COMPUTATION AND MANAGEMENT SUBJECT AREA

100 LEVEL COURSES

SE 101 Science and Society (3 credits)
The Scientific Method; Induction and Deduction; Scientific Revolutions: Ancient and Modern Science; Science of Non-Western Societies; Colonial Science; Science and Ethics; Values in Scientific Research and Results; Indigenous Knowledge systems; Technology and Science; Science and Technology in Development; Important Discoveries of Modern Science and their Development; Institutionalization of Science and Technology; Modern Scientific Research and its Funding; Role of Multinationals; Science and Warfare; Scientists and Social Responsibility; Risk and Uncertainty in Science; Science and the Media; Food and Population; Energy; Environment; Oceans; Outer Space; Technology and Trade; Science and Developing Countries

Recommended Text:
1. Okasha, S. 2002, *Philosophy of Science, A Very Short Introduction*, Oxford: OUP
2. Bird, A, 1998, *Philosophy of Science*, Montreal: McGill-Queen's University Press
3. Kuhn, T, 1962, *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press
4. Harre, R., 1981, *Great Scientific Experiments*, New York: Dover Publications
5. Moore, P 2002, *$E=mc^2$, The Great Ideas that shaped our World*, London: Quintet Publishing
6. Barnes, B (ed.), 1972, *Sociology of Science*, Penguin, London
7. Barnes, B *et al*., 1996, *Scientific Knowledge: A Sociological Inquiry*, Athalone, London

MGT 101 Principles of Management (3 credits)
This is an introductory course in Management. It covers various definitions of Management as well as the evolution and social responsibility of Management. The main components of the course are the functions of Management: Planning, Organizing, Staffing, Leading and Controlling. The course will introduce and discuss case studies in business in order to provide students with a sound knowledge of Real World Management.

MGT 103 Introduction to Business Accounting (3 credits)
This course provides the basic knowledge in financial accounting, which ensures that the students are able to understand the issues in financial accounting relating to business entities.
The course includes: objectives, use & users, underlying assumptions, qualitative characteristics and the elements of financial statements; the understanding of the recording of transactions; the adjusting entries; the preparation of financial statements of Sole Proprietorships and Partnerships and the underlying systems, procedures & controls in preparation of such statements.

Recommended Text:
1. Wood, F., 1984, *Business Accounting*. Vol. 1 and 2 (4^{th} ed.) London: Pitman Publishing
2. Jennings A. R. 1997, *Financial Accounting* (2^{nd} ed.) London: ELBS
3. Randall, H. Advanced Level Accounting, ELBS ed.
4. Relevant Journals and Books published by *CIMA*

PSC 101 Introduction to State and Government (3 credits)
This course introduces the basic concepts related to the state and government. The course commences by introducing the nature and scope of political science and the main approaches to its study. The course then focuses on the emergence, development, and the nature of the nation state and the key theories related to it. Particular attention is paid to study the position the nation state occupies in the contemporary international system, its relationship with the citizens, and how the process of globalization impacts upon the modern state. Some key political concepts such as sovereignty, separation of power, power and authority, civil society and governance will also be introduced to the students. Finally, the course will provide a basic understanding of public policy, policy formulation, and the process of policy implementation.

FNA 102 Introduction to Art History and Aesthetics (3 credits)
This course entails introductions to the study of art from historical and philosophical perspectives.
The historical approach to art will be studied in relation to the critical approach. The significance of art as a source of the history of human society will be examined under the topic history in art. The concept of aesthetics and its basic tenets will be introduced.

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MT 120 Foundation Course in Mathematics (2 credits)

Different types of numbers, Variables, Parameters, Computer arithmetic, Linear and Quadratic equations, Functions and graphs, Logarithmic and Exponential functions, Trigonometric functions, Cartesian coordinate system, Coordinate geometry of straight line and circle, Evaluation of limits,

Derivatives: Derivatives of standard functions , Algebra of derivatives, Chain rule, Derivatives of functions in parametric forms, Anti-derivatives and Techniques of integration.

First order Difference Equations and Discrete models.

MT 121 Mathematics for Arts/Commerce I (3 credits)

Algebraic inequalities, Basic set theory, Permutations and Combinations, Mathematical Induction, Binomial Theorem, Vectors, Systems of Linear equations, Continuity and Differentiability, Applications of derivative, Curve sketching, Applications of definite integral, Convergence of sequences and Summation of series.

MT 122 Mathematics for Arts/Commerce II (3 credits)

Probability: Tree diagrams, Sample space and events, Axioms of probability and basic laws, Probability in discrete sample space, Conditional probability and multiplicative law, Baye's theorem,

Independent events.

Descriptive Statistics: Graphical representation of statistical data, Mean, Median, Mode. Quartiles, Deciles, Inter quartile range, Standard deviation. Shapes of distributions

Linear and non-linear market models, Marginal functions in economics.

CS 100 Computer Applications (2 credits)

Introduction to Computer and operating Systems,

Micro Computer Applications : Use of Software Packages- Spread Sheet applications, DBMS applications, Utility programs and Word processing.

Data Protection Techniques : Data security techniques, Computer Viruses and prevention. Data Communication : Email, Internet and Networking of Computers.

Introduction to a Programming Language: Procedures, Functions, File handling, Application of a DB management.

(This course includes both theory and practicals)

Recommended Texts:

1. Computer Science, C.S.French
2. Programmer's Guide to Foxpro 2.0, D. Howard
3. Computer viruses, Robert Slade

CS 101 Introduction to Computer Science (3 credits)

Introduction and overview : Intelligent machines and systems applications, Business, Communications, Educational, Engineering, Environmental, Medical and Scientific applications.

Introduction to computing concepts : Basics of computer programming : data types, declarations, assignments, basic input and out put ASCII files, built-in functions.

Structured programming ideas : selection statements: sequence, iteration (counting loops, while loops, file pointers), conditional (if-then-else statements ,case statements) ,matrix manipulations (addition, subtraction, multiplication, transposition).

Modular programming : functions, procedures with actual and formal parameters, simple sort algorithms, dynamic memory allocation and addressing.

Numerical methods: Linear interpolation, linear regression, pseudo random, roots of functions, solutions of simultaneous linear equations by Gaussian elimination, numerical integration.

Recommended Texts

1. The Thinking Ape: Evolutionary Origins of Intelligence, R. Byrne.
2. Intelligent Multimedia System : A Handbook for Creating Applications, R.M.Kaplan
3. Artificial Intelligence, E.Rich and K. Knight

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CS 102 Programming Techniques (3 credits)

Basic concepts, basic components of programming languages, binding, simple algorithms operating on non-structured data, modularity in program construction.

Basics of constructing larger programs :abstraction and instantiation of program components, structured data (lists, stacks, queues, ordered binary trees), storing and accessing data structures, operations on mutable data, working with mutable data, object-based programming, data encapsulation

Recommended Texts:

1. *Data Structures, Algorithms,and Object-oriented Programming*, G.L. Heileman.
2. *Structured programming concepts*,K. Labudde

CS 104 Structured oriented Programming practical (1 credit)

(Prerequisites: CS101, CS102 which shall be taken concurrently)

Language constructs: data declarations, loops, decision structures, input/output, files, subprograms / procedures, numeric and non-numeric data. Design and construction of software: top-down and bottom-up design, decomposition, structuring, design for reuse, documentation, study of examples, writing software as a team, using software from others.

Programming assignments: A variety of progressively more complex assignments

Recommended Texts:

1. *The C Programming Language*, 2nd Edition, by Brian W. Kernighan and Dennis M. Ritchie, Prentice Hall, Inc., 1988.

CS105 Object oriented Programming practical (1 credit)

(Prerequisites: CS101, CS102)

Implementation of programs with object oriented language constructs: classes, objects, inheritance, aggregation, composition and polymorphism.

Recommended Texts:

1. *Developing Java Software, 3rd Edition, by Russel Winder and Graham Roberts, published by John Wiley and Sons, 2006*
2. *Java Programming: From the Beginning*, K. N. King, *Georgia State University*

FND 104 Society, Culture and Environment (2 credits)

There are four modules in this course. They are

I. Human Mind
II. World Religions
III. Law and Ethics
IV. Art and Art Appreciations

ECN 101 Introductory Microeconomics (3 credits)

This course is an introduction to microeconomic theory. No prior knowledge of economics is required.

Course topics include: Demand and supply. Theories of consumer behavior and cost. Market failure and Market structure (perfect competition. monopoly, monopolistic competition and oligopoly). No prerequisites.

ECN 102 Introductory Macroeconomics (3 credits)

The course is an introduction to macroeconomic theory. No prior knowledge of economics is required

Course topics include: National income accounting. Circular flow of income: the Keynesian income/output determination model: Fiscal policy, Deficit and debt: Money supply and demand: Monetary policy: Unemployment and inflation: Debates in macroeconomics: and an introduction to international trade and finance No prerequisites.

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