

COMPUTER
PROFESSIONALS
EXAMINATIONS
[CPE]

Syllabus

ENTRY REQUIREMENT

5.1 Affiliate Requirements:

Two Credit passes in any two subjects and at least two passed in English and Mathematics in WAEC, GCE, NECO, SSCE, NABTEB and its equivalence from recognized institutions.

5.2 Entry Qualifications for the Computer Foundation Examinations (CFE)

Five Credit passes in GCE ordinary level, Senior Secondary School Certificate, NABTEB, NECO or equivalence. The credits must include Mathematics and English Language. A credit pass in the Computer Affiliate Examination of the CPN examinations will be accepted in place of incomplete GCE or SSCE. The candidate must be a registered student in NCS and must be training in a CPN-accredited Computer Training Institute or departments of computing/engineering in the universities, polytechnics or other approved tertiary institutions in Nigeria.

5.3 Entry to Computer Professional Examination (CPE I)

A pass in the CFE plus one year industrial attachment in Computer or Information Technology backed with a log book signed by a Full Member of NCS/CPN or Credit Pass in a 2-year Diploma/ND/Diploma/ND granted by a CPN accredited Institution.

NCE/ND/Diploma in Computer Science, Information Technology, Management Information Systems, Electrical/Electronics and Computer Engineering, Computer Communications and Information Systems obtained from CPN-Accredited Institutions with a pass plus two or more years relevant experience.

A pass in the Past-graduate Diploma in Computer Science, Information Technology/Systems or Electronics & Computer Engineering, Communications from a recognized University or CPN-Accredited tertiary institutions

Parts of Professional qualification accepted by Council such as the Internationally recognized chartered qualifications e.g. IDPM/MIS/BCS/ACM/IEEE considered equivalent CPE I.

Exemptions will be granted to ND/HND and B.Sc holders other than Computer Science/Information Systems/Information Technologies/Electronics and Computer Engineering and Communications on subjects-to-subject basis. Holder of MSCSE and related Certifications such as NCS/CPN User Certification Examinations will be granted subject-to-subject exemption and such exemptions must be paid or before the

examinations.

Entry Qualification for the Computer Professionals Examinations II (CPE II)

A Credit pass in CPE I plus one year relevant Industrial experience OR

A pass in CPE I plus two years relevant industrial experience OR University/Polytechnic/CPN tertiary accredited Higher Diploma, Advanced Diploma, Higher National Diploma and B.Sc, B-Eng, B.Ed in Computer Science, Electronics and Computer Engineering, Information Systems, Information Technology, Data Processing and Data Communications obtained from CPN accredited institution with at least a Lower Credit/Third Class/Division OR

University/Polytechnic/CPN tertiary accredited Higher Diploma, Advanced Diploma, Higher National Diploma and B.Sc, B.Eng, B.Ed in Computer Science, Electronics and Computer Engineering, Information Systems, Information Technology, Data Processing and Data Communications obtained from CPN accredited institution with at least a Pass plus one year relevant industrial experience.

Entry Qualifications for the Computer Professionals Examinations III (CPE III)

Pass in CPE III

Holders of CPN-Accredited HND, 2-years Advance Diploma, B.Sc, M.Sc. M.Tech, Ph.D. There is no direct admission to the Profession. Applications to the membership of NCS and CPN must take the final examinations, write a Project and successfully defends self during the project defense interview.

6.0 REGISTRATION PROCEDURE

Candidates for any NCS/CPN Examination shall be required to register as "Student Member" before the intended examination.

Entries must be made on the prescribed Application forms, which are obtainable at the NCS Head Office or at designated CPN centers around the country. A self-addressed stamped envelope should accompany request for Application and registration forms.

The appropriate registration forms must be purchased, completed and submitted or before the specified deadline date for registration.

The registration form must be accompanied by documentary evidence of qualification and stipulated registration fees.

Forms should be completed in all respects and with correct information and attachment; incomplete forms giving incorrect/incomplete information will be rejected.

Passport photographs must be duly signed by “Full Member” of NCS/CPN.

7.0 REGULATIONS

Candidates wishing to take the examination in any particular year or diet must comply with the following regulations:

A valid registration must be held

Entry to the examination is restricted to students enrolled in or who have graduated from an institution or training school approved by appropriate authority or whose application form have been signed by a “Full Member” of NCS/CPN

Application for entry to the examination must be submitted on an appropriate form.

A registered candidate who fails to pass all the subjects at a particular level within 18 months shall be required to re-sit all papers at that level.

8.0 EXAMINATION

The examination will consist of written papers and practical tests.

Each written examination paper will be a maximum of three-hour duration

The practical test will be of at least 3 hours duration

Satisfactory evidence of practical training/experience would be required for all candidates. Candidates will be accepted for practical examination only through data processing/computing/information technology organizations or CPN Accredited Training Schools. Examiners appointed by NCS/CPN will from time to time pay visitations to such accredited institutions/training schools to ascertain their quality.

(a) **Date of Examination**

NCS/CPN examination will normally be held twice in a year – April and September. The examination dates for each year will be published not later than four months before the examination.

(b) **Examination Centres**

The list of centers will be dynamic. However, effort would be made to geographical spread. The following among the cores examination center at the present: Lagos, Owerri, Kaduna, Benin and Jos. There will remain in place until new viable centers are created and approved by Council.

(c) **Closing Dates of Entry**

Registration forms accompanied by the correct fees must be received at the Secretariat not later than the

closing date stated on the examination form.

No exceptions to the registration can be made in the account of entities or correspondence loss or delay in transmission. Candidates should therefore send their registration forms early and make enquiries if they do not get acknowledgement within a reasonable time.

(d) **Examination Result**

Results will be communicated to candidates via their various centers and newspaper publications. In general results shall be released not later than three months after the examination. Detailed individual results will be posted to candidates later. Any typographical error in the detailed result will be not entitle the candidate to interpret the result in his/her favour or claim any advantage there-form. CPN reserves the right to correct such mistakes when they come to its notice and no action shall be liable against CPN.

Request for review of examination scripts may be entertained on payment of a fee per subject, which shall be reviewed from time to time. Such requests, in writing, must be received at the Secretariat within one month of the declaration of results, with the appropriate verification fees.

(e) **Correspondence**

Candidates should quote their centers, examination number, and membership registration number in all correspondence about examination entries.

(f) **Misconduct in an Examination**

CPN has the right to take severe disciplinary action against any candidates or invigilator found guilty of examination malpractice. Such actions include:

Cancellation of results

Suspension/banning from NCS/CON examination for some period

Reporting such candidates to employers/sponsors and the Law Enforcement Agents

Forfeiting of invigilation fee

Banning from future invigilation

Banning from NCS/CPN future examinations

Instituting of legal action where necessary

Reference of offender to the ethics and disciplinary committee for disciplinary action that may include withdrawal of membership status

(g) **Absence from Examination**

No refund will be made to a candidate that has paid for an examination however, a candidate who has registered for

examination may be allowed to differ the sitting for the examination to the next or second diet following the original registered examination. CPN reserves the right to make alteration or changes to the examination administration as it may deem necessary and in such circumstance determine how to reschedule a candidate who encountered problem because of such actions.

(h) **Exemptions**

Direct entries into CPE I and CPE II (i.e. by exemption) must obtain the necessary exemptions at least six months before the examination after having duly completed exemptions Application Form, registered as student of the Council and paid the exemption fees as may be prescribed by NCS/CPN from time to time. Enquiries on exemptions fees should be forwarded to the Administration Secretary, NCS at the National Secretariat.

(i) **Other Cost**

Candidates or sponsors would be required to pay for the cost of any equipment rental, where necessary for a practical test. All subscriptions and levies must be paid BEFORE sitting for any of the examination.

(j) **Notification of Result and Award of Diploma**

A registered candidates for an examination will be awarded the appropriate qualification after having been successful in all requirements of the examination. A registered candidate who is not successful in one or two paper(s) in an examination will be referred in the paper(s) and will have to re-register and retake the paper(s) within eighteen calendar months or else he/she will have to re-register and retake all of the papers of the examination module of a future data.

9.0 **STRUCTURE OF THE SYLLABUS**

9.1 **Computer Users Certification**

CUC 1	Office Productivity Expert
CUC 2	Web site Developer Expert
CUC 3	CAD Expert
CUC 4	DTP Expert
CUC 5	Programmer Expert
CUC 6	Systems Auditor Expert
CUC 7	PC Maintenance Expert
CUC 8	PC LAN Expert

9.2 **CLC 1 Computer Literary Certificate**

- CLC 1 01 Introduction to Microcomputer System
- CLC 1 02 Introduction to Microsoft Windows 2000
- CLC 1 03 Introduction to Microsoft Word
- CLC 1 05 Introduction to Microsoft Excel
- CLC 1 06 Introduction to Microsoft Internet & E-mail Application

CLC 2 Advanced Computer Application

- CLC 2 01 Computer & Secretariat Practice
- CLC 2 02 Computer Desktop Publishing
- CLC 2 03 Computer Utilization
- CLC 2 04 Computer Operations

9.3 Affiliate Examination

- CAE 01 Computer Fundamentals
- CAE 02 The use of Packages
- CAE 03 Computer Operations
- CAE 04 Introduction to Mathematics
- CAE 05 Introduction to English Language

Foundation Examination

- CFE 01 Communication Skills
- CFE 02 Quantitative Methods (including Algebra, Statistics, Analytical Geometry Trigonometry)
- CFE 03 Computer Methods
- CFE 04 Use of Packages
- CFE 05 Accounts & Economic (restricted to principles of micro-economics)
- CFE 06 Introduction Sciences (Physics & Chemistry)

All courses are compulsory. Each paper consists of one or more sections. Candidates must attempt at least one question from each section. Reference may be allowed in one subject, which must be passed within eighteen calendar months, otherwise candidate may have to retake the whole examination.

9.5 Computer Professional Examination (CPE I)

- CPE 101 Computer Electronics 1 (Compulsory)
- CPE 102 Systems Programming I
- CPE 103 Management Information Systems (MIS)
- CPE 104 High Level programming languages
- CPE 105 Quantitative Techniques in Business (including operations research)
- CPE 106 Software Engineering

9.6 Computer Professional Examination II (CPE II)

- CPE 201 Computer Electronics II (compulsory)
- CPE 202 Data Communications & Network including internet, intranet, extranet, LAN Technology/(including e-commerce, design and deployment of Web sites)
- CPE 203 Knowledge Engineering (including Artificial intelligence and Expert Systems, Neural Networks and Robotics)
- CPE 204 Systems Programming II
- CPE 205 Management of Information Technology
- CPE 206 Programming based Project (based on one of the HPL in CPE 104) This is the basic for admission to membership of both NCS and CPN. This project must be an original practical contribution to the field of Computer Science Software Engineering or Information Technology.

9.7 **Computer Professional III**

- CPE 301 Evolving Information Technologies (current trends in Computer Science, Information Systems, Information and Communication Technology)
- CPE 302 Advance, Object-oriented programming (using one of Java, C++, Corba, Active X, VB)
- CPE 303 Advanced Simulation & computer Modeling
Application of QM, Undo, STORM, SAS, SPSS in complex modeling & simulation).
- CPE 304 Final Project & interview

CPN USER CERTIFICATION EXAMINATIONS

SYLLABUS

User Certification will qualify successful candidates for an Affiliate States. Entry qualification is evidence of SSSC or equivalent examination attempt. It is also open to graduates of any profession willing to acquire recognized IT certification for job engagement or for private practice. The NCS certification program has been categorized into six broad fields of specialization viz;

CUC 1	Office Productivity Expert
CUC 2	Web Site Developer Expert
CUC 3	Computer Aided Design Expert
CUC 4	Desktop Publishing Expert
CUC 5	Programming Expert
CUC 6	PC Maintenance Expert
CUC 8	PC LAN Expert

The outline syllabus are presented below:

CUC 1 NCS OFFICE PRODUCTIVITY EXPERT

This will be made up of eight core courses with practical and theory content. They include Microsoft Office Suite and Windows 2000 applications and other software vendors e.g. Corel or Novel Word Perfect, dBase for Windows and DOS, Oracle DBMS

CUC 1 01	Word
CUC 1 02	Excel
CUC 1 03	Access
CUC 1 04	Power Point
CUC 1 05	FrontPage Outlook 2000
CUC 1 06	Introduction to Oracle DBMS
CUC 1 07	Dbase for DOS and Windows
CUC 1 08	Word Perfect

CUC 2 NCS Web Site Developer Expert

This expert license will include six core courses involving pre-examination project in practical website design, development and deployment and written examinations. These courses are:

CUC 2 01	Programming in C, C++
CUC 2 02	Programming in Java and HTML
CUC 2 03	Working with Windows FrontPage 2000
CUC 2 04	Planning, Designing, Developing and Deploying Websites
CUC 2 05	Working with Windows 2000 Explorer and Netscape Navigator
CUC 2 06	e-Commerce, e-Banking and the Internet Technologies.

CUC 1 01 WORD

Create and print documents. The word Window, default settings, what to do when you Make an error, create a new document, saving a new document, close a document, exit word, use the tab

key, autocorrect, spell check, insertion point Movement, Create a Business letter, Create a Personal Business letter, The Date feature, Uppercase Mode, Preview a Document.

Open and edit documents, Open a document, Insert and overtype mode, Saving changes to a document, Open a document as Read only, As, Undo, Redo, select and Delete text, Show/Hide codes, Open a document, Delete text, Non-breaking spaces, Insert and Delete Text, Preview a File, Print a File without opening, Print Multiple files, File Details, Sort Files, Find files, Text Alignment and Enhancements, Format and Edit Documents, Additional Formatting and Editing, Thesaurus, Grammar check, Find and Replace text, Work with multiple documents, macros, display multiple documents, Close and maximize documents, Columns and Tables; calculate and sort, Merge main and data source documents, Prepare envelopes and labels while merging, Clip art and templates; envelope and labels.

CUC 1 02 **EXCEL/LOTUS SUITE**

Create, save and exit a worksheet, Start Excel, the Excel window, excel Menu and toolbars, explore the worksheet using the mouse and keyboard, open a blank workbook, enter labels, make simple corrections and save the workbook, close a workbook, exit Excel, Numeric labels and values, label alignment.

Use formula, Format, Copy, Print, Use formulas and functions; Edit Print options, additional formatting and Editing working with Workbooks, Use templates (spreadsheet solution), Logical functions, autoformat, Protection and Hiding Data, Charting Create Columns, line and pie charts, Change Chart types, select size embedded charts, Select cells to chart, enable chart editing, Edit chart text, Create a combination chart, change chart subtype, delete and embedded chart, select chart items, change legend position, print charts, print embedded chart separately, set chart print options, Set page orientation of printed page, use data map feature, Edit map and legend, Data map toolbar, Lotus Groupware applications, Lotus financial modeling capabilities, Lotus suite internet capabilities.

CUC 1 03 **ACCESS**

Create a Database form, Plan a database, Create a Table (Datasheet) design, Switch between Table views, Save Datasheet Design, Open a Database file, Create a Table in Datasheet View, Open a Datasheet Enter records, Enhance a Datasheet, Change Datasheet Column Widths, Create a form from an existing Datasheet, Enter Records, Enhance form design, edit and print a database, Add a lookup Value list field, Open an existing Database, Modify the datasheet, Enter Records, Change

Datasheet Column widths, Simple print, Hide Datasheet fields, Modify a Datasheet and print, Print with Header and footers, Edit a record, Add and Delete a record, Edit records, insert and Delete records, Searching and sorting a Database, Find records, Use Wildcards, Find record and replace Data, Sort records, Multiple sorts, Filter a records subset, Edit a record subset, Advanced filter/sort, Filter forms, Sort a form subset, Queries, create a query, save a Query, Use a Query, Create Queries, Rename a Query, Enhance an print a Query, Create a query using Data from multiple tables, print a query table, reports use a Wizard to create a report, Change and enhance a Report, change item properties, Create a Report from a query, Add Report Sections and items, Group items, Add Report statistics, Add new fields to a report, Create a Database with Database Wizard.

CUC 1 04 **POWERPOINT**

Create, Save and Print a Presentation, About PowerPoint, Start PowerPoint, the Blank Presentation option, the Template option, Add Text to placeholders, Add Slides to Presentations, Save a Presentation, Exit PowerPoint, Open a Presentation, Add a Slide to a Presentation, Slide Views, Print, Working with object Slides, Use Undo, Change a Slides Layout and Template, AutoClip Art, Move, Copy and Delete Slides, Use Slide sorter View, Use outline View, Enhanced slide, Work with text and objects, Select, Align, and change the Appearance of text, change slide's Color Scheme, Copy text formatting, move and copy text, increase/decrease paragraph formatting, Move and size placeholders, use slide master, Insert page numbers/data and time/footer, Format bullets, Draw graphics objects, Use Autoshapes and create text objects, Work with slide, Show a presentation, Add Transitions and timing, Building Slide text, Use the Annotator, Create Continuously Running Presentations, Create Notes pages and Handout master, Insert a Graph and Table slide, Insert an Organization Chart slide, integration an Print Notes Master and Handout Window files in one application, Window files from different Applications, integrate an Excel worksheet file and a Word document file, Edit a linked file, Export an Access Database to an Excel file, Analyze Database Data, Merge an Access Table with a Word Main Document, Mail merge, Import a Word outline into a PowerPoint Presentation, Export a Word outline to a PowerPoint Presentation, Link a Excel Worksheet with a PowerPoint Presentation.

CUC 1 05 **FRONTPAGE 2000**

Exporting FrontPage 2000, Working in Page view, Creating Basic Web Pages, Adding Features in Web pages, Creating Tables, Frames, Creating forms, FrontPage Components, Adding Multimedia, Cascading Style sheets, Publishing the Web sites.

CUC 1 06 INTRODUCTION TO ORACLE DBMS

How the Oracle RDBMs works, Oracle memory structures, Oracle files, Oracle processes, Basic Oracle Database objects, Oracle System privileges, Oracle object privilege roles, and Grants, Backup and Recovery, Sound database object, design Query optimization, keeping current as a DBA, Rollback segments, Locks, Parallel Processing options, Packages, Procedures and triggers, Client Server and Networking, SQL basics and Oracle programming skills.

CUC 1 07 DBASE APPLICATIONS

Windows Dbase, Object Orientation, Designing and Creating Dbase Systems, Working with Catalogs, Data prompt, Macros, Using applications generator, Installing Dbase, Customizing with the template language, Learning how to program reports, Dbase SQL, Concepts and application.

CUC 1 08 WORD PERFECT FOR WINDOWS

Differences between MS-Word and Word Perfect, Advanced features of Word Perfect such as Mathematical typesetting which is easier and faster to handle in Word Perfect than in Word, other advanced features that differentiating Word from Word Perfect, Application areas of Word Perfect not available in Word.

CUC 2 **WEBSITE DEVELOPER EXPERT**

CUC 2 02 **PROGRAMMING IN C, C++**

<p>Course C++ PROGRAM ME: CPN User Certification Examination s</p>			
<p>Course: C++</p>	<p>Course Code NWDE 101</p>	<p>Contact Houses 3/3/10 Teaching practical simultaneously</p>	
<p>Course Specificati on Theoretical Content</p>			
<p>WEEK</p>	<p>General Objective: This course is designed to enable the student efficient, reliable object oriented program in C++</p>		
	<p>Special learning Objective: Computer Programming Language</p>	<p>Teachers Activities</p>	<p>R e s o u r c e s</p>

	<p>1.1 Introducing Computer High Level Language</p> <p>1.2 Explain the advantage of High Level Language</p> <p>1.3 Identity the differences HLL and Low Level Languages</p> <p>1.4 Explain some program development tools such as flowchart pseudo code etc</p> <p>1.5 Draw flowcharts to explain the use of each symbols</p> <p>2.1 Introduction to Object Oriented</p> <p>2.2 Introduction C and C++ Programs Programming Language</p> <p>2.3 Explain the character set of C and C++</p> <p>2.4 Define C and C++ reserved words</p> <p>2.5 Explain some features of C++ such as: Abstract data, types input and output, the result, reuse and extendibility which includes Header files, Late Binding, Inline specification and overloading</p> <p>3.1 Explain classes in C++ such as: Referencing classes and class members, structuring classes, declaring delivered classes, Multiple inheritance constructors and Destructors, static objects</p>	<p>Explain the need for Computer High Level Language</p> <p>Demonstrate the use of program development tools</p> <p>Explain the concept of OOP</p> <p>Make student understand the character of C and C++</p> <p>Explain reserve words with example</p> <p>Assist student to appreciate some features of C++</p> <p>Explain classes available in C++</p>	<p>M a g i c b o a r d / S l i d e s M a g i c b o a r d / S l i d e s M a g i c b o a r d</p>
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CUC 2 02 PROGRAMMING IN JAVA AND DHML

Java Basics, HTML basics, Java applet, Differences between HTML and DHTML, FrontPage express and creation of Web page, Basic structure of HTML, Font, Colour, size, face, heading, body, background and picture, Marquee, links to FTP sites and mail, inserting images on web page, editing HTML code, using Web page Wizard, add comments and symbols, Inserting tables, Inserting tables, setting headers, giving the table a caption and application of applets.

CUC 2 03 WORKING WITH WINDOWS FRONTPAGE 2000

Exploring FrontPage 2000; Working with Page View, Creating Basic Web Pages, Adding features in Web Pages, Creating tables, Frames, Creating Forms, FrontPage components, Adding Multimedia, Cascading Style Sheets, Publishing the Website.

CUC 2 04 PLANNING, DESIGNING, DEVELOPING AND DEPLOYING WEBSITES

Introduction to the Internet, Client Server basics, Electronic Mail, Telnet, FTP, Archie, Gopher, Jughead, and Veronica, WAIS, WWW, Search Engines, HTML, TCP/IP fundamentals, HTML documents usage, Applets and their use in HTML documents the Internet and e-Commerce, Planning, designing, developing and deploying websites.

CUC 2 05 WORKING WITH WINDOWS 2000 EXPLORER AND NESCAFÉ NAVIGATOR

(Includes Network essentials, DHTML, Frames and forms) Windows 2000 basics, Windows 2000 Explorer characteristics and components, Using Explorer to hook up to the Web.

CUC 2 06 e-COMMERCE, e-BANKING AND THE INTERNET TECHNOLOGIES

Theory and application of e-commerce, e-banking, and the Internet technologies, Planning web sites, managing WWW sites, FTP, Mail and News, Site Security, Creating compelling content, Remote Access Service, Seven habits of highly effective Webmasters, Interactive clients and Servers, Database connectivity.

CUC 3 COMPUTER AIDED DESIGN EXPERT

This is also made up of six core courses which will practical architectural, machine design and GIS mapping of an earth or

space with the aid of software and written examination. The courses are:

- CUC 3 01 AUTOCAD
- CUC 3 02 ArchiCAD
- CUC 3 03 Electronic Work Bench (EWB)
- CUC 3 04 Principles of Circuit Design and the Computer as instrument
- CUC 3 05 Introduction to Geography Information Science (GIS)

CUC 3 01 AUTOCAD

PROGRAMME: NCS USER CERTIFICATION EXAMINATIONS			
Course: AUTOCAD	Course Code: NADE101	Contact Hours: 6 hours per week	
Course Specification Computer Aided Design CAD Theoretical Content			

Week	General Objective: To enhance the ability of participants to use CAD for design of prototypes		
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	<p>Special Leaning Objective: Auto CAD Be able to draw objects using EWB Teachers Resources Introduce Auto CAD Starting the merits of use in Auto CAD Auto display menu system Explain the various CAD systems available Defining Auto CAD co-ordinates Specify Angles Specifying points distances using absolute methods and relative coordinates using "@" sing, polar coordinates</p> <p>Limits Expanding & shrinking drawing area Expanding & shrinking area Colour and Line types Loading line types and setting line-type scale factor</p> <p>Layers Zooming and panning Selecting objects</p> <p>3.1 Object shape COSMAP 3.2 Drawing commands including Line, Circle, DONUT, ARCS, SOLID Polyline, Pine</p> <p>4.1 Student Practical Project</p>	<p>Introduce the subject of CAD and their relationship Advantages of the use of CAD How to involve Auto CAD and study menu with students Try typical small drawings with students</p> <p>2.1 Draw typical objects and show expansion and shrinking is done with the students 2.2 Show him layers are turned on and off</p> <p>3.1 Demonstrate OSNAP on the AutoCAD menu using ENDPOINT etc 3.2 Go to command line on the menu and issue the commands</p> <p>4.1 Request the student to under take a practice CAD project for evaluation of transfer of skill</p>	<p>Magic board and flip board</p> <p>Computer with SVGA Monitor and torch pen</p> <p>Ditto</p> <p>Ditto</p> <p>Computer system with LCD Projector and screen</p>
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CUC 3 02 ARCHICAD

Will follow same steps and topics as in CUC 7 1 01 but with special emphasis on how to use ArchiCAD for the design of structure. Differentiate characteristics of AutoCAD from that of ArchiCAD. Factors which should influence the choice of AutoCAD and ArchiCAD for structural design.

CUC 3 03 ELECTRONIC WORK BENCH (EWB)

Application of EWB in industrial electronics engineering design, Benefits of EWB over other types of CAD for Electronic Engineers, Working Environment of EWB Bfile, edit, circuit, analysis, windows help, Application of sources in EWB design e.g. ground, battery, DC current sources, AC voltage source, AC current source, Voltage-controlled, voltage source etc.

Application of Basic components of EWB B connector, Resistor, capacitor, inductor etc.

Application of Diodes B Yener diode, LED, full-wave bridge rectifier

Application of ics, 3-terminal Opamp, 5, 7, 9 terminal Opamp, comparator, phase-locked loop

Mixed Ics, Analog/Digital converter, digital to analog converter, monostable multivibrator, 555 timer.

Digital Ics, 74 XX template etc, Logic Gates, 2-input and Gates, 2-input OR Gates, NOT Gates, NOR and NAND gates, Schmitt-triggered inverter etc.

Application of Digital Half adder, full Adder, RS Flip-Flop etc. application of controls such as voltage differentiator, integrator, gain box, Application of miscellaneous component of the EWB such as fuse write data, netlist component, lossy transmission line, crystal, DC motor, Triode vacuum tube, Understand and apply instruments component of EWB such as multi meter, function generator, oscilloscope, Bode Plotter, Word Generator, Logic Analyzer and Logic converter, Understand how to activate the Simulator, Know how to zoom in and out of your drawing s, Know how to display graphs and create sub-circuit, Know how to use flip vertical, flip horizontal and rotate buttons, produce a finished drawing.

CUC 3 04 PRINCIPLES OF CIRCUIT DESIGN AND THE COMPUTER AS INSTRUMENT

Understand Boolean constants, connectives, theorems, positive and negative logic and American Standard Graphics Symbols.

Know Karnaugh Maps and Flow tables true tables, mapping, network stability in sequential networks, network analysis by flowchart, face conditions.

Understand and invert logic such as Karnaugh Mapping of NAND, three stage NAND networks, and network subfunction.

Understand and-or-invert logic such as packaging the AOI Gate, Karnaugh Mapping for the AOI Gate.

Know OR-invert, Emitter Coupled Logic, e.g. Mapping for NOR, three stage NOR Logic, using ECL circuits, OR-invert Coupled Logic such as Adder-Full No. 1 etc.

CUC 3 05 INTRODUCTION TO GEOGRAPHY INFORMATION SCIENCE AND EARTH-SPACE SCIENCES

Understand the concept of Geographic Information Systems (GIS), Land Information Systems (LIS), Earth Sciences and Space Sciences. The Earth's makeup, minerals, rocks, mapping the earth. The solar system, earth and list moon, earth and sun, the earth in motion, beyond our solar system. Atmosphere and Weather, layers of the Atmosphere, forecasting the weather, climate and seasons, weather and people. Water on the earth, the chemistry of water, Fresh water, the supply of fresh water, oceans and seawater, resources of the ocean, geologic history, plate tectonics, eruptions and quakes, weathering and erosion, glaciers, treasures of the earth, people and the environment, environmental pollution. Protecting our environment. The application of telescope, satellite for training events in space and lonesphere, the role of computers and associated information technology in GIS and space science and technology.

CUC 3 04 DESKTOP PUBLISHING EXPERT

This license will include pre-examination project involving the publishing in electronic form of a book manuscript, which will be drawing, and scanning images, creating specialized pages and colour separation and a written examination.

The course are listed are:

- CUC 4 01 Introduction to Publishing & Print Technology
- CUC 4 02 Sate of the Arts DTP Technology
- CUC 4 03 PageMaker
- CUC 4 01 CorelDraw
- CUC 4 04 Quark Express
- CUC 4 05 MS Publisher

CUC 4 01 INTRODUCTION TO PUBLISHING & PRINT TECHNOLOGY

Basic theories of mass media and the press, Print Technology and production procedure, Pre-press and Desktop publishing, Imaging and production, Introduction to CAD, Web Publishing such as static and dynamic sites for a e-commerce, database and scalable systems for online communities. Knowing of DTP packages such as Publisher, PageMaker, Corel Draw is required.

CUC 4 02 **PAGEMAKER**

Know a brief history of PageMaker and the various available in the software market today. Know how to start PM screens, Page Setup and related dialog box paper size, orientation, page number, double-sided, facing pages, restart page numbering, margin, compose to printer, resolution. Know how to invoke and apply the TOOL PASTE. The Pointer or Selector tool, the Diagonal Line tool, the Perpendicular line tool, the rotate tool, the Rectangular Tool, the Ellipse Tool, the Cropping Tool, Understand the use and application of STYLE PALETTE, COLOUR PALETTE AND THE CONTROL PALETTE Character View Norman, bold, italic, small capitals, large capital, superscript, subscript, font size, leading, tracking, setting width, kerning, base shift, know the use of Paragraph View left align, justify, center align, left indent, first line indent, right indent, space before paragraph, space after paragraph, grid size, align to grid. Know how to manipulate objects, apply button, Proxy, X and Y, W and H, Control palette, Rotation, skewing, reflection, cropping, printer-resolution.

Know how to work with text and Window shade automatic text-flow icon, manual text-flow icon, and semiautomatic text-flow icon. Know the use of GUIDES, margin guides, Column Guides, Ruler Guides.

Understand the availability of utilities and their application additions, find, search document, search story, attributes, change, spelling, index entry, show index, create index, create TOC

Understand the role of Layout and how it is applied in PM View, Guides and rulers, Column guides, Go to pages,

Remove pages, Display Master items, Copy Master Guide

Know the use of type and the control panel font, size, leading, set width, track, type style, type specifications paragraph, indents/tabs, hyphenations, alignment, style, define styles.

An introduction to real world book publishing using PageMaker.

CUC 4 04 **CORELDRAW**

Understand how to use the CorelDraw Screen, Drawing objects, Transforming and shaping objects, Outlining objects and filling objects, Arranging objects, Creating documents. Know how to start CorelDraw, apply user's guide, set up a page, draw objects such as rectangles and ellipses, straight line and circles. Know how to display a new page, constrain the angle of a line, draw curves, draw in Bezier mode, add dimension lines, use dimension roll-up, specify how text is displayed, set line and curve preferences. Know how to access the curves dialog box, create and edit text, add artistic text, add a paragraph text, add symbols from the symbols roll-up. Know how to use the Presets Roll-up

and apply present to an object, record a new preset, add notes to a present, delete a preset. Know how to trace a bitmap, know how to select an object, move object, stretch objects, undo transformations, scale objects, rotate objects, skew objects, repeat and clear transformations. Understand how to shape rectangles and ellipses, zoom in and out of objects, shape curves using the tool, kern text and change its character attributes, shape text and adjust text spacing. Know how to set outline width outline colours, know how to fill the interiors of objects with grays and colours, fill objects with bitmap and full-colour patterns, fill objects with fountain fills, bitmap textures, and PostScript textures. Know how to duplicate and delete objects, move objects to different locations on the page, move objects, use weld, intersection, and trim and work with layers.

Understand how to shape objects using envelope command, add one and two point perspective to objects, blend two objects and blend along a path, extrude an object to give it a three dimensional look, contour and object, draw a PowerLine, fit text to a path and add a lens.

Understand how to open an existing file and save a new one, use the dialog boxes for importing/exporting files and inserting objects and to print a file. Know how to create and apply styles, set up a multi-page document, learn to attach information to objects using the Object data feature, learn how to take full advantage of CorelDraw by customizing its look fee, and usability in the new Preferences dialog box.

CUC 4 05 QUARK EXPRESS

Basic features of Quark Express DTP packages that differentiates it from Publishers, PageMaker and CorelDraw, PageMaker and cropping, Advanced column and formation, Font generation techniques, Imaging features, Newspaper publishing, Text publishing using Quark Express.

CUC 4 06 MS PUBLISHER

Starting MS-Publisher, Choosing design from scratch or the use of Wizards, Using Clip Arts, Drawing in Publisher, Use of Wizards business letters, memos, legal agreements, cards etc. Importations cropping and design page frames. Fonts application in Publisher, Margins, Tables, Columns, Generation of Automatic Monthly or Annual calendars.

CUC 5 PROGRAMMING EXPERT

This is made up of six core modules involving practical object oriented analysis and Design and development of software of national significance. The courses are:

CUC 5 01 Structured/OO Analysis and Design Methodology

- CUC 5 02 Programming in C, C++
- CUC 5 03 Programming in Visual Basic
- CUC 5 04 Programming in Dbase for DOS and Windows
- CUC 5 05 Programming in FoxPro or Delphi

CUC 5 01 STRUCTURED/OO SYSTEMS ANALYSIS AND DESIGN METHODOLOGY

SSADM as internationally accepted software engineering standard, procedure of SSADM problem identification, feasibility studies, analysis, design, coding and implementation, object oriented design; Procedure and application, Prototyping, COCOMO MODEL in computer metrics, Software Management, Software Engineering group dynamics, Analyzing existing Systems, and designing High Level Model of proposed solutions, Effective implementation techniques for software engineering projects, Project Management of software engineering projects.

CUC 5 02 PROGRAMMING IN C, C++

Foundations of object oriented Programming Methodology, starting with C, brief history C's strengths and weaknesses, Borland, MS and Turbo C++. The C++ Compiler, C++ comments > Preprocessor Directive, Data and Variables, Input and output, Calling function, Output with printf (). Printing string literals, Data basics; numeric type data, numeric literal qualifiers. Variables, String data and input gathering, Simple operators, Relational and logic operators, Bitwise operators, Looping, Power with switch, C library function, Pointers, Structure with struct. Allocating memory, Sequential files, Random Access files, Programming in C++; Character set, Polymorphism and reusable components, Building files and compilation.

CUC 5 03 PROGRAMMING IN VISUAL BASIC

OOP and Visual Basic, VB dialects, VB6 and DotNet, ANSI Character set, Data types, Operators, derived math functions, VarType function, OLE container control, Database object, DBEngine object, CheckBox Control, Microsoft Jet Database Engine SQL Data Types. Boolean Data Type, Byte Data Type, #Const Directive, #If.. then ... #Else Directive. Abs Function Absolute Position Property, Action Property (CommonDialog).

Action Property (OLE Container), Activate, Deactivate Events in VB, ActiveForm Property, Add method to Collection Objects, AfterCFoIUpdate event, Afterinsert event, AfterDelete Event, AfterUpdate Event, Align Property of data control. All, Distinct, Distinctrow, TOP Predicates (SQL). AppActivate Statement for an application window, AppendChunk Method for Field Object, AppRunning Property, activate, Hidden, Normal Systems Properties, Array Functions ASC Function. Atn function,

Attributes Property, AutoActivate Property, AutoRedraw Property, AutoShowChildren Property, AutoSize Property, Avg Function (SQL), AutoVerMenu Property etc. ClassModule Object, Clear Method (Clipboard, ComboBox, ListBox, Clip Property, CLng Functions, Close Method (OLE Container) Close statement, Clustered Property, Col, Row Properties, ColAlignment Property, ColContaining Method, CollsVisible Property, Collection Object, Columns Collection, Command function, CompactDatabase Method, Connect Property, Constraint Clause (SQL). CopyQueryDef Method, Cos function, Count Function (SQL), Count Property (Data Access), Starting VB Complex, writing programs on the compiler or any text processor and compiling a running program.

CUC 5 04 PROGRAMMING IN ORACLE

The OOP nature of Oracle DBMs. Suitability for Web programming. Oracle versions and difference, how the Oracle RDBMS Memory structures, Oracle files, Oracle Processes, Basic Oracle Database Objects, Oracle System Privileges, Oracle object privileges. Roles and Grants, Backup and recovery, Sound database object Design, Query optimization, keeping current as a DBA, Rollback segments, locks, Parallel Processing options, Packages Procedures and triggers. Client-Server and Networking, SQL basics and Oracle programming skills. Oracle character set, Oracles polymorphism, reusable components and encapsulation, Programming practically in Oracle.

CUC 5 06 PROGRAMMING IN FOXPRO OR DELPHI

Understanding the Concept of Rapid Applications development using FoxPro or Delphi. Object orientation of FoxPro or Delphi, Polymorphism, reusable components, and encapsulation techniques. Database and object design, object-orientation programming, the Delphi Development Environment, Program components, Data types, expressions, Statements, Procedures and Functions. Objects, Flat file input and output, Units, Dynamic Link Libraries. Anatomy of Components, Delphi controls, Delphi Database controls. Understand SQL and procedure; understand SQL and simple Database Application, Direct Calls to the Borland Database engine. And overview of ReportSmith, know how to manage transactions in Delphi or FoxPro, data Security techniques and integrity. Using interbase and Microsoft SQL Server, Packaging Applications, Database Desktop Background and Overview

CUC 6 SYSTEMS AUDIT EXPERT

This is made up six core courses which will involve practical project of using a CAT tool to investigate a tutored Statement of Account and results stored electronically and forwarded to

examiner and three-hour written examinations. The subjects are:

- CUC 6 01 Auditing & Investigation Techniques
- CUC 6 02 Technologies and Security Policy
- CUC 6 03 Principles of Computer Systems Audit
- CUC 6 04 Advanced Accounting Techniques and Practice
- CUC 6 05 Computer Logic and Programming Skills
- CUC 6 06 Computer Audit Software Tools

CUC 6 01 AUDITING AND INVESTIGATION TECHNIQUES

Methods of Auditing and Investigation of Corporate Accounts of a firms. Substantive testing, Vouching, Audit Reporting, Importance of Audit Reports for corporate survival, Selecting audit Staff and Training. The issue of neutrality and independence of the Audit Team, Transparency of the Audit team and relationship with top management.

CUC 6 02 INTERNET TECHNOLOGIES AND SECURITY POLICY

Brief history of Internet technology and the problem of security, 419 and hacking, Security Techniques available today firewall, biometric approaches and encryption, Weaknesses of these techniques. Corporate security policy particularly internet security.

CUC 6 03 PRINCIPLES OF COMPUTER SYSTEMS AUDIT

Understand the concept of Substantive Testing. Differences between traditional audit and systems audit. Program logic testing, sample data comparison of source document, Pilot run. The use of CAT tools for verifications, checks of Auditability and Control, writing a Systems Audit Report.

CUC 6 04 ADVANCED ACCOUNTING TECHNIQUES PRACTICE

Techniques applied by Chartered Accountants in preparation and presentation of Consolidated Accounts of firms. The understanding of various accounting law as such as statement of source and application of fund, SAS, balance sheet and profit and loss account preparation and their publications. Branch accounts and consolidated accounts. Establishing of Audit Trail, Management Accounting organization and reporting for management decisions. Limited liability vs Public Limited Liabilities and reporting difference and legal requirements.

CUC 6 05 COMPUTER LOGIC AND PROGRAMMING SKILLS

A smartly understanding of basic of some programming language in use such as VB, C++, Java, Corba, Dbase, FoxPro and Delphi. Understanding algorithms and mathematical specifications to enable the Auditor analyze codes and programming logic to identified faulty logic leading to errors in applications, a little

knowledge of data structures, Data Flow Diagrams and Flowcharts.

CUC 6 06 COMPUTER AUDIT SOFTWARE TOOLS

A detailed study and application of one the advance computer audit techniques such as CAT. The benefits of CAT and other advanced auditing tools, Techniques of application and reporting.

CUC 7 PC MAINTENANCE EXPERT

This include:

CUC 7 01 Instrumentation

CUC 7 02 Basic Electronics

CUC 7 03 Computer Architecture & Assembly Language

CUC 7 04 Fault Diagnosis & Trouble Shooting

CUC 7 05 PC Component Configuration and Assembly

CUC 7 06 Operating Systems

CUC 7 01 INSTRUMENTATION

A detailed understanding of the techniques of using instruments to detect machine failure. The use of Analogue and Digital Probes and Oscilloscope. How to read logic gates and techniques of troubleshooting a failed system. Basic electronics principles and their application.

CUC 7 02 BASIC ELECTRONICS

Electric shock, Charge, Current and voltage. Conductors, insulators and semiconductors, Alternating current, Basic tools used in electronics, Wires cables, and flexes. Connectors and circuit boards, types of meters, Measuring current, voltage and resistance, Prototype board, copper strip board, printed circuit board. Resistors and resistance, Capacitors and capacitance, Diodes, Batteries, Logic voltage legels, Logic gares. Combing logic gates, other combination of logic gates, Sequential logic, monostable and astable logic gates. Uses of bistable, Light dependent switch, the buggy drive box. The LED board, the visual display timer, the 555 organ, the LM380 AF amplifier. Passive and active components, Transducers, Soldering, Circuit faults and testing.

CUC 7 03 COMPUTER ARCHITECTURE AND ASSEMBLY LANGUAGE

Identification of different generations of computers in order to study design structure and differences in architecture. Specify assembly language for each generation of PCs, Mini and Mainframe computer. Differences in structures, speed, but registers, memory keyboard, mouse power supply, keyboard and auxiliary storage. A smarty knowledge of Assembly Language

coding. Understanding the architecture of a machine will enhance the ability of the expert to rectify faults. Type of faults identified with particular PC generation and techniques to tackle such problems. Differences in power systems such as XT, AT and ATX power supply models. Sucketing differences on the motherboards, Upgrading considerations say from 486 Pentium difficulties due to BUS, word length, RAM size and solutions, CUC 105 Typing/keyboard skills.

CUC 7 04 FAULT DIAGNOSIS AND TROUBLESHOOTING

Using instrumentation tools such as oscilloscope and multi-meters to diagnose hardware failure. Checking the power unit, using digital probe to check continuity of circuits. Testing the CMOS battery and replacing if dead. Checking voltage output from the power unit. Rectifying printer and keyboard faults, software Diagnosis; failure of operating System; failure of application systems and re-installation. Identifying hard-disk failure. Reformatting hard-disk, Initializing hard disk. Installation of Operating System such as Window 2000 Professional or XP, Installing applications, Setting board speed and its implications, Disassemble and reassembly of PCs.

CUC 7 05 PC COMPONENTS CONFIGURATION AND ASSEMBLY

Selecting components for Computer Assembly Hard disk, RAMs, CD-ROMs, Power Unit and casing, Keyboard, Mouse, and Speaker Systems. Differences between Celeron and MMX boards costs and benefits. Discharging the technician of static that can damage board.

Components, Tools for the assembly screw drivers of different sizes, multi-meters, saw etc. Mounting the board on a casing precautions, inserting voltage supply to each sub-component and voltage rating for hard disk, board, CD-ROMs etc. Interfaces with keyboard, mouse, monitors, and printer. Software/board configuration setting up the CMOS, board speed, and floppy disks etc. Testing techniques for an assembled PC to ensure it will operate properly.

CUC 7 06 OPERATING SYSTEMS

A proper understanding of differences in Operating Systems such as single-user operating systems such as DOS or Windows 95, 98, Network Operating Systems such Windows 2000 Professional and XP. What is the role of operating systems. Role of DOS in maintenance in the face of Windows applications. Relationship between Operating Systems and Internet Browsers.

CUC 8 PERSONAL COMPUTER LOCAL AREA NETWORK EXPERT MODULE

- CUC 8 01 Basic Concepts of Data Communication
- CUC 8 02 Network Designing/Architecture
- CUC 8 03 Network Operating Systems
- CUC 8 04 Structured Cabling
- CUC 8 05 Internetworking
- CUC 8 06 Network Security Management

CUC 8 01 BASIC CONCEPTS OF DATA COMMUNICATION

Introduction basic networking and data communication concepts. Exchanging Information, sharing information, Shearing Software Resources, Preserving and protecting information, Clients, Servers and Peers. Server-based Networks and Domains, Peer Networks, Hybrid Networks, Peer Security Vs. Server Security, Selecting the right network Type. Server types, Network Topology Bus, Star, Ring, Star Bus and Star Ring. Physical Mesh Topology, Network Media Copper, Glass, Air, Radio, Network protocols, Network components signal transmission, Digital signaling, analog signaling, comparing the signaling methods. Bit synchronization, Baseband and broadband transmissions. Network media types cost, installation, bandwidth capacity, Node capacity, Attenuation, Electromagnetic inference, Cable Media Twisted-pair Cable, Coaxial Cable, Fiber-optic Cable, Wireless Media Road Wave Transmission Systems, Microwave Transmission Systems, Infrared Transmission Systems, Network Adapters, Adapters in Abstract, how network adapters work. Configuring Network Adapters, Selecting an Adapter. The OSI Model and Protocol Stacks, Microsoft Networking components within the OSI Framework, how to design a Local Area Network, Remote Access, Modem Technology, Types of Modems, Carriers, Remote Access Software, Introduction to Satellite and Microwave technology.

CUC 8 02 NETWORK DESIGNING/ARCHITECTURE

LAN, MAN, WAN, GAN design and architecture. Topologies, network components, hub, routers, switches, repeaters, bridges, Real work network Ethernet how Ethernet works, 10Mbps Ethernet, 100Mbps Ethernet, Segmentation, Token Ring, FDDI how it works, components, ATM (Asynchronous Transfer Mode) how it works, Configuring network Server. Server Hardware and Operating System, Windows Professional 2000 Server Installation Network Printing, Network Applications email, Components of an E-mail system. Client Server Centralized Computing, Client computing with central File Storage. The Client Server Mode, Configuring Network Clients.

CUC 8 03 STRUCTURE CABLING

Understanding of what structured cabling is all about. Why structure cabling what merits does it provide? Procurement of plastic sheets. Wall breaking and installation of outlines. Adapter structured cabling methods. Organizing cables so that they are not visible, planning position of PCs for ease of connection. Adding structured cabling design during building design and construction.

CUC 8 04 INTERNETWORKING

Internetworking principles and standards internetworking history. Open Systems Interconnection Principles, OSI protocols for Internetworking. Applying Connectivity Devices; to the OSI Model, IEE Project 802, LAN Frame Formats, IEEE Bridging Standards Transparent Bridging Model, Source Routing Method. Source Routing Transport Method, LAN to LAN Internetworking, Transmission Facilities for Internetworks, LAN to WAN Internetworking, TCP/IP Protocols, X25 Protocols, XNS Protocols, Networking Software, Internetworking and interoperability, GATEWAYS, Implementing the interwork.

CUC 8 06 NETWORK SECURITY MANAGEMENT

The Network Administrator, Network software, User Accounts, groups, Documenting the Network, Protecting your Network Environment Security, Virus Protection, Uninterruptible Power Supply, Disaster Recovery, Managing Your Network Environment Monitoring Network Performance, Hardware Upgrade Policy. Firewall and other emerging technology for network security. Basics of Network Troubleshooting, Diagnostic Tools Terminators, Cable Testers, Digital Volt Meters, Protocol Analyzers.

METHOD OF EXAMINATION

Examination for CPN Expert License will be made up of practical project and a 3-hour written examination. Another option, which may be considered, is for each examinee to bring along a battery back-up. Notebook or Laptop will be used to undertake practical work in the presence of a Supervisor; the diskette is labeled with the candidates name, examination number and description of the paper. This is the best option if it will be possible for a student to a purchase of hire a notebook computer.

CPN

COMPUTER LITERACY

CERTIFICATE

CLC 1 **COMPUTER LITERACY CERTIFICATE**

Course Code: **CLC**
Duration: **8 Wks (2 months)**
Lecture: **150 hrs**
Practical: **40 hrs**

Requirements: **WAEC, SSCE, GCE Attempted**

Subjects:

- CLC 1 01 Introduction to Microcomputer Systems
- CLC 1 02 Introduction to Microsoft Windows 2000
- CLC 1 03 Introduction to Microsoft Word
- CLC 1 04 Introduction to Microsoft Excel
- CLC 1 05 Introduction to Microsoft Access
- CLC 1 06 Introduction to Microsoft Internet & E-mail Application

CLC 1 01 **INTRODUCTION TO MICROCOMPUTER SYSTEMS**

Evolution of Computer Generations of computers, State of the Art; the present, Alan Turing; the unknown Genius. Historical review of the computer industry. Mainframe computers, Minicomputers, Microcomputers.

Computers Hardware, Software, Primary storage, Read Only Memory (ROM), Registers, Cache memory, Data representation, Binary representation, Octal Number Systems, Hexadecimal Number system, Digital and Analog computers, Input and output devices Storage Devices.

CLC 1 02 **INTRODUCTION TO MICROSOFT WINDOWS 2000**

History of windows operating systems, Win 3.0, 95, 98, 2000. Installation of Windows 2000. Operating Systems 2000, Windows Desktop. The windows setups, Software installation in windows 2000, Operating of installed software applications, Task bars, Versions of Win 2000, use of Mouse. Creating Shortcuts, the control panel, opening and saving folders, minimize and maximize windows, Recycle bin.

CLC 1 03 **INTRODUCTION TO MICROSOFT WORD**

Only a broad introduction of the topics are necessary at this stage; Create and Print documents, the word window, default settings, what to do when you make an error. Create a New Document, Saving a new document, close a document, exit word. Use the Tab key Autocorrect, Spell Check, Insertion Point Movement, Create a Business Letter, Create a Personal documents, Open a document, Insert and Overtyping Mode, saving changes to a document, Open a document as Read only, As

Undo, Redo, Select and Delete text, Show/hide cores, Open a document, Delete text, Non-breaking space, Insert and Delete Text, Preview a file, Print a file without opening, Print multiple files, file Details, Sort files, Find files. Text Alignment and Enhancement. Format and Edit documents, Additional formatting and Editing, Thesaurus Grammar Check, Find and replace text, Work with multiple documents, macros, display multiple documents. Close and maximize documents, columns and Tables; calculate and sort, Merge main and templates; envelope and labels.

CLC 1 04 INTRODUCTION TO MICROSOFT EXCEL

Topics stated here are taught at introductory level only. Create, save and exit a worksheet start Excel, the Excel window, Excel Menu and toolbars, explore the worksheet using the mouse and keyboard, open a blank workbook, enter labels, make simple corrections and save the workbook, close a workbook exit Excel, Numeric labels and values, Label alignment. Use formulas, format, Copy, Print, use Formulas and Function; Edit Print options, additional formatting and editing working with Workbooks. Use Templates (spreadsheet solution). Logical functions; Autoformat; Protection and Hiding Data, Charting Create columns, line and Pie charts, Change Chart types, Select and Size embedded Charts, Select cells to chart, enable chart editing, Edit Chart text, Create a combination chart, change chart subtype delete and embedded chart, select chart items, change legend position, Print charts, Print embedded chart separately, set chart print options. Set page orientation of printed page. Use data map feature, Edit map and legend, Data map toolbar, Lotus GroupWave applications, Lotus financial modeling capabilities, Lotus suite internet capability.

CLC 1 05 INTRODUCTION TO MICROSOFT ACCESS

These topics are taught to introductory level only. Create a Database form plan a database. Create a Table (Datasheet) Design, Switch Between Table View, Save Datasheet View Open a document Enter records. Enhance a Datasheet, Change document column widths create a form from an existing datasheet enter Records enhance from Datasheet enter records, change Datasheet Column widths, Simple print Hide Datasheet fields. Modify a Datasheet and print. Print with Headers and footers, edit a record, Add and Delete a Record Edit record inter and delete records.

Searching and Sorting a Database find records, Use Wildcards, Find record and replace Data, Sort records multiple sorts, Filter a records subset. Advanced filter/sort. Filter forms, sort a form subset, queries, Create a Query, Save a Query, use a Query,

Create Queries, Rename a Query, enhance and print a Query, Create a Query, Apply a Query, change field format and names, Print a query table, Create a query using Data from Multiple tables, Print a Query table, reports use a Wizard to create a Report. Change and Enhance a report, Change their properties, Create a Report from a Query, Add Report sections and Items, Group items, Add report statistics, Add new table to a Report, create a Database with Database Wizard.

CLC 1 06 INTRODUCTION TO MICROSOFT INTERNET & E-MAIL APPLICATION

The Internet and the WWW. The Internet Explorer/Browser, Origin of the Internet, Client Server Basics, Electronic Mail, Explain the Telnet, Discuss FTP explain Archie, Discuss Gopher, Jughead and Veronica WAIS, Search Engine and HTML Introduction to Websites and their design, Websites Hosting and ISPs

CLC 2 ADVANCED COMPUTE APPLICATION

Course Code: APC
Duration: 6 Months
Lecturers: 300 Hrs (for all the four modules)
Practical: 80 Hrs

Requirements: A pass in CUC

Courses:

CLC 2 01 Computer & Secretariat Practice
CLC 2 02 Computer Desktop Publishing
CLC 2 03 Computer Utilization
CLC 2 04 Computer Operation & Programming

CLC 2 01 COMPUTER & SECRETARIAT PRACTICE

The impact of computers, the Internet and desktop publishing on the secretariat profession. Impact on manual filing and the use of Access and Dbase applications. Computerizing appointments, archiving files, development of electronic filing skills. Computerizing telephone addresses and appointments. Using the Internet for communicating to all staff. Introduction to conventional secretary practice appointment telephone, fax, word processing, filing, control of visitors etc.

Subjects:

CLC 2 01 a Introduction to Computer Method
CLC 2 01 b Introduction to Operating Systems

- CLC 2 01 c MS-Word
- CLC 2 01 d Shorthand
- CLC 2 01 e Communication Skill
- CLC 2 01 f Secretarial/Office Management

CLC 2 01 A INTRODUCTION TO COMPUTER METHOD

The role of computer in modern society, Principles of Information Processing, Information and Communication Technology, Use of Computer packages as a tool for acceleration the automation of corporate functions. Hardware configuration, concept of software, type of computer data processing systems, principles of data transmission, number systems and concept of algorithm and flowcharting, CPU, RAM and ROM, auxiliary memory, Bits nibbles, bytes, word storage size in terms of K. Concept of Software, High Level, Low Level and 4/5th GLs, RAD tools, types of translators, assembler, compiler, interpreter. Basic principles of data transmission, Number systems, binary, octal, decimal, and hexadecimal number systems.

CLC 2 01 B INTRODUCTION TO OPERATING SYSTEMS

The role of Operating System in Computer Applications, types of Operating Systems, Single User, Multi-User, Network Operating Systems, Generations of Operating systems. Early history of Operating Systems, Developments of the early 1960s Time sharing systems, Hardware, Software, Firmware. Process concepts Asynchronous concurrent processes, Deadlock, Storage Management, Virtual Storage organization and management, processor management. Multiprocessing, Auxiliary storage management, File and database systems, Operating Systems Security.

CLC 2 01 C MS-WORD

Create and print documents. The word Window, default settings, what to do when you Make an error, create a new document, saving a new document, close a document, exit word, use the tab key, autocorrect, spell check, insertion point Movement, Create a Business letter, Create a Personal Business letter, The Date feature, Uppercase Mode, Preview a Document.

Open and edit documents, Open a document, Insert and overtype mode, Saving changes to a document, Open a document as Read only, As, Undo, Redo, select and Delete text, Show/Hide codes, Open a document, Delete text, Non-breaking spaces, Insert and Delete Text, Preview a File, Print a File without opening, Print Multiple files, File Details, Sort Files, Find files, Text Alignment and Enhancements, Format and Edit Documents, Additional Formatting and Editing, Thesaurus, Grammar check, Find and Replace text, Work with multiple documents, macros,

display multiple documents, Close and maximize documents, Columns and Tables; calculate and sort, Merge main and data source documents, Prepare envelopes and labels while merging, Clip art and templates; envelope and labels.

CLC 2 01 D SHORTHAND

History and use of Shorthand for reporting. Pitman and Gregg models, Study of sound and phonetics as basis for the development of Pitman's characters, Vowels, Phrases and advanced phraseography. Taking dictations and translation of written shorthand scripts into English. Techniques for increasing shorthand speed, Techniques for improving readability of scripts, regular practice

CLC 2 01 E COMMUNICATION SKILL

Introduction to English Grammar, Essay writing, Report Writing, writing business correspondence, report of on going projects sales reports, engineering project reports; feasibility studies reporting.

CLC 2 01 F SECRETARIAL/OFFICE MANAGEMENT

The role of a secretary in the effective organization of an office, Managing staff, Representing the boss effectively, controlling visitors, effective file organization, effective telephone and computing skills. Recording and remembering appointments, document production and reprography, writing letters, memos and reports for the boss.

CLC 2 02 COMPUTER DESKTOP PUBLISHING

Pre-press production and cost saving in corporate printing using the tools of DTP. What DTP means and its application, the limitations of DTP. Tools of DTP Word, Excel, Access; the real tools PageMaker, CorelDraw, Publisher, Quark Express. A detailed study and applications of these tools should form the main fulcrum of this syllabus.

Subjects:

CLC 2 02	a	Introduction to Computer Method
CLC 2 02	b	Introduction to Operating System
CLC 2 02	c	MS-Word
CLC 2 02	d	PageMaker
CLC 2 02	e	CorelDraw
CLC 2 02	f	PowerPoint
CLC 2 02	g	Communication Skill
CLC 2 02	h	MS-Access

CLC 2 02 A INTRODUCTION TO COMPUTER METHOD

The role of computer in modern society, Principles of Information Processing, Information and Communication Technology, Use of Computer packages as a tool for acceleration the automation of corporate functions. Hardware configuration, concept of software, type of computer data processing systems, principles of data transmission, number systems and concept of algorithm and flowcharting, CPU, RAM and ROM, auxiliary memory, Bits nibbles, bytes, word storage size in terms of K. Concept of Software, High Level, Low Level and 4/5th GLs, RAD tools, types of translators, assembler, compiler, interpreter. Basic principles of data transmission, Number systems, binary, octal, decimal, and hexadecimal number systems.

CLC 2 02 B INTRODUCTION TO OPERATING SYSTEM

The role of Operating System in Computer Applications, types of Operating Systems, Single User, Multi-User, Network Operating Systems, Generations of Operating systems. Early history of Operating Systems, Developments of the early 1960s Time sharing systems, Hardware, Software, Firmware. Process concepts Asynchronous concurrent processes, Deadlock, Storage Management, Virtual Storage organization and management, processor management. Multiprocessing, Auxiliary storage management, File and database systems, Operating Systems Security.

CLC 2 02 C MS-WORD

Create and print documents. The word Window, default settings, what to do when you Make an error, create a new document, saving a new document, close a document, exit word, use the tab key, autocorrect, spell check, insertion point Movement, Create a Business letter, Create a Personal Business letter, The Date feature, Uppercase Mode, Preview a Document.

Open and edit documents, Open a document, Insert and overtype mode, Saving changes to a document, Open a document as Read only, As, Undo, Redo, select and Delete text, Show/Hide codes, Open a document, Delete text, Non-breaking spaces, Insert and Delete Text, Preview a File, Print a File without opening, Print Multiple files, File Details, Sort Files, Find files, Text Alignment and Enhancements, Format and Edit Documents, Additional Formatting and Editing, Thesaurus, Grammar check, Find and Replace text, Work with multiple documents, macros, display multiple documents, Close and maximize documents, Columns and Tables; calculate and sort, Merge main and data source documents, Prepare envelopes and labels while merging, Clip art and templates; envelope and labels.

CLC 2 02 D PAGEMAKER

Differentiate PageMaker from Word Processing package; understand the role of PageMaker in page design, newspapers, textbooks, magazine design, columns, tables. Creating of graphic images, importation and exportation of texts and graphics from PageMaker to other applications. Grafting text and images. Measuring in design using PageMaker.

CLC 2 02 E CORELDRAW

Differentiate CorelDraw from PageMaker and Word Processing packages. Learn how to use CorelDraw for design and development of Graphics and images. Learn how to import graphics and text from other applications environment. Be able to publish articles, journals and book using CorelDraw and a suite of other applications.

CLC 2 02 F POWERPOINT

Learn how to use PowerPoint to make academic and professional presentations. Learn how to import texts and graphs from other environment like CorelDraw and PageMaker, to make up a good presentation. Animation techniques in PowerPoint, Timing of Presentation.

CLC 2 02 G COMMUNICATION SKILL

Introduction to English Grammar, Essay writing, Report Writing, writing business correspondence, report of on going projects sales reports, engineering project reports; feasibility studies reporting.

CLC 2 02 H MS-ACCESS

Create a Database form plan a database. Create a Table (Datasheet) Design, Switch Between Table View, Save Datasheet View Open a document Enter records. Enhance a Datasheet, Change document column widths create a form from an existing datasheet enter Records enhance from Datasheet enter records, change Datasheet Column widths, Simple print Hide Datasheet fields. Modify a Datasheet and print. Print with Headers and footers, edit a record, Add and Delete a Record Edit record inter and delete records.

Searching and Sorting a Database find records, Use Wildcards, Find record and replace Data, Sort records multiple sorts, Filter a records subset. Advanced filter/sort. Filter forms, sort a form subset, queries, Create a Query, Save a Query, use a Query, Create Queries, Rename a Query, enhance an print a Query, Create a Query, Apply a Query, change field format and names, Print a query table, Create a query using Data from Multiple tables, Print a Query table, reports use a Wizard to create a

Report. Change and Enhance a report, Change their properties, Create a Report from a Query, Add Report sections and Items, Group items, Add report statistics, Add new table to a Report, create a Database with Database Wizard.

CLC 2 03 **COMPUTER UTILIZATION**

The Computer System and Data Processing, File creation, File security, Backup techniques. Library storage of files on magnetic files, Staff control and maintenance of Data Processing Standards. Computer Centre Security, Virus Protection.

- CLC 2 03 a Introduction to Computer Method
- CLC 2 03 b Introduction to Operating System
- CLC 2 03 c Introduction to Programming
- CLC 2 03 d MS-Word
- CLC 2 03 e MS-Excel
- CLC 2 03 f MS-Access
- CLC 2 03 g Algebra & Logical
- CLC 2 03 h Communication Skill

CLC 2 03 A **INTRODUCTION TO COMPUTER METHOD**

These are the introductory level only. The role of computer in modern society, Principles of Information Processing, Information and Communication Technology, Use of Computer packages as a tool for acceleration the automation of corporate functions. Hardware configuration, concept of software, type of computer data processing systems, principles of data transmission, number systems and concept of algorithm and flowcharting, CPU, RAM and ROM, auxiliary memory, Bits nibbles, bytes, word storage size in terms of K. Concept of Software, High Level, Low Level and 4/5th GLs, RAD tools, types of translators, assembler, compiler, interpreter. Basic principles of data transmission, Number systems, binary, octal, decimal, and hexadecimal number systems.

CLC 2 03 B **INTRODUCTION TO OPERATING SYSTEM**

The role of Operating System in Computer Applications, types of Operating Systems, Single User, Multi-User, Network Operating Systems, Generations of Operating systems. Early history of Operating Systems, Developments of the early 1960s Time sharing systems, Hardware, Software, Firmware. Process concepts Asynchronous concurrent processes, Deadlock, Storage Management, Virtual Storage organization and management, processor management. Multiprocessing, Auxiliary storage management, File and database systems, Operating Systems Security.

CLC 2 03 C **INTRODUCTION TO PROGRAMMING**

Begging programming, why programming, what programmers do not do. The programming process. Constructing flowcharts and Data Flow Diagrams, Decision Trees and Tables. Study of programming logic, introduction to systems analysis and design. Introduction to proceduration language and object oriented languages, Basic, Pascal, Fortran, c; Visual Basic, C++ and Java, Writing simples/short but working programs in these languages.

CLC 2 03 D **MS-WORD**

Create and print documents. The word Window, default settings, what to do when you Make an error, create a new document, saving a new document, close a document, exit word, use the tab key, autocorrect, spell check, insertion point Movement, Create a Business letter, Create a Personal Business letter, The Date feature, Uppercase Mode, Preview a Document.

Open and edit documents, Open a document, Insert and overtype mode, Saving changes to a document, Open a document as Read only, As, Undo, Redo, select and Delete text, Show/Hide codes, Open a document, Delete text, Non-breaking spaces, Insert and Delete Text, Preview a File, Print a File without opening, Print Multiple files, File Details, Sort Files, Find files, Text Alignment and Enhancements, Format and Edit Documents, Additional Formatting and Editing, Thesaurus, Grammar check, Find and Replace text, Work with multiple documents, macros, display multiple documents, Close and maximize documents, Columns and Tables; calculate and sort, Merge main and data source documents, Prepare envelopes and labels while merging, Clip art and templates; envelope and labels.

CLC 2 03 E **MS-EXCEL**

These topic are taught at the advanced level. Create a Database form plan a database. Create a Table (Datasheet) Design, Switch Between Table View, Save Datasheet View Open a document Enter records. Enhance a Datasheet, Change document column widths create a form from an existing datasheet enter Records enhance from Datasheet enter records, change Datasheet Column widths, Simple print Hide Datasheet fields. Modify a Datasheet and print. Print with Headers and footers, edit a record, Add and Delete a Record Edit record inter and delete records.

Searching and Sorting a Database find records, Use Wildcards, Find record and replace Data, Sort records multiple sorts, Filer a records subset. Advanced filter/sort. Filter forms, sort a form subset, queries, Create a Query, Save a Query, use a Query, Create Queries, Rename a Query, enhance an print a Query,

Create a Query, Apply a Query, change field format and names, Print a query table, Create a query using Data from Multiple tables, Print a Query table, reports use a Wizard to create a Report. Change and Enhance a report, Change their properties, Create a Report from a Query, Add Report sections and Items, Group items, Add report statistics, Add new table to a Report, create a Database with Database Wizard.

CLC 2 03 F MS-ACCESS

Topics stated here are taught at introductory level only. Create, save and exit a worksheet start Excel, the Excel window, Excel Menu and toolbars, explore the worksheet using the mouse and keyboard, open a blank workbook, enter labels, make simple corrections and save the workbook, close a workbook exit Excel, Numeric labels and values, Label alignment. Use formulas, format, Copy, Print, use Formulas and Function; Edit Print options, additional formatting and editing working with Workbooks. Use Templates (spreadsheet solution). Logical functions; Autoformat; Protection and Hiding Data, Charting Create columns, line and Pie charts, Change Chart types, Select and Size embedded Charts, Select cells to chart, enable chart editing, Edit Chart text, Create a combination chart, change chart subtype delete and embedded chart, select chart items, change legend position, Print charts, Print embedded chart separately, set chart print options. Set page orientation of printed page. Use data map feature, Edit map and legend, Data map toolbar, Lotus Groupware applications, Lotus financial modeling capabilities, Lotus suite internet capability.

CLC 2 03 G ALGEBRA & LOGICAL

Set, real Numbers, properties of Real Number. Algebra of Polynomials; properties of positive. Integral exponents, Polynomials, products of Polynomials factoring polynomials. Algebra of fractions, rational expression, addition and subtraction of fractions, multiplication and division of fractions, complex fractions, division of polynomials. Exponents and Radical zero and negative exponents, scientific notation, rational exponents, radical, and complex numbers. First degree equations and inequalities in one variable, quadratic equations and inequalities, Cartesian coordinate system, Relations and functions, logarithms. Systems of equations, Geometry, Sequences progressions and binomial theorem, Logic; format principles of reasoning, criteria of validity in thought and demonstration. Basic principles and applications of truth table, the relationships of propositions, Logic in computer programming.

CLC 2 03 H **COMMUNICATION SKILL**

English Grammar, Essay writing, Report Writing, writing business correspondence, report of on going projects sales reports, engineering project reports; feasibility studies reporting.

CLC 2 04 **COMPUTER OPERATION & PROGRAMMING**

Operation of Data processing center. The staff and control structure, distribution of Jobs and control, Control totals. The Networked DPC, Economic of Centralized printing, the Human User of Computing. Storage devices secondary storage, magnetic tape, Magnetic disk, file organization, mass storage. Beginning programming, why programming, What programming do and do not do. The programming process. Constructing flowcharts and Data Flow Diagrams, Decision trees and tables, Study of programming logic, Introduction to systems analysis and design. Introduction to proceduration languages and object oriented languages. Basic , Pascal, Fortran, C; Visual basic, C++ and Java. Writing simple but working programs in these languages.

Subjects:

CLC 2 04	a	Introduction to Computer Method
CLC 2 04	b	Introduction to Operating System
CLC 2 04	c	Introduction to Programming
CLC 2 04	d	MS-Word
CLC 2 04	e	MS-Excel
CLC 2 04	f	MS-Access
CLC 2 04	g	Algebra & Logical
CLC 2 04	h	Communication Skill

CLC 2 04 A **INTRODUCTION TO COMPUTER METHOD**

The role of computer in modern society, Principles of Information Processing, Information and Communication Technology, Use of Computer packages as a tool for acceleration the automation of corporate functions. Hardware configuration, concept of software, type of computer data processing systems, principles of data transmission, number systems and concept of algorithm and flowcharting, CPU, RAM and ROM, auxiliary memory, Bits nibbles, bytes, word storage size in terms of K. Concept of Software, High Level, Low Level and 4/5th GLs, RAD tools, types of translators, assembler, compiler, interpreter. Basic principles of data transmission, Number systems, binary, octal, decimal, and hexadecimal number systems.

CLC 2 04 B **INTRODUCTION TO OPERATING SYSTEM**

The role of Operating System in Computer Applications, types of Operating Systems, Single User, Multi-User, Network Operating Systems,

Generations of Operating systems. Early history of Operating Systems, Developments of the early 1960s Time sharing systems, Hardware, Software, Firmware. Process concepts Asynchronous concurrent processes, Deadlock, Storage Management, Virtual Storage organization and management, processor management. Multiprocessing, Auxiliary storage management, File and database systems, Operating Systems Security.

CLC 2 04 C INTRODUCTION TO PROGRAMMING

Begging programming, why programming, what programmers do not do. The programming process. Constructing flowcharts and Data Flow Diagrams, Decision Trees and Tables. Study of programming logic, introduction to systems analysis and design. Introduction to proceduration language and object oriented languages, Basic, Pascal, Fortran, c; Visual Basic, C++ and Java, Writing simples/short but working programs in these languages.

CLC 2 04 D MS-WORD

Create and print documents. The word Window, default settings, what to do when you Make an error, create a new document, saving a new document, close a document, exit word, use the tab key, autocorrect, spell check, insertion point Movement, Create a Business letter, Create a Personal Business letter, The Date feature, Uppercase Mode, Preview a Document.

Open and edit documents, Open a document, Insert and overtype mode, Saving changes to a document, Open a document as Read only, As, Undo, Redo, select and Delete text, Show/Hide codes, Open a document, Delete text, Non-breaking spaces, Insert and Delete Text, Preview a File, Print a File without opening, Print Multiple files, File Details, Sort Files, Find files, Text Alignment and Enhancements, Format and Edit Documents, Additional Formatting and Editing, Thesaurus, Grammar check, Find and Replace text, Work with multiple documents, macros, display multiple documents, Close and maximize documents, Columns and Tables; calculate and sort, Merge main and data source documents, Prepare envelopes and labels while merging, Clip art and templates; envelope and labels.

CLC 2 03 E MS-EXCEL

These topic are taught at the advanced level. Create a Database form plan a database. Create a Table (Datasheet) Design, Switch Between Table View, Save Datasheet View Open a document Enter records. Enhance a Datasheet, Change document column widths create a form from an existing datasheet enter Records enhance from Datasheet enter records, change Datasheet Column widths, Simple print Hide Datasheet fields.

Modify a Datasheet and print. Print with Headers and footers, edit a record, Add and Delete a Record Edit record inter and delete records.

Searching and Sorting a Database find records, Use Wildcards, Find record and replace Data, Sort records multiple sorts, Filter a records subset. Advanced filter/sort. Filter forms, sort a form subset, queries, Create a Query, Save a Query, use a Query, Create Queries, Rename a Query, enhance an print a Query, Create a Query, Apply a Query, change field format and names, Print a query table, Create a query using Data from Multiple tables, Print a Query table, reports use a Wizard to create a Report. Change and Enhance a report, Change their properties, Create a Report from a Query, Add Report sections and Items, Group items, Add report statistics, Add new table to a Report, create a Database with Database Wizard.

CLC 2 03 F MS-ACCESS

These topics are taught at the advanced level. Create, save and exit a worksheet start Excel, the Excel window, Excel Menu and toolbars, explore the worksheet using the mouse and keyboard, open a blank workbook, enter labels, make simple corrections and save the workbook, close a workbook exit Excel, Numeric labels and values, Label alignment. Use formulas, format, Copy, Print, use Formulas and Function; Edit Print options, additional formatting and editing working with Workbooks. Use Templates (spreadsheet solution). Logical functions; Autoformat; Protection and Hiding Data, Charting Create columns, line and Pie charts, Change Chart types, Select and Size embedded Charts, Select cells to chart, enable chart editing, Edit Chart text, Create a combination chart, change chart subtype delete and embedded chart, select chart items, change legend position, Print charts, Print embedded chart separately, set chart print options. Set page orientation of printed page. Use data map feature, Edit map and legend, Data map toolbar, Lotus GroupWave applications, Lotus financial modeling capabilities, Lotus suite internet capability.

CLC 2 03 G ALGEBRA & LOGICAL

Set, real Numbers, properties of Real Number. Algebra of Polynomials; properties of positive. Integral exponents, Polynomials, products of Polynomials factoring polynomials. Algebra of fractions, rational expression, addition and subtraction of fractions, multiplication and division of fractions, complex fractions, division of polynomials. Exponents and Radical zero and negative exponents, scientific notation, rational exponents, radical, and complex numbers. First degree equations and inequalities in one variable, quadratic equations and inequalities,

Cartesian coordinate system, Relations and functions, logarithms. Systems of equations, Geometry, Sequences progressions and binomial theorem, Logic; format principles of reasoning, criteria of validity in thought and demonstration. Basic principles and applications of truth table, the relationships of propositions, Logic in computer programming.

CLC 2 03 H COMMUNICATION SKILL

Advance topics and application of Essay writing, Report Writing, writing business correspondence, report of on going projects sales reports, engineering project reports; feasibility studies reporting, Corporate Finance analysis reports, constancy reports of the overall health of the organization.

COMPUTER AFFILIATE

EXAMINATION

2005

Escape key, F1, F2, ..., F5

Define

i. Commands

Parameters

Switch

Default

Examples

D. MS-DOS Commands

i. Definition & Examples

Internal

External

E. Treat the following commands under

i. Type

Purpose

Syntax

Define syntax Parameters

Examples CUC 3

A. COMMANDS FOR: MANAGING DEVICE

TIME

DATE

VER

CLS

SYS

B. MANAGING FILES

DIR

DEL

TYPE

COPY

COMP

RENAME OR REN

ERASE

C. MANAGING DISKETTE

Formatting

Checking Diskette for formatted size

Disk copying

Disk comparing

Xcopy, copy diskettes

Backing up diskettes

Structures and case of diskettes

D. MANAGING FIXED DISK

BACKUP

RESTORE

ATTRIB

E. **TREE OF A FILE**

CD-CHDIR

MD-MKDIR

RED-RMDIR

TREE

PATH

VI. **COMPUTERS AND THE SOCIETY**

Application of Computer to different areas of Human endeavors:
Education, Health, Industry, Telecommunication, Military, Government
and Business etc.

CAE 2 THE USE OF PACKAGES

Word Processing Section

Level 1 Objectives

On completion the student should be able to:

Prepare a word processing systems for use

Recognize and respond to simple error message and prompts

Insert paper into tractor or friction –fed printer ready for use

Use the appropriate commands to start a new document ready for text to be entered.

Use the cursor control key to move up, down, left and right in the text

Use the appropriate keys to scroll text horizontally and vertically to see the entire document

Inserting and deleting characters, word and lines using the appropriate commands provided.

Proof-read a document on the screen and edit it by overwriting characters, words and line as required.

Use all the keys and combinations of keys on query keyboard as required

Identify the advantages and limitations of word processing

Identify applications which are appropriate to the use of word processing e.g. contracts reports, standard letters, etc

Save a document to an appropriate storage medium

Reload a stored document

Produce a printed copy of the document

Enter text and describe the importance of the word wrap around and page break/page wrap around screen aides.

Level 2 objectives

On completion, the student should be able to:

Save a corrected version of previously saved document

Explain the screen layout including status and ruler lines

State program defaults or the appropriate use of commands to establish left and right margins, justifications, line spacing, and page length

Edit key by creating a new paragraph with a different layout, edit text by merging two paragraphs into one as required

Edit the complete text by using the search and replace command to find and replace word with an alternative word.

Create file names according to a selected word with an alternative word

Use the appropriate commands to call up the disk directory, make backup copies of important documents, merge two or more text documents to make one final document explain possible differences between the screen version of a document and the final hard-copy, hence explain the advantages of wysiwyg.

Be able to describe the main methods of file organization, recognize characters, fields (alphabetic, numeric and alphanumeric), records and

files, explain the term key field. Explain the relationship between master file in transaction file.

Distinguish between serial and random retrieval of information from files

Explain the relationship between methods of file organization and storage

State what is meant by each of the following processes and explain why each is necessary e.g. Sorting, updating, merging and searching

Understand the concept of a database be aware of any database available to the general public and their contents. Understand that it is necessary to maintain control for the security data. Understand that it is necessary to prevent loss of data. Identify physical hazards which may cause loss of data stored on magnetic media.

Identify potential human causes of loss of data

Describe methods of preventing loss of data; the grandparent/parent/child technique and file back-ups

Understand that it is necessary to prevent unauthorized access to files know why it is necessary to prevent unauthorized access to files e.g. Maintenance of personal privacy and prevention of corruption of data.

Know methods of preventing unauthorized access of files e.g. physical protection and use passwords.

B. Spreadsheets

Level 1 Objectives

Define the terms 'label', 'numeric', and 'formula'

Load a spreadsheets

Select and load a specific spreadsheet data file

Access available commands

Clear the spreadsheet

Move the cursor to an adjacent cell

Respond appropriately to program prompts

Identify appropriate row and column titles

Identify the cell-type for a given cell

State the width of a specified column

Amend the data format within a cell to display 'cash' format

Amend the data format within a cell to display 'integer; format

Replace existing data in a given cell

Save an edited file under an existing file name

Save an edited file under a new file name

Enter the contents of a cell as a formula to provide for addition, subtraction, multiplication, division, and percentages

Use the summation function to add a group of cells (column or row)

Print out the spreadsheet

Move the cursor directly to a specified cell

Level 2 Objectives

Explain the operation of a window

Respond to error message resulting from mistakes by the user

State the format specified for a given cell

Amend the data format within a cell to left or right justify its contents.
Amend the data format within a cell and display 'real' formats to a specified numbers of places
Edit and correct with reference to a hard-copy
Copy one cell to another
Replicate a formula through a group of cells correctly
Change the width of a column
Print a specific part of the spreadsheet
Control a specific part of the spreadsheet
Insert and delete rows and columns into or from an existing *8* spreadsheet go to original spreadsheet
Identify the uses of spreadsheet for numerical analysis, financial and non-financial applications
Explain how spreadsheets provide a useful analytical tool particularly for what if situations
Compare spreadsheets with manual systems with regards to editing recalculation, automatic calculation and speed of use.

C. Database Management Systems

Level 1 Objectives

Explain the meaning of a 'data record'
Explain the term 'field'
Give examples of fixed and variable length records
Classify data as alphanumeric, alphabetic or numeric
Load a database application package
Load a specific database file for immediate access
Identify the field names of the records in database file
Identify the data type and length of a given field
Add a given record to an existing file
Display and edit selected fields
Define a file as a set of records
Define the field name, data type, and length of any given field in a selected record from database file.

Level 2 objectives

Explain the terms 'fixed' and 'variable' length records
Explain the terms 'menu driven' and 'command driven' software
Define a single condition search for a numeric and for an alphanumeric file
Print a list of records matched by a single condition search
Describe how an index is used to assist record retrieval
Explain that the maximum length of fields need to be declared in order for memory to be reserved.
Define a sort criterion for a specified file
Sort the records on a specified field
Print a sorted list of all the records in the file

Define a multiple condition search for a specified range of items
Be able to generate a data dictionary

CAE 03 **COMPUTER OPERATIONS**

Overview of EDP environment

Introduction to computer systems and informational technology

Computer files: purpose, elements of a file, type of file, file organization methods, storage media and devices, processing activities, vulnerability of file.

Modes of processing/operation: batch, on-line, time-sharing, real-time, distributed processing, networking

EDP organogram

Improper/fraudulent input

Software/program abuse

Data security/control

Manual Controls

Document scrutiny

Verification of document entries

Data Preparation Controls

Keyboard data entry

O. C. R.

M. I. C. R

Validation Checks

Presence check

Range check

Character check

Format check

Reasonableness check

Check digits

Batch Controls

Batching

Batch numbering

Batch registers

Batch total

Data preparation of batches

Reconciliation

File Controls

File storage procedures

File identification procedures

File reconstruction procedures

Backup arrangements and file precautions

Data encryption

Data compression

Access controls
Operations controls
Database controls
Output controls
Systems development and programming controls
Computer virus
Administrative controls

CAE 04 INTRODUCTION TO MATHEMATICS

SYLLABUS	NOTES
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<p>Number and Numeration</p> <p>Number Bases</p> <p>Indices</p> <p>Logarithm</p> <p>Percentage error</p> <p>Sequences</p> <p>A.P. and G. P.</p> <p>Sets</p> <p>B. Algebraic Processes</p> <p>(i) Solution of equations Linear in one variable Simultaneous linear in two variable Change of subject of a formula</p>	<p>Binary number only. Including significant figures. Approximation should be realistic e.g. a road not measured correct to the nearest cm.</p> <p>Laws of indices. Numbers in standard form e.g. $375.3 = 3.753 \times 10^2$ $0.00353 = 3.53 \times 10^{-3}$ Simple examples only negative and fractional indices</p> <p>Relationship between indices and logarithms e.g. $Y = 10^k = k = \log 10^x$ Basic rules of logarithms i.e. $\log 10^{(pq)} = \log 10^p \times \log 10^q$ $\log 10^{(p/q)} = \log 10^p - \log 10^q$ $\log 10^{pn} = n \log 10^p$</p> <p>Use of tables of logarithms. Base 10 logarithms and antilogarithm tables. Calculate involving multiplication, division, powers and square roots, use of logarithm tables in problems on compound interest, investment and annuities etc.</p> <p>Determine the nth term of a given sequence. Simple cases only.</p> <p>The notation U_n and the 'nth' of a sequence.</p> <p>Idea of set, universal set, finite and infinite sets, subsets, empty sets (Null sets), disjoint sets. Idea and notation for union, intersection and complement of sets. And the use of Venn diagrams. Solution of practical problems involving classification, and use of Venn Diagram</p>
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<p>Variation</p>	<p>Solve the equation for the letter which is to a formula become the subject</p>
<p>Factorization of Quadratic expression</p>	<p>Direct, inverse, partial and joint variations.</p>
<p>Solution of quadratic equations</p>	<p>Applications to simple practical problems of the form $ax^2 + bx + c$</p>
<p>Graphs of quadratic expressions</p>	<p>Using $ab = 0$ i.e. $a = 0$ or $b = 0$, by completing the square and use of formula. Include construction of quadratic equations with given roots.</p>
<p>Graphs of linear inequalities in one and two variable</p>	<p>Coordinates of a point, tables of values, Drawing given quadratic graphs and obtaining roots from graphs. Graphical solution of a pair of equations of the form $y = x^2 + 5x + 6$ to solve $x^2 + 5x + 4 = 0$.</p>
<p>Operations on algebraic fractions With monomial Denominators</p>	<p>Drawing of a target to determine gradient. Application of a solution of quadratic Expression in practical problems Simple practical problems.</p>
<p>With binomial denominators</p>	<p>Simple cases only e.g. $(\frac{1}{u}) + (\frac{1}{v}) = (v + u)/uv$ ($u \neq 0$ and $v \neq 0$)</p>
<p>Menstruation</p>	<p>Simple cases only e.g. $\frac{1}{(u + a)} + \frac{1}{(v + b)}$ $= (u + v + a + b)/(u + a)(v + b)$ Where a, b are constants, values for which a fraction is not defined e.g.</p>
<p>Length and perimeters Use of Pythagoras theorem to determine lengths, attitudes and distance</p>	<p>$\frac{1}{(x + 3)}$ is not defined for $x = -3$</p>
<p>Length of arcs circles, perimeters of section and segments</p>	<p>Angle distance along lines of altitudes and longitudes.</p>

<p>Latitude and longitude (b) Areas</p> <p>Triangles and special quadrilateral including special quadrilateral triangles</p> <p>Circles, sectors and segments of circles</p> <p>Surface areas of solids</p> <p>(c) Volumes</p> <p>Volumes of solids</p>	<p>Area of similar figures include area of triangles is $\frac{1}{2}$ base * height and $\frac{1}{2}$ (absinc)</p> <p>Relationship between the sector of a circle and the surface area of a cone e.g. cube, cuboids, cylinder, right triangular, primes spheres and cones.</p> <p>Volumes of compound shapes</p>
<p>(D) Plane Geometry</p> <p>Angles at a point</p> <p>Angles at a point and up to 360°</p> <p>Adjacent angles on a straight line are supplementary</p> <p>Vertically opposite angles are equal</p> <p>Angles and intercepts parallel lines</p> <p>Alternate angles are equal</p> <p>Corresponding angles are equal</p> <p>Interior opposite angles are supplementary</p> <p>Intercept theorem</p> <p>Triangles and other polygons</p> <p>The sum of the angles of a triangle is 2 right angles</p> <p>The exterior angles of a triangle equals the</p>	<p>The results of the theorems must be known but the proofs are required, except those marked with * (asterisks). The degree as a unit of measure, Acute, obtuse, reflex angels.</p> <p>Application to proportional division of a line segment.</p>

<p>sum of the two interior opposite angles.</p> <p>Congruent triangles</p> <p>Properties of special triangles, isosceles, equilateral right angled</p> <p>Properties of special quadrilaterals, parallelogram, rhombus rectangle square, trapezium.</p> <p>Properties of similar triangles</p> <p>The sum of the angles of a polygon</p> <p>Property of exterior angles of polygon</p> <p>Parallelograms on the same base and between the same parallels are equal in area.</p> <p>Circles</p> <p>Chords</p> <p>The angle which an arc of a circle subtends at the center is twice that which it subtends at any point on the remaining part of the circumference</p> <p>Any angle subtended at the circumference by a diameter is a right angle.</p> <p>Angles in opposite segment.</p> <p>Supplement and have the same segment are equal.</p>	<p>Conditions to be known but proofs not require. Rotation, translations, reflection, and lines of symmetry to be used. Use symmetry where applicable.</p> <p>Equal angular properties and ratio of sides and areas</p> <p>Angles subtended by chords in a circle, at the center of a circle. Perpendicular bisectors of chords.</p>
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Angles in opposite segments are supplementary

Perpendicularity of tangent and radius

If a straight line touches a circle and from the point of contact a chord is drawn, each angle which this chord makes with the tangent is equal to the alternate segment.

Construction

Bisector of angles and line segments

Line parallel or perpendicular to given line

An angle of 60° , 45° , 30° and angle equal to a given angle

Triangle and quadrilaterals from sufficient data

Loci

Knowledge of the loci listed below and their intersection in 2 dimensions.

Points at a given distance from a given point

Point equidistant from two given points

Points equidistant from two given straight lines.

Points at a given distance from a given straight line.

E. Trigonometry

Sine, cosine, tangent of an angle

Consider parallel and intersecting lines.

Angle from 0° to 360° related to the unit circle.

Definitions use of tables trigonometric

<p>Angles of elevation and depression</p> <p>Bearings Graphs of sine's and cosine</p> <p>F. Statistics Frequency distribution Pie charts, bar and frequency polygons</p> <p>Means, median and mode</p> <p>Cumulative frequency curve</p> <p>Measure of dispersion range, inter quartile range, mean deviation and standard deviation</p> <p>G. Probability Experimental and theoretical probability</p> <p>Addition and multiplication of probability</p>	<p>rations of 30°, 54° and 60°.</p> <p>Easy problems only</p> <p>Simple examples involving calculations of lengths and angles. Sine and cosine rules may be used but their proofs are not required. $0 < x < 360^{\circ}$</p> <p>Reading and drawing simple inferences from graphs and interpretation of data in histograms.</p> <p>For both discrete and grouped, data, (exclude unequal class interval) charts, histograms.</p> <p>Use of an assumed mean is acceptable but not required.</p> <p>Median, quartiles and percentiles</p> <p>Simple examples only. Use of standard deviation in practical problems.</p> <p>Include equally like events e.g. probability of throwing a six with a die, or head when tossing a coin.</p> <p>For mutually exclusive and fin dependent event. Simple practical problem only.</p> <p>Interpretation of 'and' and 'or' in probability</p>
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CAE 05 INTRODUCTION TO ENGLISH LANGUAGE

Grammar

Define grammar and differentiate it from other branches of grammar

Explain briefly parts of speech and relate them to sentence structure

Explain sentence structure and bring out syntactical error

The importance of spelling in the structure of a sentence

Explain the types, use and importance of punctuation marks\

Explain grammatical structure such as:

Normal Groups

Verbal Groups

Adjectival Groups

Clause modifiers & sentence connections

Conjunctions & subordinations

Predication

Give explanation on lexis such as:

Collocation Explanation

Synonyms & antonyms

Examples of synonyms & antonyms

Exercises of synonyms & Antonyms

Appreciation of Literary Work

Define Literature

List and explain figures of speech in relation to figurative expressions

Explain the importance of proverbs

Bring out the main difference in the use of figures of speech and proverbs in literary works

Define, explain and differentiate literary genres

Identify literary elements

Relate literary elements to a particular literary work.

Outlining

Discuss different methods of outlining a textbook

Summary

Explain the term summary

Discuss qualities of a good summary presentation

Discuss a rule of summary writing

Summarizing part of a passage

Essay Writing

Discuss types of essay e.g. Narrative, Argumentative

Discuss methods for writing each of the types

Stating a problem and a solution

Discuss qualities of a good essay.

Correspondence

Discuss the 3 types of letter i.e formal, informal and semi-formal

Discuss the tone & language of each

Explain the essentials of letter writing e.g. address, salutation, headline, and complementary close.

Discuss different parts of letter writing such as the introduction, the body and the conclusion.

Report Writing

Discuss the following with examples

Minute taking

Petition

Decision extracts.

Business Correspondence

Discuss the types of business correspondence such as:

Investigation or inquiry

Analytical report

Book report or review

Period progress report

Proposal

CFE I FOUNDATION EXAMINATION

CFE 01 COMMUNICATION SKILLS

GOALS

This course is designed to provide the student with the necessary language skills, which will enable him to cope effectively with the challenges of this course, to use English Language effectively as well as know the techniques of formal correspondence, and comprehend the concept and method of technical reports.

GENERAL OBJECTIVES

On completion of the course the student should:

Know the elements of language development
Understand the basic rules of grammar
Understand the techniques of summary writing and note taking/making
Comprehend the essential qualities of good essay
Appreciate literary works in English
Know the essential elements of correspondence
Know the techniques of report writing.

KNOW THE ELEMENTS OF LANGUAGE DEVELOPMENT

Language development, concept of language, characteristics, functions, use.

UNDERSTAND THE BASIC RULE OF GRAMMAR

Grammatical conventions grammar, parts of speech, syntax, idioms, idiomatic expression in a passage, punctuation marks, figures of speech, and idiomatic expression; lexical errors,; sentence structures.

UNDERSTAND THE TECHNIQUES OF SUMMARY WRITING AND NOTE TAKING/MAKING

Summary writing and note-taking, concept of summary writing, types of summary writing, techniques of note-taking/making

COMPREHEND THE ESSENTIAL QUALITIES OF GOOD ESSAY

Essays main features of essays; introduction, body and conclusion, methods of paragraph development, styles in essay writing, qualities of a good essay thematic unity, economy of words, clarity, simplicity.

APPRECIATE LITERARY WORKS IN ENGLISH

Literature in English meaning of literature, literary genres such as drama, poetry, prose, influence of literature in the minds of people; essentials of literature, literary works such as theme, plot, characterization etc. answer context questions on a given novel.

KNOW THE ESSENTIAL ELEMENTS OF CORRESPONDENCE

Correspondence different parts of letter such as address, salutation, body, complementary, close etc. Format of a formal/informal letter, types of business correspondence e.g. memoranda, order etc, functions of the first and last paragraphs of a letter.

KNOW THE TECHNIQUES OF REPORT WRITING.

Report writing technical reports and their types, presentation and analysis of technical reports. Introduction to feasibility analysis and reporting. Reports in the Court of Law, conferences, symposia, meetings.

CFE 02 QUANTITATIVE METHOD (INCLUDING ALGEBRA, STATISTICS, ANALYTICAL GEOMETRY & TRIGONOMETRY)

GOAL

To introduce the student to the basic concept of set theory, logic, basic algebraic concepts, statistical computations and inferencing, analytical geometry and application of trigonometry.

GENERAL OBJECTIVES

On completion of this course, the students will be able to:

Understand the structure of algebra – number system, logic, logical operations, rules of indices, logarithms and surds, functions by graphs, concept of identities, remainder, factorization theorem and their applications, permutations and combination, binomials theorem and its application to approximations errors, arithmetic and geometric progression, matrices and their algebra as well as determinants.

Understand statistics and all that it stands for, different methods of data collection, their limitations, different forms of data presentation, measures of central tendency in summarizing data, measures of dispersion in summarizing data, different types of random variables, principles of probability, probability distribution and correlation of two variables and the regression of two variables on an independent variable.

Understand and apply the concept and theories of Analytical Geometry and Trigonometry.

(a) UNDERSTAND THE STRUCTURE OF ALGEBRA

Number system; concept of logic and logical operations; rules of indices, logarithms and surds and their algebra. Solution methods to linear and homogenous equations to three unknowns. Drawing graph functions and methods of solution of function by graphs. Concept of identities, remainder and factorization. Theorems and their applications, Basic theory of partial fractions and quadratic equations with some applications. Concept of permutation and combination, Binomial theorem and its application to

approximations errors. Concept of arithmetic and geometric progression. Matrices and their algebra determinants.

- (b) **UNDERSTAND STATISTICS AND ALL THAT IT STANDS FOR**
Meaning and application of statistics in real life situations. Different methods of data collection and their limitations, different forms of data presentation. Measures of central tendency in summarizing data. Measuring of dispersion and data summarization. Type of random variables, basic principles of probability, probability distributions. Principles of correlation of two variables and the regression of one variable on an independent variable.
- (c) **UNDERSTAND AND APPLY THE CONCEPT AND THEORIES OF ANALYTICAL GEOMETRY AND TRIGONOMETRY**
Convex sets in the plane, set of point and poisson processes in the plane. Sets of linear subspace, convex and Pac part manifolds, the kinematics density in E_n , Geometry and statistical applications, stereo logy, no Euclidean integral geometry, differential forms and exterior calculus. Liens in the place, pairs of points and pairs of lines, set of strips in the plane, the group of motions in the plane, kinematics density, lattice of figures, differential forms and lie groups, density and measure in homogenous spaces, the of fined groups, the group of motions in E_n , linear subspace, convex on Pac pact manifolds, the kinematics density in E_n , Geometric and statistical applications, stereo logy, Noeuclidean integral geometry, differential forms and exterior calculus. Right triangle ration trigonometric functions, graphing trigonometric functions, graphing trigonometric functions, identities, trigonometric equations, polar coordinates, complex numbers.

CFE 03 COMPUTER METHODS

GOAL

To acquaint the student with the role of computer in modern society and understand the principles of information processing and information and Communication Technology and to introduce the student to the use of computer packages as a tool for accelerating the automation of corporate functions.

GENERAL OBJECTIVES

On completion of this course, the student should be able to:

Outline the role of the computer in modern society

Understand the basic principle of information processing

Understand computer hardware configuration, concept of some software, type of computer data processing systems, principles of data transmission, number systems and concept of algorithm and flowcharting.

OUTLINE THE ROLE OF THE COMPUTER IN MODERN SOCIETY

Role of Computer in Modern society, historical evolution of computer technology with particular reference to Abacus, Pascal, Babbage, Hollerith and the Eniac. Basic classification of computers in generations, analog, digital, and hybrid systems.

UNDERSTAND THE BASIC PRINCIPLE OF INFORMATION PROCESSING

Basic principles of information processing Batch, online, real-time.

UNDERSTAND COMPUTER HARDWARE CONFIGURATION, CONCEPT OF SOME SOFTWARE,

Computer hardware configuration CPU, RAM and ROM, Auxiliary Memory, Bits, nibbles, bytes, word, storage size in terms of K. Concept of Software, High Level, Low Level and 4th/5th GLs, RAD tools; types of translations; assembler, compiler, interpreter. Basic principles of data transmission, number systems, binary, octal, decimal and hexadecimal number systems. Conversion of one systems to the other, algorithms and flowcharting.

CFE 04 USE OF PACKAGES

GOAL

To introduce the student to the use of computer packages for enhancing the automation of corporate functions

GENERAL OBJECTIVES

On completion of this course the student should be able to:

Know the existing application packages

Understand and apply software packages, statistical and modeling applications such Word Processing, Spreadsheet, DBMS, Statistical packages, Graphic packages an Integrated software applications.

KNOW THE EXISTING APPLICATION PACKAGES

Study the application of various software packages for office productivity today

UNDERSTAND AND APPLY SOFTWARE PACKAGES, STATISTICAL AND MODELING APPLICATIONS

Word Processing, Electronic Spreadsheet, Database Management System – Dbase, Oracle, Sybase, FoxPro, Statistical and modeling packages: Lindo, QM, Storm, SPSS, SAS, Graphic and integrated applications AutoCAD, AchiCAD, EWB, Circuit Maker, integrated applications such as MS Office (2000), Peachtree Accounting, DacEasy etc).

CFE 05 ACCOUNTS & ECONOMICS (RESTRICTED TO MICRO-ECONOMICS)

SECTION A: PRINCIPLES OF ACCOUNTS

SECTION B: PRINCIPLES OF ECONOMICS

GOAL (A)

The course in accounts is designed to expose the student to principles of accounting and the application of same in different types of transactions to enhance ability to design business applications software.

GOAL (B)

The course in economics is structured to provide the students with an introduction to the basic design principles.

GENERAL OBJECTIVES

On the completion of these courses the students should be able to:

Know principles and convention of accounting

Understand the role of accounting and the principle of double entry

Know books of original entry, the ledger, trial balance, errors, journal

Understand bank Reconciliation statement, accrual and prepayment, depreciation, control and final accounts and be able to value stock.

Know the scope of economics, factors affecting location of industries.

Understand price theory and the theory of production, "National Income" and the significance in an economy, the theory of international Trade

Understand the basis of economic development and public finance.

KNOW PRINCIPLES AND CONVENTION OF ACCOUNTING PRINCIPLES, CONVENTION AND ROLE OF ACCOUNTING

UNDERSTAND THE ROLE OF ACCOUNTING AND THE PRINCIPLE OF DOUBLE ENTRY PRINCIPLES OF DOUBLE ENTRY, CAPITAL AND REVENUE ITEM

Know books of original entry, the ledger, trial balance; error, Journal books or original entry, Ledger, Trial Balance.

UNDERSTAND BANK RECONCILIATION ETC

Journal; Bank Reconciliation Statement; Depreciation, Accruals and Payment; Control Accounts; Final Accounts; Value Stock; Errors and correction of errors in Accounting.

KNOW THE SCOPE OF ECONOMICS, FACTORS AFFECTING LOCATION OF INDUSTRIES

Economic (micro) scope of economics, Price Theory; Theory of Production

UNDERSTAND PRICE THEORY AND THE THEORY OF PRODUCTION

"National Income Factors affecting the location of Industries, Money, the

banks and other financial institutions and their role in national economic development, National Income.

UNDERSTAND THE BASIS OF ECONOMIC DEVELOPMENT AND PUBLIC FINANCE. THEORY OF INTERNATIONAL TRADE, PUBLIC FINANCE

Theory of Distribution; Demand and Supply theory, Elasticity

CFE 06 INTRODUCTION SCIENCES (PHYSICS & CHEMISTRY)

GOAL (A)

The course in physics is designed to expose the student to principle of physics and the application of some in different types of physical and engineering activity to enhance ability to design science applications and to be prepared for advanced studies in the sciences.

GOAL (B)

The course in chemistry is structured to provide the student with an introduction to the basic principles of Chemistry and its application in semiconductors and other electronic engineering applications.

GENERAL OBJECTIVES

On the completion of these courses the student should be able to:

Know principles and convention of physics such as mechanics and motion

Understand the role of classical physics

Know the theory of relativity

Understand the principles behind the spin of an electron

Know the scope of chemistry and their classification

Understand reaction velocity and equilibrium, Arrhenius's theory of ionization.

Know Neutralization indicators, Electrical Conductance, Electrode Effects, etc

KNOW PRINCIPLES AND CONVENTION OF PHYSICS SUCH AS MECHANICS AND MOTION

General Introduction; mechanics and the study of motion, Newton's Laws of motion, energy, momentum, rotational motion and the law of gravitation; properties of matter such as solids, liquids, gases and plasmas, Heat such as temperature, heat and expansion, transmission of heat and change of state; sound such as vibration and waves, sound and musical sounds. The importance of Quanta, classical mechanism, Kinematics and Dynamics, Newton's Law of the Dynamics of a point, the dynamics of systems of materials points, analytical Mechanics and the theory of Jacobi, the principle of Least Action.

UNDERSTAND THE ROLE OF CLASSICAL PHYSICS

Classical physics the extension of mechanics, optics, electricity and the electromagnetic theory, thermodynamics, Atoms and Corpuscles

KNOW THE THEORY OF RELATIVITY

The theory of relativity, the appearance of Quanta in physics, the Atom of Bohr, the correspondences principle. Wave Mechanics, Helsenberg's Quantum Mechanics. Probability interpretation of the New Mechanics. The Spin of the Electron, the wave mechanics of systems and Paul's Principle.

KNOW THE SCOPE OF CHEMISTRY AND THEIR CLASSIFICATION

Chemistry – Chemical Elements and their classification, Chemical Combination and the Atomic theory, the Gas laws and the kinetics theory. Solution and their types Fundamental Chemical theory. Thermo-chemistry, relation Velocity and Equilibrium.

UNDERSTAND REACTION VELOCITY AND EQUILIBRIUM, ARTHENIUS'S THEORY OF IONIZATION.

Arhenius's theory of Ionization, Reactions Accounting to the Ionic Thoery. Quantitative Applications of the Ionization theory.

KNOW NEUTRALIZATION INDICATORS, ELECTRICAL CONDUCTANCE, ELECTRODE EFFECTS, ETC

Neutralization Indicators, Electrical Conductance, Electrode Effects, Electromotive Force, Applications of Electrode Potentials, Modern Theories of Electrolytes, Radiations and Spectra, Radioactivity, Isotopes, Atomic Structure, The Nucleus, Transmission of the elements, Atomic Structure Arrangement of External Electrons. The Electronic Theory of Valence, Chemical formulas and calculations, Chemical bonding and physical properties, Chemical practice and description, Highlights on organic synthesis, the chemistry of life.

**COMPUTER PROFESSIONAL
EXAMINATION**

1, 2, 3

CPE 1 COMPUTER PROFESSIONAL EXAMINATION I

CPE 1 01 Computer Electronic I (Compulsory)

SECTION A: BASIC MICRO-ELECTRONICS

SECTION B: BASIC HARDWARE MAINTENANCE

GOAL

To enable the student understand the basic principles, construction and application of electronic components, as well as troubleshoot and solve simple hardware problems and to acquire basic knowledge of hardware maintenance

GENERAL OBJECTIVES

On the completion of these courses the student should be able to:

Know principles and fundamentals of Booleans Algebra, logic gates and characteristics of multivibrator circuits, codes and conversion.

Understand the principles of the counter and data transfer registers, features of different transistor logic gates, attributes of different families

Understand the principle of operation and use of basic electronic measuring instruments.

Understand the principles of basic electric current theory, logic circuit.

Know the use of Maintenance tools, preventive maintenance of hardware components.

Know diagnostic techniques involved in corrective maintenance and how to install a computer system.

KNOW PRINCIPLES AND FUNDAMENTALS OF BOOLEANS ALGEBRA, LOGIC GATES AND CHARACTERISTICS OF MULTIVIBRATOR CIRCUITS, CODES AND CONVERSION.

Basic microelectronics – Boolean algebra, logic gate, multi-vibrator circuit, and their characteristics

UNDERSTAND THE PRINCIPLES OF THE COUNTER AND DATA TRANSFER REGISTERS, FEATURES OF DIFFERENT TRANSISTOR LOGIC GATES, ATTRIBUTES OF DIFFERENT FAMILIES

Codes and conversion, principles of the counter and data transfer register, addition operation in the computer, different transistor logic, gates, features and attributes of the different logic gates and their families.

UNDERSTAND THE PRINCIPLE OF OPERATION AND USE OF BASIC ELECTRONIC MEASURING INSTRUMENTS.

Pin connections and operation and manufacture data sheets. Construction of basic circuits using logic gate, principles and operations of multi-meters and oscilloscopes. Measurements of currents, voltage, resistance, capacitance and inductance using multi-meter. Observation and measurement of pulse using oscilloscope. Diagnose fault using multi-

meter and oscilloscopes.

UNDERSTAND THE PRINCIPLES OF BASIC ELECTRIC CURRENT THEORY, LOGIC CIRCUIT.

Basic hardware maintenance – Basic Electric Current Theory, basic logic circuit, use of maintenance tool, preventive maintenance of hardware components, diagnostic techniques involved in corrective maintenance. Computer configuration, installation and batch programming. Identify and utilize maintenance tools such as electronic multi-meter, oscilloscope, test etc.

KNOW THE USE OF MAINTENANCE TOOLS, PREVENTIVE MAINTENANCE OF HARDWARE COMPONENTS.

Basic instrumentation – Principle of operation and use of basic electronic measuring instrument such as Digital Multi meter and Oscilloscope to measure currents, voltage, resistance, capacitance and inductance and to diagnose fault.

KNOW DIAGNOSTIC TECHNIQUES INVOLVED IN CORRECTIVE MAINTENANCE AND HOW TO INSTALL A COMPUTER SYSTEM.

Corrective maintenance describe the method of troubleshooting, testing Ics with appropriate tools. Need for diagnostic program, explain the need for equipment inventory and modular testing. Use of installation manuals in computer installations procedure.

CPE 1 02 SYSTEM PROGRAMMING

SECTION A: SYSTEMS SUPPORT PROGRAMS

SECTION B: DATA STRUCTURES

GOAL

To enable the student understand the basis systems support programs and the concept of data and their organization.

GENERAL OBJECTIVES

In the completion of these courses the student should be able to:

Understand the general concepts of system programs, use of utilities and libraries as well as input/output devices handlers.

Know the processes and phases of compilation and the functions of the operating systems

Understand the basic principles of data structures and tools for studying data

Understand the properties of ordered and linked list as well as string structure.

Understand the principles of Assembly Language programming and its application in hardware driving.

UNDERSTAND THE GENERAL CONCEPTS OF SYSTEM PROGRAMS, USE OF UTILITIES AND LIBRARIES AS WELL AS INPUT/OUTPUT DEVICES HANDLERS.

Systems support programs – general concepts of systems program, processes and phases of compilation. Use of utilities and libraries, function of the operating system input/output devices handlers.

KNOW THE PROCESSES AND PHASES OF COMPILATION AND THE FUNCTIONS OF THE OPERATING SYSTEMS

Define translation; compilation and interpretation, multi-pass and single-pass compilation, tokens and delimiters, scanning process. Explain sentence recognition, explain code generation and code optimization, describe error handling.

UNDERSTAND THE BASIC PRINCIPLES OF DATA STRUCTURES AND TOOLS FOR STUDYING DATA

Data structures – concepts of data structure and its application, tools for studying about data life cycle and simple ways of representing data.

UNDERSTAND THE PROPERTIES OF ORDERED AND LINKED LIST AS WELL AS STRING STRUCTURE.

Properties of ordered lists, simple linked list and string structure

UNDERSTAND THE PRINCIPLES OF ASSEMBLY LANGUAGE PROGRAMMING AND ITS APPLICATION IN HARDWARE DRIVING.

Assembly language programming such as: Number systems, basic terms in assembly language; different instruction formats; representation groups of instructions in the instruction set; different addressing modes; assembler directive, assembly language program layout; process of running assembly language programs, assembly language output.

CPE 1 03 MANAGEMENT INFORMATION SYSTEMS (MIS)

GENERAL OBJECTIVES

Understand the basic principles and modules of MIS

Know MIS infrastructure

Know the functions and roles of the Manufacturing Information Systems

Know the functions and roles of Financial Information Systems

Understand the Marketing of Information Systems function

Understand the functions of Business/Office Information System

Know the role of Human Resources Information Systems

Know decision support systems to support the functions of managers

Understand the Planning, Development and Management of New Information Systems

UNDERSTAND THE BASIC PRINCIPLES AND MODULES OF MIS

Basic principles and models of MIS – introduction to Management Information evolution of Information Technology, how Information Technology supports business activity, how information technology affects

industry structure, information technology and competitive edge. Introduction to systems concepts systems and their environment, how systems works, systems concepts in business, an information system as a system, and effect of the systems approach on Information System design, Management Information Systems.

KNOW MIS INFRASTRUCTURE

MIS Infrastructure Computer System Resources Hardware, Software, File and Database, model-base management systems. Data communication systems satellite, microwave, and Radio links, Network LAN, MAN, WAN, Internet, Intranet and Extranets.

KNOW THE FUNCTIONS AND ROLES OF THE MANUFACTURING INFORMATION SYSTEMS

Manufacturing Information systems – the purpose of manufacturing and production systems manufacturing and production information systems. Operational systems, Strategic planning Manufacturing Information Systems. Generalized software for manufacturing and Production Decision making. Specific software for manufacturing and production decision making. Maintenance management systems and software, Financial Information systems. Technical financial information systems, Financial management software, forecasting software for microcomputers, stock brokerage and stock exchange software.

KNOW THE FUNCTIONS AND ROLES OF FINANCIAL INFORMATION SYSTEMS

The importance of Office Information Systems - The nature of the Office Administrative Support functions, the document processing cycle, the organization of the office. Office technology, integrating office technologies into Office Information Systems.

UNDERSTAND THE MARKETING OF INFORMATION SYSTEMS FUNCTION

Marketing Information Systems – the Marketing functions Marketing Information Systems. Operational Marketing Information Systems,. Tactical Marketing Information Systems. Strategic marketing information systems. Computer Software for marketing. Application of General-purpose software to the marketing functions, specific marketing software. Online marketing database, e-commerce revolution and the Internet and associated e-solution.

KNOW THE ROLE OF HUMAN RESOURCES INFORMATION SYSTEMS

The Human Resource Management function – Operational Human Resource Information Systems, Tactical Human Resources Information Systems. Strategic Human Resources Information Systems. Human Resource Information Systems Software.

KNOW THE ROLE OF DECISION SUPPORT SYSTEMS

Managers Systems Needs, characteristics of the Decision-making process, important features of decision support systems. The tools of Decision Support, Executive Information Systems. The development of Decision Support Systems. The risks of Decision support systems. Strategies for Building Effective Decision support systems. Introduction to expert systems in Decision support.

UNDERSTAND THE PLANNING, DEVELOPMENT AND MANAGEMENT OF NEW INFORMATION SYSTEMS

Organization of information systems and end-user computing, organization of data processing, Roles and responsibilities of Information Systems Professional. Organization and management of Information Centre, Business systems planning, critical success factors. Using Information Technology for competitive advantage. Enterprise wide Information Management Systems analysis and design. Organization-wide data dictionary. User involvement in System Section, Cost benefit Analysis, detailed design and implementation. Artificial intelligence and new software development technology. The emergence of departmental and distributed computing.

CPE 1 04 HIGH LEVEL PROGRAMMING LANGUAGE

GENERAL OBJECTIVES

On the completion of these courses the student should be able to:

Understand the general concepts and principles of algorithms

Know the building blocks of Java, C, C++, VB, dBase for windows, Oracle, Delphi, SQL, Visual Basic and FoxPro and the rules for using them.

Understand the basic principles of debugging programs and good programming practices.

Survey Programming Language Development

UNDERSTAND THE GENERAL CONCEPTS AND PRINCIPLES OF ALGORITHMS

Define algorithm, methods of algorithm representation, flowchart, pseudo-code, decision table etc.

KNOW THE BUILDING BLOCKS OF JAVA, C, C++, VB, DBASE FOR WINDOWS, ORACLE, DELPHI, SQL, VISUAL BASIC AND FOXPRO AND THE RULES FOR USING THEM.

Java SDK

Database programming using RAD tools such as dBase for Windows, Oracle, FoxPro, SQL, and Delphi

UNDERSTAND THE BASIC PRINCIPLES OF DEBUGGING PROGRAMS AND GOOD PROGRAMMING PRACTICES.

Explain debugging and identify sources of error. Distinguish between syntax and logical bugs in programs, identify the techniques of locating

bus in program.

SURVEY PROGRAMMING LANGUAGE DEVELOPMENT

Survey of programming language will cover traditional procedural language such as Basic, Pascal, Fortran including an understanding of the principle of algorithm flowchart, pseudo-code, HIPO, building blocks, control and execution of a program subprogram, subroutine and declarative statements as well as JCL statements and good programming practices. The above syllabus covers the spectrum of knowledge base of CPE 104. smartly knowledge of all the areas are needed which will be reinforced in CPE II/III, which will involve more practical than theories. This block will take care of formative foundations required to engage in more practical programming work in CPE I/II. This syllabus will be subject to regular review of line with new development computer science/software engineering.

CPE 1 05 QUANTITATIVE TECHNIQUES IN BUSINESS

GENERAL OBJECTIVES

On the completion of these courses the student should be able to:

Understand the general concepts and principles of algorithms

Know decision and models, forecasting, investment appraisal, inventory control, linear programming, network analysis query theory, replacement analysis and simulation.

Know the application of an appropriate business model to a particular business problem.

Recognize the need to consider risk and uncertainty in the development and application of a business model.

Know the appropriate computer systems packages that can be applied to the creation and running of a business model

Know the business modeling is an aid to decision-making and is not end itself.

Know the application of business modeling techniques to the particular problems of software project planning.

KNOW DECISION AND MODELS, FORECASTING, INVESTMENT APPRAISAL, INVENTORY CONTROL, LINEAR PROGRAMMING, NETWORK ANALYSIS QUERY THEORY, REPLACEMENT ANALYSIS AND SIMULATION.

Define and understand the definition of business models, describe different types of model physical, mathematical, analogue and simulation, recognize a problem

KNOW THE APPLICATION OF AN APPROPRIATE BUSINESS MODEL TO A PARTICULAR BUSINESS PROBLEM.

Identify suitable modeling techniques to non-complex problems and arrive at possible solution, appraising them for feasibility. Describe managerial problems and benefits of applying a variety of modeling techniques to

business problems.

RECOGNIZE THE NEED TO CONSIDER RISK AND UNCERTAINTY IN THE DEVELOPMENT AND APPLICATION OF A BUSINESS MODEL.

Apply the concept of risk and uncertainty to non-complex problems by the use of the techniques and models identification in 2.0

KNOW THE APPROPRIATE COMPUTER SYSTEMS PACKAGES THAT CAN BE APPLIED TO THE CREATION AND RUNNING OF A BUSINESS MODEL

Identify possible computer software application packages that could be used to carry out the necessary calculations for the techniques and models identified.

KNOW THE BUSINESS MODELING IS AN AID TO DECISION-MAKING AND IS NOT END ITSELF.

Outline the potential limitations of a business model in a given situation. Appreciate that decision-making is not confined to the use of specific result of applying modeling techniques.

KNOW THE APPLICATION OF BUSINESS MODELING TECHNIQUES TO THE PARTICULAR PROBLEMS OF SOFTWARE PROJECT PLANNING.

Explain the difficulties of software cost estimation. Apply appropriate models identified above to software cost estimation. Apply appropriate models identified above to software project planning.

CPE 1 06 SOFTWARE ENGINEERING

GENERAL OBJECTIVES

On the completion of these course the student should be able to:

Understand the general concepts and principles of Structure Systems Analysis and Design Methodology (SSADIM)

Know the application of CASE tools in resolving software engineering problems

Know the Software Engineering metrics and how it is applied in measuring software reliability

Know the State-of-the-Art SWE Techniques and models

UNDERSTAND THE GENERAL CONCEPTS AND PRINCIPLES OF STRUCTURE SYSTEMS ANALYSIS AND DESIGN METHODOLOGY (SSADIM)

The Structure Systems Analysis and Design Methodology (SSADM). Traditional and Structure Methods of Analysis and designing business

systems. Tools of analysis prototyping, Implementation.

KNOW THE APPLICATION OF CASE TOOLS IN RESOLVING SOFTWARE ENGINEERING PROBLEMS

CASE Tools Study and application of Computer-Aided Software Engineering Tools such as Yourdon CASE Tools etc for the practical design and implementation of the systems development process.

KNOW THE SOFTWARE ENGINEERING METRICS AND HOW IT IS APPLIED IN MEASURING SOFTWARE RELIABILITY

Software Engineering metrics evaluation of software reliability and performance. Application of Metrics concepts in software evaluation and usability.

KNOW THE STATE-OF-THE-ART SWE TECHNIQUES AND MODELS

State-of-the-art SWE Techniques and models as would be evolving from time to time.

CPE 2 COMPUTER PROFESSIONAL EXAMINATION II

CPE 2 01 COMPUTER ELECTRONIC II

GOAL

This course is designed to enable the student have an indepth knowledge of the design principles and application of electronic components, in order to troubleshoot and solve hardware problems

GENERAL OBJECTIVES

On the completion of these course the student should be able to:

Understand the constructional features and configurations of semi-conductor switching circuits

Understand the constructional features and configurations of different integrated circuit device.

Understand constructional features and configurations of digital IC systems

Understand the design principles of combinational circuits using small-scale integrated (SSI) circuits

Understand elementary digital computer architecture

UNDERSTAND THE CONSTRUCTIONAL FEATURES AND CONFIGURATIONS OF SEMI-CONDUCTOR SWITCHING CIRCUITS

Define a pulse, explain pulse shaping. Define rise time, fall time, pulse circuits, duration, overshoot, and undershoot. Explain the structural action of multivibration, monostable, astable and bistable. Explain the constructional features of the R-S and J-K flip-flops. Apply the R-s and J-K flip-flop to solve problems. Explain the operations of shift registers.

UNDERSTAND THE CONSTRUCTIONAL FEATURES AND

CONFIGURATIONS OF DIFFERENT INTEGRATED CIRCUIT DEVICE.

Describe the application of integrated circuit in the field of digital system design. Explain the characteristic and implication of using ATL, TTL, DTL, ECL, and HTL gates.

UNDERSTAND CONSTRUCTIONAL FEATURES AND CONFIGURATIONS OF DIGITAL IC SYSTEMS

Explain the constructional features of binary and decode counters; straight binary shift even, shift odd, sign and preset. Describe the configuration of the counters

UNDERSTAND THE DESIGN PRINCIPLES OF COMBINATIONAL CIRCUITS USING SMALL-SCALE INTEGRATED (SSI) CIRCUITS

Synthesize a 4-bit adder, Synthesize a NBCD adder, Synthesize code-converting circuits, integrated (SSI) circuit e.g, BCD to gray. Design a 4-decade excess 3-adder code converting circuits. Solve problems of combinational circuit designs.

UNDERSTAND ELEMENTARY DIGITAL COMPUTER ARCHITECTURE

Explain the various WORD formats; explain the Neumann's configurations of digital computers, arithmetic logic units, and its basic registers, the basic registers of the engineers control unit, the basic registers of the I/O units, the basic registers of memory control units. Describe the four, three and two address machines and various methods of addressing.

CPE 2 02 DATA COMMUNICATIONS & NETWORKS (INCLUDING DESIGN AND DEPLOYMENT OF WEBSITES)

GOAL

This course is designed to enable the student have an in depth knowledge of the data communication and their application in the design of network, e-commerce applications and the Internet.

GENERAL OBJECTIVES

On the completion of these course the student should be able to:

Know the definition of Data Communications and the various equipment used in computer communications.

Understand modulation techniques and principles of multiplexing

Know the different transmission modes and the various types of media used in data communication.

Know the various forms of line organization, major forms of line organization

Understand communication protocols and the concepts of data networks.

KNOW THE DEFINITION OF DATA COMMUNICATIONS AND THE VARIOUS EQUIPMENT USED IN COMPUTER COMMUNICATIONS.

Define data communication, explain the need for communication between nodes/machines. Identify equipment used in computer communications.

Explain the functions of on-line equipment, interactive terminals and batch processing terminals. Explain the functions of indirect equipment line controller, line drivers, data set (modems, digital service units, traffic clustering devices, multiplexers, concentrators, network control, front-end processors, network modes).

UNDERSTAND MODULATION TECHNIQUES AND PRINCIPLES OF MULTIPLEXING

Describe the different types of modulation; amplitude, frequency and phase. Define a multiplexer, explain frequency division multiplexing, time division and statistical multiplexing. Calculate the cost effectiveness of the methods above and define a concentrator. Differentiate between a multiplexer and concentrator.

KNOW THE DIFFERENT TRANSMISSION MODES AND THE VARIOUS TYPES OF MEDIA USED IN DATA COMMUNICATION.

Explain the difference between simplex, half-duplex and full duplex transmission. Define synchronous and asynchronous transmission.

KNOW THE VARIOUS FORMS OF LINE ORGANIZATION, MAJOR FORMS OF LINE ORGANIZATION

Define line organization, define; point-to-point, multi-point and multi-drop organization. Explain the difference between the organizations above.

UNDERSTAND COMMUNICATION PROTOCOLS AND THE CONCEPTS OF DATA NETWORKS.

Define a communication protocol, state the functions of communication protocol. Differentiate between various transmission protocols (Asynchronous and Synchronous). Describe some specific transmission protocols binary synchronous control, Synchronous Data Line Control (SDLC), High Data Line Control (HDLC) x25, etc. Define a network, explain different type of network topologies: star, Loop, Ring, Bus, Mesh, etc. Know different types of network LAN, WAN MAN, know management of system in network environment various gates etc. Explain specific existing network: ARPANET, System Network Architecture (SNA), Digital Network Architecture (DNA), JANET, JUNET, ASCNET, MAILNET, UUCP, INTERNET, INTRANET, EXTRANET.

CPE 2 03 KNOWLEDGE ENGINEERING

GOAL

This course is designed to enable the student have an in depth knowledge of the Artificial intelligence and Expert Systems and the role of this new knowledge base in the automation of both business and industrial systems

GENERAL OBJECTIVES

On the completion of these course the student should be able to:

Know the basic concept of computer graphics, interactive graphics, raster graphics, input/output devices and available graphics facilities and software packages.

Know artificial intelligence and expert systems

Understand the concept of Neural Network

Know about Robotics as an intelligence tool for industrial efficiency

KNOW THE BASIC CONCEPT OF COMPUTER GRAPHICS, INTERACTIVE GRAPHICS, RASTER GRAPHICS, INPUT/OUTPUT DEVICES AND AVAILABLE GRAPHICS FACILITIES AND SOFTWARE PACKAGES.

Define a graphic systems, explain the origin of computers graphics, define a picture element block pixel line and basic techniques of clipping geometry transformation and incremental methods. Explain interactive graphics, two basic types of graphical and interactions pointing and positioning, event handling, polling, interrupts and event queue; functions of dragging and fixing, hit detection and on-line character recognition. Explain raster graphic fundament. Generate a raster image, describe useful operation for manipulating a raster; write rectangle, write mask, write colour, copy raster, invert mask and invert rectangle. Describe graphics input devices, output devices, mouse tablets, the light pen. Explain three dimensional input devices, acoustics and mechanical devices, graphic output devices; plotters, visual display units and oscilloscopes. Explain block graphics characters and the codes. Design a set of graphic character suitable for use by a program to give an animation effect. Explain the use of graphics commands, write programs to display; an isosceles triangle, regular hexagon, an a circle, the graphics facilities available on computer. Describe graphics package and support the writing of application programs in graphics packages.

KNOW ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Explain the fundamental concept of stimulation, perception and recognition. Describe the basic components and functioning of the human brain and the central nervous systems, problem-solving in terms of recognition of pattern, objects, images. Express game playing and puzzles as form of pattern recognition. Introduce the concept of automatic closed-loop feedback systems. Apply man-machine interactions and the simulation of the former by machine. Define cybernetics, hionics, artificial neuron and robotics. Explain self-adjusting systems and learning machines. Define expert system, explain the role of the expert systems, knowledge engines and their use in systems development. Explain knowledge representation and knowledge bases. Explain expert system shell (or the inference engine). Explain backward and forward chaining. Apply expert systems to real-life problems. AI & Expert systems industry and applications today. Basics of Expert Systems, building AI and Expert Systems, developing a small-scale expert system. Getting knowledge into the computer, searching through knowledge for answers, how the computer reads knowledge. The promise of expert systems, application of AI/ES to Robotics engineering, sensor, manipulators and pattern

recognition, languages, software and CAD, Vision, Object representation, shape and solid modeling. Robot systems, control with mobility, robotics and AI application in industry and medicine.

UNDERSTAND THE CONCEPT OF NEURAL NETWORK

Know what a Neural network is know what differentiates a Neural network from conventional LAN, WAN, WAN.

KNOW ABOUT ROBOTICS AS AN INTELLIGENCE TOOL FOR INDUSTRIAL EFFICIENCY

Understand what robots can and cannot do, know about components of robots. Actuation mechanism, vision systems, control, end-effectors, know some manufacturers of robot components. Types of robots and where they are applied. The economic drive behind robot deployment in the advanced countries. Reasons for adoption of robots in Africa, research efforts in robotic development.

CPE 2 04 SYSTEMS PROGRAMMING II

SECTION A: FILE ORGANIZATION AND DATABASE

SECTION B: OPERATING SYSTEMS

SECTION C: COMPILER CONSTRUCTION

GOAL

The goal of this module is three fold:

To ensure students understand the concept of file management and the principle of database design

To ensure students understand the functions and the design of operating systems

To ensure students have developed the skill of writing compilers.

GENERAL OBJECTIVES

On the completion of these course the student should be able to:

Know the basic concept and basic operations on a computer file, types of file organization and simple file application.

Know basic simple file applications, storage devices and media

Understand Access media and file access methods

Know the function of a buffer, the general concept of database and its structure schemas and sub-schemas, database implementation and applications

Know the different types of operating systems, their function and philosophy, their process view.

Understand Queuing in operating systems; interrupt mechanism and components of an operating system as well as a popular operating systems available in the market place.

Know the differences between a compiler, Assembler and an Interpreter

Understand the compilation process, concepts of grammar and language, functions of a scanner, recognizes, run time storage allocation,

functions of error routine at each phase of compilation and the process of the code generation.

KNOW THE BASIC CONCEPT AND BASIC OPERATIONS ON A COMPUTER FILE, TYPES OF FILE ORGANIZATION AND SIMPLE FILE APPLICATION.

File organization and database – basic operation of computer file, types of file organization and simple file applications.

KNOW BASIC SIMPLE FILE APPLICATIONS, STORAGE DEVICES AND MEDIA

Access methods, functions of buffer

UNDERSTAND ACCESS MEDIA AND FILE ACCESS METHODS

Database concepts, database structure, schemas and sub-schemas

KNOW THE FUNCTION OF A BUFFER, THE GENERAL CONCEPT OF DATABASE AND ITS STRUCTURE SCHEMAS AND SUB-SCHEMAS, DATABASE IMPLEMENTATION AND APPLICATIONS

Setting up simple database, practical database application and operation

KNOW THE DIFFERENT TYPES OF OPERATING SYSTEMS, THEIR FUNCTION AND PHILOSOPHY, THEIR PROCESS VIEW.

Operating Systems Design (with popular and current O/S such as Windows, MS-DOS, UNIX, LINUX, NOVELL, NETWARE, SOLARIS etc. Different types of Operating Systems. Function and philosophy of operating systems.

UNDERSTAND THE COMPILATION PROCESS, CONCEPTS OF GRAMMAR AND LANGUAGE, FUNCTIONS OF A SCANNER, RECOGNIZES, RUN TIME STORAGE ALLOCATION, FUNCTIONS OF ERROR ROUTINE AT EACH PHASE OF COMPILATION AND THE PROCESS OF THE CODE GENERATION.

Compilation process, concept of grammar and languages, scanner, recognizers. Run time storage allocation, functions of error routine at each phase of compilation, code generation.

CPE 2 05 MANAGEMENT OF INFORMATION TECHNOLOGY

GENERAL OBJECTIVES

On the completion of these course the student should be able to:
Know the management control, security procedure in MIS centers
Know about Computer systems and their configuration
Know about the application of Information Technology (IT) and the need for national security
Know how to manage IT resource
Understand the process of managing IT projects
Know how to plan for Data and computer security
Know the role of IT Managers in planning and organizing computer centers.

KNOW THE MANAGEMENT CONTROL, SECURITY PROCEDURE IN MIS CENTERS

Management control, security procedure in MIS Centers, procedure for security file and authorization methods for release of data media such as tapes, disk and CDs. Organizational structure of DP department. Procedures for computer operations. Type of Data Preparation Methods, Security of the Environment and procedure, external file library Structure.

KNOW ABOUT COMPUTER SYSTEMS AND THEIR CONFIGURATION

Computer systems & configuration – Planning and Installation of computer hardware and software.

KNOW ABOUT THE APPLICATION OF INFORMATION TECHNOLOGY (IT) AND THE NEED FOR NATIONAL SECURITY

IT and national security – prevention techniques against denial of service attacks. Prevention techniques for leakage of national security secrets, Techniques for protecting Website from enemy electronic bomb attacks etc. Ethical and legal issue relating to electronically stored information, Copyright issues and protection.

KNOW HOW TO MANAGE IT RESOURCE

IT Resource management – Recruitment of qualified IT personnel, placement, control, training and discipline. Purchase and inventory of equipment and accessories. Vendor assessment techniques. Maintenance agreements.

UNDERSTAND THE PROCESS OF MANAGING IT PROJECTS

Project management – Planning and implementation of hybrid IT projects. Problem identification, Analysis, design, Coding, Prototyping and implementation.

KNOW HOW TO PLAN FOR DATA AND COMPUTER SECURITY

Data/Computer security – Data Library design, equipment and control. Electronic and physical locks. Security Management, Virus suites and protection.

KNOW THE ROLE OF IT MANAGERS IN PLANNING AND ORGANIZING COMPUTER CENTERS.

In planning, organizing, coordination, control. Planning for new installation, site preparation, System Auditing

CPE 2 06 PROGRAMMING-BASED PROJECT (BASE ON ONE OF THE HPL IN CPE 1 04)

GOAL

To provide the student with an opportunity to demonstrate an ability to apply development techniques and methods to solving a scientific/business-related problems and produce relevant documentation in support of the problems solved.

This is the basis for admission to Associateship of both NCS and CPN. This project must be an original practical contribution to the field of Computer Science, Software Engineering or Information Technology. Four copies is to be submitted to the Chairman Education Committee) at least 60 days before project defense date.

CPE 3 COMPUTER PROFESSIONAL EXAMINATION III (FINAL CHARTERD EXAMINATION)

CPE 3 01 EVOLVING INFORMATION TECHNOLOGIES

GOAL

To make students aware of current trend in information and communication technology to enable chartered professionals consult effectively to clients.

GENERAL OBJECTIVES

On the completion of these course the student should be able to:

Know the concept of tele-working, e-Commerce and website development.

Know about confravision, teleconferencing, EDI, Internet, Intranet and automated Factories of the 21st century.

Know about the possible convergence of PCs and Television

Motion Analysis, Artificial Intelligence Using Agents and Nano Technology

KNOW THE CONCEPT OF TELE-WORKING, E-COMMERCE AND WEBSITE DEVELOPMENT.

Tele-working, e-commerce and website development and deployment, e-economy, confravision, teleconferencing, EDI, globalization, e-governance, Internet, Intranet, Extranet, automated factories of the 21st century

KNOW ABOUT CONFRAVISION, TELECONFERENCING, EDI, INTERNET, INTRANET AND AUTOMATED FACTORIES OF THE 21ST CENTURY.

KNOW ABOUT THE POSSIBLE CONVERGENCE OF PCS AND TELEVISION

Convergence of PCs and Television through multi-mediatechnology

MOTION ANALYSIS, ARTIFICIAL INTELLIGENCE USING AGENTS AND NANO TECHNOLOGY

On the Cutting Age of Technology Motion Analysis, Artificial intelligence Using Agents, Nano-technology, Smart Materials, 3-D Animation with Ray Tracing, Virtual Reality, Liquid Graphics, and Advanced Simulation.

CPE 3 02 ADVANCED, OBJECT-ORIENTED PROGRAMMING USING JAVA AND C++, CORBA ACTIVE X

GOAL

To provide the student an opportunity to demonstrate skill in the development of applications software using one of the least object-oriented compilers.

This course will involve practical programming in Java and C or Corba. There may be two components a practical programming assignment developed by each student and stored in a diskette and a two-hour theory question in an examination condition. The diskette with inscription of the student's name, number, course code, date of examinations should be submitted along with the theory answers to he examiner. Acceptable topics may include drive writing, website development, typical applications software or utilities.

CPE 3 03 ADVANCED SIMULATION & COMPUTER MODELING

GOAL

To enable students to acquire skills in the use of advanced mathematical and modeling tools to solve complex modeling problems for clients.

GENERAL OBJECTIVES

Know who to apply QM, Lindo, SPSS, SAS and other statistics/mathematical/simulation models in solving the problems of industry.

Know advanced knowledge of the software mentioned as mentioned above

Demonstrate ability to interpret the result of produced by these modeling.

KNOW WHO TO APPLY QM, LINDO, SPSS, SAS AND OTHER STATISTICS/MATHEMATICAL/SIMULATION MODELS IN SOLVING THE PROBLEMS OF INDUSTRY.

Starting modeling toolkits such as QM, Lindo, SPSS, SAS, identifying modules, entering data, modeling data, producing output.

KNOW ADVANCED KNOWLEDGE OF THE SOFTWARE MENTIONED AS MENTIONED ABOVE

Advanced knowledge in the use of the tools such as processing discriminant analysis data, probity logic, simulation

DEMONSTRATE ABILITY TO INTERPRET THE RESULT OF PRODUCED BY THESE MODELING.

Demonstrate ability to interpret correlation coefficient Y and X intercepts, alpha, beta, colinearity, covariance matrix, acceptance and rejection of hypothesis, ability to formulate a hypothesis. Ability to analyze multiple and stepwise regression. Interpretation of Linear programming results (minimization and maximization)

APPLICATION OF QM, LINDO, STORM, SAS, SPSS IN COMPLEX MODELING & SIMULATION)

Students may be given a problem(s) to solve such as a Ph.D statistical/OR solution to solve and put in a diskette in advance. Such practical question may be sent to all registered examination students two weeks before the examinations date and the diskettes will be submitted along with the theory examination answer sheet to the supervisor as it is in CPE 3 02.

CPE 3 04 FINAL PROJECT & INTERVIEW

This involves the design, development and implementation of a unique software or hardware design and development that is an original contribution to knowledge, science and technology. This is the final basis for graduation. The project must be supervised by a Member of CPN/NCS (MCPN or FCPN) preferably with a Masters of Doctorate Degree who have taught in a University or Polytechnic and with some five years experience in Project Supervision at HND/HD/AD, Bachelors, PGD, or Masters degree. Oral interview to demonstrate that a candidate presenting a project really undertook a practical project; a team of experienced professionals would be set up to conduct an interview. The result of the interview would determine the success or failure of the candidate in the last stage of the professional examinations.

