridpur Regional Resource Center
      Goalchamot (Near Faridpur Bus Stand), Faridpur
      Phone: 0631-62 081
      Fax: 0631-63 228
      Email: rrcfarid@bttb.net.bd

12.   Regional Director
      Khulna Regional Resource Center
      Satkhira Road, Zero Point, Roshnebag, Khulna
      Phone: 041-731 795
      Fax: 041-810 965
      Email: mamatin7@yahoo.com

For more information the learners are advised to contact with the local RC. In special case one may contact with the School of Science and Technology of Bangladesh Open University to the following address.

Dr. Sharker Md. Numan
Professor (Medical Science)
Dean
School of Science and Technology
Bangladesh Open University
Gazipur-1705
Bangladesh
Phone: 02-9291111
Fax: 880-2-9291111
E-mail: deanSST2017@gmail.com

For information about Program

Md. Moshiur Rahman
Lecturer and Program Co-ordinator
E-mail: moshiurrahman.bou@gmail.com
Phone: 01748987282

Program Code: 50

Rules for Filling up the Admission Form

♦ The applicant should not write anything in Student ID columns. It is for BOU's official use only.

♦ Two passport size photographs are to be submitted with student's name, father's name in the back and should be attested with the principal of the college/first class officer or equivalent.

♦ All columns of the form should be filled up with block letters clearly.

♦ Payment Information: The applicant must write application payment information in payment column.

♦ Application Information:

  ♦ Program Code and Study center Code: given in the student guide.

♦ Applicant's Personal Information:
  ➢ Date of Birth: Please write your date of birth on the relevant space
  ➢ Gender: Please put tick (√) mark on relevant space.
  ➢ Marital Status: Please put tick (√) mark on relevant space.
  ➢ Religion: Please write in the relevant space.
  ➢ Postal Code: To be known from your nearest post office.

♦ Academic Records: Please put all academic information as per field.

Syllabus of the Diploma in Computer Science and Application (DCSA) Program (Revised: 1st June 2013)

1st SEMESTER

Course: DCSA 1201 Computer Basics   Credit: 2

Introduction to Computers: Introduction and Basic Organization, Types of Computers, History and Generations of Computers.
Number Systems, Codes and Logic Functions: Number Systems, Conversion of Numbers, Binary Arithmetic, Data Representation and Codes, Logic Functions.
Microcomputers and Microprocessors: Microcomputer and Organization, Basics of Microprocessors, Popular Microprocessors.
Input and Output Devices: Input Devices, Output Devices, Other Peripheral Devices.
Memory Organizations: Main Memory, Secondary Memory
Computer Software: Introduction and Classification, System Software, Application Package Programs, High Level Languages and Software Development Cycle
Operating Systems: Functions and Types, Disk Operating System, Windows and UNIX/Linux Operating Systems
Applications: Basic Considerations, Application Areas, Impact of Computers on Society, General Maintenance, Selection of Microcomputers
Internet:
Beginning with Internet: Objective, Introduction, History of Internet, What is Internet, Advantage of Internet, How to Access the Internet. **World Wide Web (WWW):** Advantages of WWW, Common Terminologies, Emails.
Web Browsers: Microsoft Internet Explorer, Features of Browsers.
Course: DCSA 1302 Office Automation and MS Office   Credit: 3
Office Automation: Goals and Office Automation, Office and Office Automation, Computer Mail Systems.
Office Automation Tools and Technology: Telecommunication and Word Processor, WP Hardware Configuration, Reprographics, Electronic Mail and Electronic-Filing, Facsimile Transmission and Micrographics, Voice Technology.
Microsoft Word and Basics of Word Processing: Basic File Operations, Locating and Managing Documents,

19

Previewing a Document Before Printing, Printing Documents. Typing and Editing: Moving Insertion Points, Scrolling and Selecting Text, Editing Word Art and Equation Editor, Finding, Replacing and Moving Texts, Proofing Documents. Formatting Text and Pages: Character and Paragraph Formatting-I, Paragraph Formatting-II and Formatting List, Page Formatting. Tables and Newspaper Style Columns: Table-I, Table-II, Newspaper Style Columns, Drawing in Word.

Microsoft Excel and Spreadsheet Analysis: Introduction to Microsoft Excel and Spreadsheet, Spreadsheet Fundamentals, Entering Data, Formulas and Functions, Advanced Editing, Alignment and Fonts, Formatting Numbers, Adding Borders and Shades, Changing Cell Size and Page Setup, Printing Worksheets, Creating and Modifying a Chart.

Microsoft Access

Introduction to Database:

Understanding data, database, Database Management system, Getting familiar with Microsoft Access, Major steps to using Microsoft Access, Access Database Objects, Creating Access Database, Understanding Data types, Creating and Viewing Tables, Inserting, Editing and Deleting Data(Record),Understanding Sorting, Filtering, Indexing and creating Relationships Database, Performing Queries.

Introduction to Forms:
Creating an Access Form, Inserting Data using Access form, Familiar with Form Toolbox, Generating code and Running Form.

Designing and Printing Reports:
Creating Reports, Familiar with Report Writer Toolbox, Adding and Formatting Objects, Adding Field to the Report, Saving Reports and Printing Reports.

Course: DCSA 1303 Computer Programming
Credit: 3

Principles of Programming: Objectives of Computer Programming, Nature of Algorithms.
Programming Tools: Flowcharts-I, Flowcharts-II, Pseudocodes, Decision Table, Structured Diagram.
High Level Language-I: Characteristics, Data Elements, Data Structure-I, Data Structure-II.
High Level Language-II: Operators, Precedence and Associativity, Statements, Procedures and Functions.

Computer Programming C
C Fundamentals: Introduction to C, The C Character Set, Keywords and Identifiers, Constant and Data types, Variables and its Declaration, Expression, Statements and some simple C program.
Operators and Expressions: Arithmetic Operators, Unary, Relational and Logical Operators, Assignment Operators and Conditional Expressions, Operator Precedence and Associativity, Library Functions.
Data Input and Output: Single Character Input/Output - The getchar and putchar Function, Entering Input Data - The scanf Function, The gets and puts Functions, Interactive (Conversational) Programming.
Preparing and Running a Complete C Program: Basic Structure and Steps for Executing a C Program, Planning and Writing a C program, Entering (Creating) the Program into the Computer, Compiling and Linking the C Program, Types of Error and Error Diagnosis.
Control Statements: Preliminaries, Branching: The if-else STATEMENT, The Switch Statement, Looping: The while and do-while Statement, More Looping: The for Statement, The break and continue Statement, The Comma Operator.
Functions: A Brief Overview, Defining a Function, Accessing a Function, Function Prototypes, Passing Arguments to a Function, Recursion.
Program Structure: Storage Classes, Automatic Variables, External (Global) variables, Static variables, Multiple Programs.
Arrays: **Defining an Array, Processing an Array, Passing Arrays to Functions, Multidimensional Arrays, Arrays and Strings.**

Pointers: Fundamentals, Pointer Declarations, Passing Pointers to a Function, Pointers and One-dimensional Arrays, Dynamic Memory Allocation, Operations on Pointers, Pointers and Multidimensional Arrays, Arrays of Pointers, Passing Functions to Other Functions.
Structures and Unions: Defining a Structure, Processing a Structure, User –Defined Data Types (typedef).
Data Files: Opening and Closing a Data File, Creating a Data File, Processing a Data File.
Course: DCSA 1304   Visual Programming Credit: 3
Customizing a Form-Writing Simple Programs-Toolbox-Creating Controls-Name Property-Command Button-Access Keys-Image Controls-Text Boxes-Labels-Message

Boxes-Grid, Editing Tools, Variables, Data Types, String, and Numbers. Displaying Information, Determinate Loops, Indeterminate Loops, Conditionals, Built-in Functions, Functions and Procedures. Lists, Arrays, Sorting and Searching, Records, Control Arrays, Combo Boxes, Grid Control, Projects with Multiple forms, Do events and Sub Main, Error Trapping. VB Objects, Dialog Boxes, Common Controls, Menus, MDI Forms, Testing, Debugging and Optimization, Working with Graphics. Monitoring Mouse activity, File Handling, File System Controls, File System Objects, COM/OLE-automation, DLL Servers, OLE Drag and Drop.

2nd SEMESTER

Course: DCSA 2301 Digital Systems and Computer Organization   Credit: 3

Logic Gates and Boolean Algebra: Basic Logic Gates, Boolean Algebra, De-Morgan's Theorem, Simplification of Logic Circuits I, Simplification of Logic Circuits II.
Combinational Circuit: Half and Full Adder Circuit, Parallel Adder, Multiplexer, De-multiplexer, Decoder, 7-Segment Decoder, Encoders.
Sequential Circuit: Sequential Logic Circuit, SR (Set-Reset) Flip-Flop, J-K Flip Flop, D Flip Flop and T Flip Flop.
Sequential Machine: State Diagram and State Tables Analysis of Asynchronous Sequential, Analysis of Synchronous Sequential, Design of Sequential Logic Circuit.
Counter and Register: Introduction to Counter, Synchronous Counter, Up-down Counter, Odd Sequence and Down Counters.
Memory Organization: Memory Terminology, Memory Operation, Read - Only Memory (ROM), ROM Structure and Addressing, Random Access Memory (RAM), Static and Dynamic RAM, Expanding Word Size and Capacity Expansion, Memory Mapping and Other Memory Devices.
A / D and D / A Converter: Interfacing with the Analog World, D / A Converter, A / D Converter.
Microprocessor Architecture: Microprocessor Structure, Microprocessor Architecture, 8085 Microprocessor Architecture, Addressing Modes.

Fundamentals of Parallel Processing: Types of Parallel Processing, Pipelined Vector Processors, Array Processor, Multiprocessor Systems

Course: DCSA 2302 Operating Systems
Credit: 3

Introduction to Operating System: Introduction to Operating System and System Software, Serial Batch Processing and Multiprogramming, Time Sharing and Multiprocessing Operating Systems, Real-Time and Virtual Storage Operating System, Functions and Evaluation of Operating System.
Computer and Operating System Structure: Interrupts and I/O Structure, System Calls and System Program, Operating System Structure.
Process Management: Process Concept, Scheduling Concept, Scheduling Criteria and Algorithms, Priority, Preemptive and Round Robin Scheduling Algorithms.
Deadlock: Introduction of Deadlock, Deadlock Modeling, Deadlock Avoidance, Deadlock Recovery.

LINUX OPERATING SYSTEM
Introduction to Linux Operating System
Overview of Linux Operating System, Features of Linux, Device Drivers, Linux Process and Thread Management, Linux File Management System, The File System, Current Directory, Format of Linux Commands, Creating User, Changing Password, Characters with Special Meanings, Linux Documentation, Absolute and Relative Pathnames, Some Useful Commands, Pipes, Shell Scripts, Graphical User Interface, Editor.

Windows
Windows Operating System Architecture ,Introduction to Windows Networking, Concept of Domains, Windows Domains, Workgroups , Network Protocol, TCP/IP Protocol Setting for Windows, Virtual Private Networks and Remote Networking, Using the Mapped Drive, Disconnecting a Mapped Drive, Sharing Network Resources in Windows, Sharing Files in Windows, Sharing Folders in Windows, Enabling Offline File Features , Accessing Network Resources Using My Network Places , User Administration, Remote Access ,Security System and Facilities, System Access Control, Privileged User Management, User Account Management,

Password Management Users and Groups Management , Data Recovery Management.

Course: DCSA 2303   Internet Technology and Web Designing   Credit: 3

Networks and Internet: **Networking Concepts, Advantages of Networking, Classification of Networks, internet, Applications of internet, Types of internet connections.**

Network Devices: **Network Interface Cards, Modem, Hub, Switch, Bridge, Repeater, Router, and Gateway.**

Internet Terminology**: World Wide Web (WWW) ,Web Page, Web Site ,URL, IP addresses, Web addresses, Web Browser ,Web Server, Download, Upload.**

Web Applications: Search Engines, Electronic Mail (E-mail), Browsing, chatting, e-governance, E-commerce, Blogging, E-Learning, Social Networking.

Introduction to HTML: Understanding HTML, HTML Tag, TITLE Tag, BODY Tag, Formatting of Text, FONT Tag, Special Characters, Lists, Ordered Lists, Unordered Lists, Tables, Attributes of Tables, Frames, Frameset, FRAME Tag, Creating HTML Forms, INPUT Tag, Text Box, Radio Button, Checkbox, Submit and Reset, Creating web page, Custom background and color, Putting graphics on webpage, Linking to other web page, Dynamic web page.

Developing Website using Tools : **Microsoft front page-Starting Microsoft front page-2010,, Components of the Microsoft front page window, creating a web page, saving a web page, Viewing page, Navigation View, Editing a webpage, Hyperlinks, Bookmarks, Inserting image, Table, Frame, Forms. Dreamweaver -Using Dreamweaver, Create a Site Home Page, Design a Page in Layout View, Insert Images, Insert Text, Work in Standard View, View the Site Files, Link your Documents**

SCRIPTING

VB Script

Defining Script, VB Script Basics, VBScript Data Types, VBScript Variables, VBScript Constants, VBScript Operators, Using Conditional Statements, Looping , VBScript Procedures, VBScript Coding Conventions, Methods: VBScript Dictionary Object, VBScript Dictionary Object Properties.

Course: DCSA 2304   Database Management Systems
       Credit Hour: 3

Introduction to Database Management System: Introduction and Data Models, Data Models and System Structure, DBMS Structure.

Entity Relationship Model: Introduction to Entity Relationship Modeling, Membership Class, and Conversion of ERD into Tables, Conversion of ERD into Tables, Decomposition of Many: Many Relationships.

Relational Model, Relational Database Design and Normalization: Relational Data Model, Relational Algebra and Languages, Additional Operations in SQL, Relational Database Design, Normalization.

Network and Hierarchical Model: Network and Hierarchical Model, DBTG Model, Data Definition Language in DBTG Model, Data Manipulation Language in DBTG Model, General Concept of Hierarchical Model, Data Manipulation Language in Hierarchical Model.

Query Processing: Query Interpretation and Equivalence of Expressions, Projection and Estimation of Query Processing Cost, Estimation of Costs of Access using Indices.

Library System Using Database Programming: Design of Library Database Using Entity - Relationship Diagram, Design of Library Database Using Entity - Relationship Diagram.

Introduction to Management Information System: Definition, Levels and end-users of Information System, Data Processing System (DPS), Management Information System (MIS) and Decision Support System (DSS), Operating Elements of Information System.

Analysis of MIS: Strategic MIS Planning and Initial Investigation, Information Gathering, Types of Interviews and Questionnaires.

Design of MIS: Overview of IMS Design, Design of MIS Output, Design of MIS Input and Control, Design of MIS Methods, Procedures and Data Communications.

Implementation and Testing of MIS: Hardware/Software Selection and Computer Contract, System Testing and Quality Assurance, Managing System Implementation.

Case Study-Student Management Information System: Problem Definition, Information Gathering of SMIS, Detailed Analysis of Student Management Information System (SMIS), Design of SMIS.

3rd SEMESTER

Course: DCSA 3301   Graphics Design
Credit: 3
Desk-top Publishing
Overview: Introduction, Importance of Good Design, Choosing the Right Software, Choosing the Right Font, Working with pictures, Using Advanced Hardware.
Establishing the Foundation: Determining Size, Shape and Length, Using White Space as a Design Tool, Working with Multi-Column Documents
Making Type Easy to Read: Setting the Body Copy, Working with Paragraphs, Modifying Word, Letter, and Sentence Spacing, Hyphenation and Punctuation.
Working with Pictures: Working with Photographs, Changing the Size and Shape of Scanned Images, Advanced Image Enhancement, Placing Photographs and Adding Captions.

Flash
Introduction to flash interface,using tools, creating symbols(clips,buttons,graphics) saving and publishing file.
Adobe Photoshop
Work with Image, Image Color and Channels
Install Adobe Photoshop Software, Components of the Photoshop Window, Creating a New Document, Change image size, resolution and canvas size, foreground and background color, color change with the help of color piker, Practice with Hue, HSB, bitmap and gray color, creating Channel, RGB Channel, CMYK Channel and multi Channel, Practice on Using various Palettes.
Work with Painting and Editing
Painting, Painting tools, editing tools, Practice on using Paint Bucket tools and Brush tools, Use lasso selector tools including freelance and point base lasso selector tools, magic wind tools and pen tools, path builder and anchor point, Practice with smudge, sharpen, lighten and dark tools, Practice with rubber stamp, healing and patch tools.
Work with layer, filter and color mapping and adjusting.
Creating layers, arrange layers ,merge layers and link between layers, Practice on using filter, destructive filters, stylize filters, high pass filter and noise filter, Practice on using gradient tools, eyedropper tools, Practice on using color mapping and adjusting, Practice on using erase and

pencil, custom shape tools, Practice on using bevel emboss, color range and layer linking.

Work with projects

Design a Shopping Bag/Calendar/Gift Box/ Bill Board/Cover Page etc. Print an image with color separation.

Adobe Illustrator

Introduction to Adobe Illustrator

Creating a New Document, Document Color Modes, setup & the New Art board Tool, Saving & Exporting Files, Using the Toolbox, Menus & Keyboard Shortcuts, Customizing your Workspaces, Setting Preferences, Navigating a Document

Drawing & Transforming Objects

Drawing Vector Shapes (Rectangles, Squares, Circles, Polygons, Stars, Lines & Arcs), Tracing a Placed Image, Using Rulers, Guides & Grids

Making & saving Selections

Using the Selection Tools, Using Advanced Selection Techniques (Adding and subtracting), Saving & Reloading Selections

Managing Shapes

Moving & Copying Shapes, Aligning & Distributing, Grouping, Locking & Hiding, Transforming Shapes

Working with colors

Using Fill & Stroke, Copying colors with the Eyedropper, Mixing & Saving Custom Colors, Understanding Gradients, Working with Symbols

Creating & Manipulating Paths

Using the Pencil, Eraser & Smooth Tools, Creating Straight & Curved Paths with the Pen Tool, Manipulating Paths & Anchor Points, Creating Artistic Brush Effects

Using Layers to Organize your Artwork

Creating & Managing Layers (Duplicate, Move, Rename, Group),Understanding Layer, Sub layers & Isolation Mode,Creating Multiple Versions of a Layout,Apply Transparency & Blending Modes

Using Type

Creating Artistic & Paragraph Type,Formatting Text,Creating a Bulleted List & Inserting Special Character Symbols,Wrapping Text around Objects,Creating Type on a Path

Work with projects

Design Greeting Card/Calendar/Post Card etc.

Print the project

Course: DCSA 3302   Microcomputer Troubleshooting
Credit: 3

Introduction and Main Devices: Microcomputer, Basic Parts of the Microcomputer, Central Processing Unit, Motherboard and Multifunction Boards, Memory, Bus Structure.

Secondary Devices: Handy Input Devices, Optical Input Devices, Monitor, Printer, Other Output Devices, Floppy Disk Drive, Hard Disk Drive, Hard Disk Drive Interface, Power Supply Unit.

Controller Devices: Video and Graphics Adapter, Special System Support Chips, How the System Works, Monitor Program, Operating System.

Troubleshooting Basics: Troubleshooting Approaches, General Troubleshooting Rules, Troubleshooting Steps, Checking Software and Symptoms, Using Post and After Boot Diagnostics Software, Using ROM Based Diagnostics Software, Precautions for Disassembling, Disassembling the PC, Assembling the PC.

Troubleshooting Specific Devices – I: Troubleshooting Hard Disk, Cable Connection, Configuring CMOS, Partitioning and Formatting, Installing Floppy Disk Drive, Floppy Drive Maintenance and Troubleshooting.

Troubleshooting Specific Devices – II: Troubleshooting Keyboard, Troubleshooting Mouse, Troubleshooting Monitor, Printer Maintenance, Troubleshooting Printers.

Preventive Maintenance: Heat and Thermal Shock, Dust, Liquid and Corrosion, Magnetism and Electromagnetic Interference, Power Noise.

Course: DCSA 3303   Computer Networks
Credit: 3

Introduction to Computer Networks: Computer Networks, Types of Computer Networks, Network Topology.

Computer Networks Architecture: Protocols, the OSI Model, Layers of the OSI Model, the TCP/IP Protocol Suite.

Data Transmission Fundamentals: Basic Concepts, Frequency-Domain Consideration of Signals and Transmission Impairments, Metallic Transmission Media, Optical Fiber, Unguided Transmission Techniques, Transmission Systems.

Data Encoding: Encoding of Digital Data into Signals, Encoding of Digital Data Into Analog Signals, Encoding

of Analog Data Into Digital Signal, Encoding of Analog Data Into Analog Signal.

Digital Data Communications Techniques: Transmission Mode, Error Detection Techniques, Transmission Line Interfaces.

Data Link Control: Line Configuration, Flow Control, Error Control, HDLC and Data Link Control Protocol.

Multiplexing: Frequency Division Multiplexing, Time Division Multiplexing.

Switched Data Communication Networking: Circuit Switching, Control Signaling in Circuit-Switched Network, Packet Switching, Routing in Packet-Switched Network, Traffic Control in Packet Switched Network, X.25 Protocol Standard.

Local Area Networks: LAN Technology, Medium Access Control Protocols, LAN Standards.

Transport Protocols: Transport Services and Protocol Mechanisms, Network Services and Transport Protocols.

Session Services and Protocols: Session Characteristics, Requirements and Standards.

Presentation Facilities: Presentation Concepts and Abstract Syntax Notation one (ASN 1), **Network Security:** Encryption and Authentication, Virtual Terminal Protocols: Telnet and the ISO Standard.

Distributed Applications: Network Management: SNMPv2, File Transfer: FTAM, Electronic Mail: X. 400.

Course: DCSA 3304   Project Work Credit: 3

Students will be assigned a project under the supervision of a faculty member. Student must complete the project within one consecutive semester. A manual with necessary instructios shall be given to student. Student must follow the instruction stated in the manual and with guidance of supervisor must complete project and submit to coordinator of the study center. **Full marks is 100 and pass marks is 50.**

Lab work: 10
Record book: 5
Viva-voce: 5
Total marks: 20

List of the Practical work

Course: Computer Basics (DCSA 1201)

Lab 1:
a) To identify external ports and interfacing of PC.
b) To make comparative study of motherboards.
c) To install devices.
d) To study various cards used in a system viz. display card, LAN card etc.

      e) To remove, study and replace of a hard disk.
      f) To remove, study and replace of CD-ROM drive.

Lab 2:
      a) Windows Operating System study.
      b) Use of tools in Windows.
      c) Handling tools of control panel.

Course: Office Automation and MS Office (DCSA 1302)

Lab 1:
      a) Creating, opening, closing, saving and editing a word document.
      b) Insert header and footer in the document.
      c) Create a link between two files using Hyperlink.
      d) Create a mail - merge and add data of 5 recipients.
      e) Protect a document.
      f) Implement macro.

Lab 2:
      a) Create duplicate slides in PowerPoint. Give an example.
      b) Make a master slide.
      c) Design a chart of population.
      d) Insert animation.
      e) Insert a background in PowerPoint.

Lab 3:
      a) Creating new Spreadsheet.
      b) Entering data in Spreadsheet.
      c) Creating of formula for different operations.
      d) Creating different types of chart.
      e) How you can filter your data.
      f) Sort data in ascending and descending order.
      g) To show the use of goal seeks.

Lab 4:
      a) To show the use of scenarios.
      b) Perform any 5 Date and Time functions.
      c) Perform any 5 Math & Trig functions.

Lab 5:
      a) With the help of Wizard create table having 5 elements.
      b) Create a query in design view.

Lab 6:
      a) Make an admission form using design view in MS-Access.
      b) Create a relationship b/w two tables.
      c) Create report.

Course: Computer Programming (DCSA 1303)

Lab 1:
a) Write a C program to find area of a rectangle.
b) Write a C program to find area and circumference of a circle by defining the value of PI.

Lab 2:
a) Write a C program to swap 2 variables without using temporary variable.
b) Write a C program to find simple interest.
c) Write a C program to find area of a triangle, given its sides.

Lab 3:
a) Write a C program to find check whether the number is positive or negative.
b) Write a C program to find check whether the number is odd or even.

Lab 4:
a) Write a C program to check whether the triangle is isosceles, equilateral or scalene using if-else.
b) Write a C program to check whether a given year is a leap year.

Lab 5:
a) Write a C program to find the biggest of three numbers.
b) Write a C program to add n numbers.
c) Write a C program to find sum of digits of a given number.

Lab 6:
a) Write a C program to print first 'N' fibonacci numbers.
b) Write a C program to add two matrices.
c) Write a C program to find the factorial of a number.

Course: Visual Programming (DCSA 1304)

Lab 1: Creating, saving and running a simple visual basic project.

Lab 2: Customizing forms and use of basic controls (Textbox, Label, Command Button, Checkbox, Radio Button, Listbox).

Lab 3: Use of tree view control, Trackbar, Timer, Image, Msg Box, Input Box, Mathematical Operation, Creating Menu.

Lab
a) String manipulation.

31

4: b) Creating and Undating Database.

Lab 5: Use of Loop.

Lab 6: Creating Report.

2nd Semester

Course : Digital Systems and Computer Organizations (DCSA 2301)

Practical 1 : Install and use any of the following digital logic simulators: KTechLab, gLogic and Logisim or any other digital logic simulators.

Practical 2 : Design and simulate the following digital circuits using any digital circuit simulator:

- a)   AND, OR, NOT, XOR, NOR and NAND gate
- b)   Demorgan's Theorems
- c)   Adder
- d)   Subtractor
- e)   Multiplexor
- f)   Encoder
- g)   Decoder
- h)   JK Flip-Flop
- i)   SR Flip Flop

Course : Operating System (DCSA 2302)

Lab 1: a)   Verify that Windows client is present and or not. If not, how to install it.

- b) Find the Internet Protocol (IP) and Media Access Control (MAC) address of a Windows XP computer.
- c) How to Use Windows 7 Home Group?
  - i. Creating a Windows 7 Home Group
  - ii. Joining and Leaving Home Groups
  - iii. Changing the Home Group Password
- d) Connecting to a Wireless Home Network
- e) TCP/IP Configuration for Windows
- f) Sharing files and printer
- g) Setup a LAN in windows

Lab 2:

- a) Creating user in windows
- b) User Management in Windows XP

32

   c) Install and use anti-virus
   d) Map a Drive using Windows OS
   e) Recovering lost data in Windows

Lab 3:
   a) Editors, Shell and Shell Scripts
   b) Useful Command in Linux

Course : Internet Technology and Web Designing
(DCSA 2303)

Lab 1:
Introduction to HTML: Web site, Web Page, Types of Web Pages, Browsers and their types, Client –Server Model, Web –Server, Working of different types of Web Pages, General structure of a Web Page, Scripting languages, URL, Popular Search Engines, WWW

Lab 2: Structure of HTML web page:
          <Head>, <title>, <body>, comments, <div>,
   <h1>……<h6>, <hr>,

Lab 3: Basic HTML physical character tags:
          <b>, <i>, <u>, <big>, <small>, <sup>, <sub>,
   <strike>

Lab 4: Logical character tags:
          <em>, <strong>, <del>, <insert>, <cite>,
          <code>, <dfn>, <ins>, <kbd>, <samp>,
          <strong>

Lab 5: Other HTML tags:
          <p>, <font>, <abbr>, <acronym>, <address>,
   <blockquote>, <quote>, <q>

Lab 6: List tags: all tags pertaining to Lists
Lab 7: Table tags.
Lab 8: Hyper link tag (both Internal & External).
Lab 9: Working with Frame and Form tags.
Lab 10: Image tags & embedding a multimedia on to a web page(video, audio, zip)
Lab 11: Working with CSS (Cascading Style Sheet).
Lab 12: Develop a web page using the above tags.
Course : Database Management System (DCSA 2304)
Lab 1: Create the following tables for a COMPANY database
EMPLOYEE

Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno

DEPARTMENT

Dname	Dnumber	Mgr_ssn	Mgr_start_date

DEPT_LOCATIONS

Dnumber	Dlocation

PROJECT

Pname	Pnumber	Plocation	Dnum

WORKS_ON

Essn	Pno	Hours

DEPENDENT

Essn	Dependent_name	Sex	Bdate	Relationship

Lab 2: Illustrate the use of constraints

      i. NOT NULL

      ii. PRIMARY KEY

      iii. UNIQUE

      iv. CHECK

      v. DEFAULT

      vi. REFERENCES

Lab 3: DATA MANIPULATION : INSERTING VALUES INTO A TABLE

Lab 4: Illustrate the use of SELECT statement

Lab 5: Conditional retrieval - WHERE clause

Lab 6: Query sorted - ORDER BY clause

Lab 7: Grouping the result of query - GROUP BY clause and HAVING clause

Lab 8: Aggregate functions in SQL (Count, Sum, Max, Min, Avg)

Lab 9: SQL operators

Course: Graphics Design (DCSA 3301)

Practical 1: Working with Pictures

      a) Working with Photographs

      b) Changing the Size and Shape of Scanned Images

      c) Image Enhancement

      d) Placing Photographs and Adding Captions

Practical 2: Working with Adobe Photoshop

a) Installation and Introducing the components of Adobe Photoshop
b) Creating new document in Adobe Photoshop
c) Image Color in Adobe Photoshop
d) Working with Color and Channels
e) Working with Image Channels and Palettes

Practical 3: Image Painting, Editing and Layers in Adobe Photoshop

a) Painting Tools
b) Image Editing and Editing Tools
c) Smudge, Sharpen, Lightened and Patch Tools

Practical 4: Layers, Filters, Colors and Projects in Adobe Photoshop

a) Working with Layers
b) Working with Filters
c) Working with Color Mapping Tools
d) Working with Color Adjusting and Color Adjusting Tools

Practical 5: Create a Simple Project on Adobe Photoshop
Practical 6: Working with Adobe Illustrator

a) Introducing to Adobe Illustrator
b) Working with Basic Tools
c) Working with Drawing Objects
d) Working with Selection Tools
e) Managing Shapes in Adobe Illustrator

Practical 7: Colors, Paths, Artworks, Type and Projects in Adobe Illustrator

a) Working with Colors in Adobe Illustrator
b) Creating and Manipulating Paths
c) Working with Layers and Artwork
d) Use Type in Adobe Illustrator
e) A Simple Project on Adobe Illustrator

Course : Microcomputer Troubleshooting (DCSA 3302)
Practical 1 : Open a microcomputer casing and draw a diagram showing the rough view of the organization of the components inside the microcomputer.
[Hints : Microcomputer Troubleshooting page 5, 6, 99,100]
Practical 2 : Take a mother board and its manual and set the jumpers following the instruction of the manual. Write a report discussing about where you set the jumpers and why, assume any process and RAM as you like.
[Hints : Microcomputer Troubleshooting page 13, 14, 15]

Practical 3 : Run the CMOS configuration software in your computer. Enter into all the menus and write down all the configurations saved in CMOS.

[Hints : Microcomputer Troubleshooting page 120 - 121]

Practical 4 : Uninstall and reinstall your FDD (Floppy Disk Drive) using the following steps.

- a) Configure the CMOS so that there is no FDD.
- b) Unplug the FDD.
- c) Fun the computer normally checking that every thing runs good.
- d) Replay the FDD.
- e) Configure the CMOS so that there is a FDD.
- f) Redo step 3.

[Hints : Microcomputer Troubleshooting page 128, 129, 130]

Practical 5 : Learn HDD installation using the following steps :

- a) Take a HDD. If it is an old one then save all the important documents from it to another device.
- b) Make the hardware connection of the HDD as primary slave.
- c) Partition the HDD.
- d) Format the HDD.

[Hints : Microcomputer Troubleshooting page 113 - 126]

Course : Computer Networks (DCSA 3303)

Practical 1: Study of different types of Network cables, connectors and Practically implement the cross-wired cable and straight through cable using clamping tool.

Practical 2: Study of Different Network Devices (Router, Switch, HUB, Bridge, Gateway, Network card, Modem, Firewall) in Detail .

Practical 3: Studying different pools of IP addresses.

Practical 4: To learn and observe the usage of different networking commands (hostname, ipconfig, getmac,arp, ping, tracert, Netstat, nbtstat, nslookup) in Windows.

Practical 5: Connect the computers in Local Area Network in Windows.

Practical 6: Installation and working of Remote Desktop in Windows.

Practical 7: Study about File and Folder Sharing in Windows.

Practical 8: Study of Internet, Bowser and E-mail.