Course Code: MCA-01-OGE
Course Title: Computer Fundamentals

Unit-I: Computer Appreciation, Introduction, Characteristics of computer, History of Computers, Classification of Computers of Size, Architecture and Chronology, Applications of Computers, Commonly used Terms: Hardware, Software, Firmware, Units of Measurement of Storage, Input/output Devices, Secondary Storage Devices, Generation of Languages, Types of Software, Flowcharts and Algorithms, Translators-Interpreters, Compilers and Assemblers. Introduction to Internet & E-Mail.

Introduction to Operating System : FunctionsofOperatingSystem, evaluation, Batch Processing, Multiprogramming,Multiprocessing, Time Sharing, Real-Time Processing, Advantages and Disadvantages, Single User, Multi-User O.S. Viruses: Types and Control Measures.

Profiling an Operating System: Booting sequence, Operating System, File and Command Processor File, Definition of File,File,Naming,Booting from Floppy and HDD,Warm and Cold Reboot, Types of Dos Commands, Internal and External, Introduction of Autoexec.bat, Attrib,Backup,Restore,FindSys, FilterCommands,GenralCommands,Types,Data,Time,Prompt,Disk Organization and Disk Storage, Disk Management, Format, CHKSk, DISK COPY, LABEL, VOL, DISKCOMP, COMP, RECOVER, Redirecting Commands Input and Output.

Reference Books:

- Computer today, Donald H. Sanders, McGraw Hill Publishing Company.
- Microcomputers Software and Applications, Dennis P.Curtin and Leslie R.Portel, PHI.
- Data Processing: An Introduction, Donald P.Spencer and Charles R. Merril Pub. And Co.
- Computers and Their Applications, Larry Joel Goldestein, PHI.
- Computers in Business, Donald H.Sanders.Mc Graw Hill Publishing Company.
- Access-2000, Simpson, Bpb Publications.

Course Code: MCA-02-OGE:
Course Title: Pseudo-code Development

Unit I: Learning and writing flowcharts and algorithms:

Introduction, conversions, Programming and Problem Solving: The Basic Model of Computation, Algorithms, Flow-charts, Programming Languages, Compilation, Linking and Loading, Testing and Debugging, documentation.

Algorithms for Problem Solving: Exchanging values of two variables, summation of a set of numbers, Decimal Base to Binary Base conversion, Reversing digits of an integer, GCD (Greatest Common Division) of two numbers, Test whether a number is prime, Organize numbers in ascending order, Find square root of a number, factorial computation, Fibonacci sequence, Evaluate 'sin x' as sum of a series, Reverse order of elements of an array, Find largest number in an array, Print elements of upper triangular matrix, multiplication of two matrices, Evaluate a Polynomial.

file.

References:

1. 2. P.K. Sinha and P. Sinha, "Foundation of Computers" BPB Publishers
2. R.G. Dromey, "How to solve it by Computer"

To be effective from the year 2014

Course Code: MCA-03-OGE:
Course Title : Matlab Concepts

Unit I

Introduction, Using variables, Introduction to MATLAB commands, Introduction to arrays, Array operations, Indexing, Entering external data, Introduction to Cells, Introduction to Structures. Introduction to branching, If statements, While Loops, Solving Linear Equations, Use of matrices to solve equations, Introduction to Statistical Operations. Introduction to Plotting ,Introduction to Curve Fitting section, Introduction to Curve Fitting section , Linear Regression section , Error Analysis , Estimation , Polynomial Curve fitting , Splines .

References and Resources
1. The MathWorks. The official website for MATLAB is at http://www.mathworks.com.
2. Hart, David and Clinton Wolfe, 1999. "Getting Started with MATLAB," Indiana University, http://www.indiana.edu/~statmath/support/bydoc/
3. Miranda, Mario J. and Paul L. Fackler, 2002. ,Applied Computational Economics and Finance , Cambridge, MA: MIT Press A textbook discussing computational methods and solutions to dynamic problems generally, as well providing MATLAB tools in the CompEcon Toolbox, http://www4.ncsu.edu/~pfackler/compecon/toolbox.html
4. LeSage, James P. Econometrics Toolbox. (http://www.spatial-econometrics.com/) This website provides a MATLAB toolbox implementing a variety of functions for econometric analysis, including spatial econometrics.
5. Applied Econometrics Using MATLAB. This book/working paper provides general guidance for using MATLAB in econometric applications. The link for the book is: http://www.spatialeconometrics.com/html/mbook.pdf
6. Frain, John C., 2010. "An Introduction to MATLAB for Econometrics," TEP Working Paper No. 0110.This guide describes the use of MATLAB in econometric applications, and discusses LeSage's Econometrics Toolbox in particular http://www.tcd.ie/Economics/staff/frainj/main/MSc%20Material/MATLAB/matlab.pdf

Course Code: MCA-04-OGE:
Course Title : SPSS Concepts

Unit I

Descriptive v. Inferential Data Analysis, Measuring Variables (validity, reliability, replicability),Types of Variables (nominal, ordinal, interval), Common Terms (dataset, population sample, parameter, statistic) Misuses of Data (examples), Univariate (Descriptive) Statistics, Sample Size (N) , Range , Frequency Distributions, Histograms, Other Charts, Measures of Central Tendency and Dispersion , Means, medians, modes ,Variance, standard deviation , Introduction to SPSS for Windows ,Starting an SPSS Session ,Creating a New Dataset , Using an Existing Dataset ,Manipulating and Merging Datasets ,Importing and Exporting Data , Printing Datasets , Descriptive Statistics in SPSS (mean, standard deviation, variance, range, frequencies) Manipulating Data in SPSS ,Recoding and Transforming Variables ,Graphs and Charts , Scatter plots , Histograms ,Box Plots and Other Charts , Cross-tabulations ,Printing and Saving Output ,Probabilities and Sampling, Binomial and Normal Random Variables, Z-scores ,Using the Normal Table ,Other distributions ,Methods of Sampling ,Systematic Sampling, Random Sampling ,Sampling Error,

References and Resources
1. Joseph F. Healey, Statistics—A Tool for Social Research(Belmont, CA: Wadsworth Publishing, 1996).
2. Jane Fielding and Nigel Gilbert, Understanding Social Statistics, (London: Sage Publications, 2000).
3. Stephen Van Evera,Guide to Methods for Students of Political Research (Ithaca, NY: Cornell University Press, 1997).
4. Zina O'Leary, The Essential Guide to Doing Research(London, Thousand Oaks, New Delhi: Sage Publications, 2004).
5. Laurence F. Jones and Edward C. Olson, Researching the Polity: A Handbook of Scope and Methods(Cincinnati, OH: Atomic Dog Publishing, 2005).
6. SPSS Instruction Manual, Department of Statistics and Actuarial Science, University of Waterloo, September 1, 1998.