MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WB

Syllabus for Bachelor of Computer Application (BCA) Programme
(Effective for Students Admitted in Academic Session 2018-2019)

Detailed Syllabus
Semester VI

Paper: Python Programming
Code : BCAN-E601A
Contacts Hours / Week : 4L+1CE
Credits : 3

1. Module I: Introduction to Python (12L)

1. Introduction to Python

2. Python variables, expressions, statements

2.1 Variables, 2.2 Keywords, 2.3 Operators & operands, 2.4 Expressions, 2.5 Statements, 2.6 Order of operations, 2.7 String operations, 2.8 Comments, 2.9 Keyboard input, 2.10 Example programs

3. Functions

3.1 Type conversion function, 3.2 Math functions, 3.3 Composition of functions, 3.4 Defining own function, parameters, arguments, 3.5 Importing functions, 3.6 Example programs

2. Module II: Conditions & Iterations (8L)

1. Conditions

1.1 Modulus operator, 1.2 Boolean expression, 1.3 Logical operators, 1.4 if, if-else, if-elif-else, 1.5 Nested conditions, 1.6 Example programs

2. Iteration

2.1 while, 2.2 for, 2.3 break, 2.4 continue, 2.5 Nested loop, 2.6 Example programs

3. Module III: Recursion, Strings, List, Dictionaries, Tuples (10L)

1. Recursion

1.1 Python recursion, 1.2 Examples of recursive functions, 1.3 Recursion error, 1.4 Advantages & disadvantages of recursion

2. Strings

2.1 Accessing values in string, 2.2 Updating strings, 2.3 Slicing strings, 2.4 String methods – upper(), find(), lower(), capitalize(), count(), join(), len(), isalnum(), isalpha(), isdigit(), islower(), isnumeric(), isspace(), isupper() max(), min(), replace(), split(), 2.5 Example programs

3. List

3.1 Introduction, 3.2 Traversal, 3.3 Operations, 3.4 Slice, 3.5 Methods, 3.6 Delete element, 3.7 Difference between lists and strings, 3.8 Example program

4. Dictionaries

4.1 Introduction, 4.2 Brief idea of
dictionaries & lists 5 Tuples (1L)

5.1 Introduction, 5.2 Brief idea of lists & tuples, 5.3 Brief idea of dictionaries & tuples

4. Module IV: Classes & Objects (10L)

1. Classes & Objects

	1.1 Creating class, 1.2 Instance objects, 1.3 Accessing attributes, 1.4 Built in class attributes, 1.5 destroying objects, 1.6 Inheritance, 1.7 Method overriding, 1.8 Overloading methods, 1.9 Overloading operators, 1.10 Data hiding, 1.11 Example program

Suggested Readings:

1. **Learn Python The Hard Way, Zed A. Shaw, ADDISON-WESLEY**
2. **Learning Python, Mark Lutz, O'REILY**
3. **Programming In Python, Dr. Pooja Sharma, BPB**
4. **Python Programming - Using Problem Solving Approach, Reema Thareja, OXFORD UNIVERSITY PRESS**

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Paper: Artificial Intelligence
Code : BCAN-E601B
Contacts Hours / Week : 4L+1CE
Credits : 3

1. Module I: Introduction to AI (1L) OverviewofArtificialIntelligence–Introduction–HistoryofAI–ApplicationofAI–ObjectivesofAI-feature of AI
2. Module II: Symbolic Logic (6L) Normal Forms in Propositional Logic – Logical Consequences – Resolution Principal – Predicate Calculus – Well Formed Formulas – Clausal Form – Rules of Inference – Unification – Resolution
3. Module III: Search Techniques (10L) State Space Search, Blind Search Techniques (Depth First Search, Breadth First Search, Depth Limited Search, Bidirectional Search), Heuristic Search Techniques (Best First Search, Hill Climbing Search, A* Search, AND/OR Graphs, Problem reduction and AO* algorithm), Game Searches (Minmax Search Procedure, Alpha-Beta Cut offs)
4. Module IV: Knowledge representation (8L) Procedural verses declarative knowledge, forward verses backward reasoning, Structured Knowledge: Graphs, Frames, and Related Structures, Object-Oriented Representations, Representing knowledge in an uncertain domain, the semantics of Bayesian networks, Dempster-Shafer theory, Fuzzy sets & fuzzy logics
5. Module V: Expert system (2L) Characteristic features of expert systems Applications, importance of expert systems Rule based system architectures (the knowledge base, the inference process, explaining how or why, building a knowledge base, the I/O interface)
6. Module VI: Learning (9L) Forms of learning, inductive learning, learning decision trees, explanation based learning, learning using relevance information, neural net learning (Human neurons to artificial neurons-Learning Algorithms – Difference Network Architectures and their applications – Comparisons of Neutral Networks and rule based Methods - – Comparisons of Neutral Networks and Expert System – Benefits of Neural Computing – Limitations of Neural Computing) & genetic learning (different operators of Genetic Algorithm ,Analysis of selection operations)
7. Module VII: AI Programming (4L) **Basic knowledge of programming language - Prolog & Lisp**

Suggested Readings:

1. **Artificial Intelligence, Ritch & Knight, TMH**
2. **Artificial Intelligence A Modern Approach, Stuart Russel Peter Norvig Pearson**
3. **Introduction to Artificial Intelligence & Expert Systems, Patterson, PHI**
4. **Logic & Prolog Programming, Saroj Kaushik, New Age International**
5. **Expert Systems, Giarranto, VIKAS**

Paper:E-Commerce
Code : BCAN-E601C
Contacts Hours / Week : 4L+1CE
Credits : 3

1. Module I: Introduction to E-Commerce (5L) **E-Commerce and its types (B2B, B2C, C2B, C2C etc), Advantages, Disadvantages and Application areas of E-Commerce, E-Commerce Framework, Introduction to M-Commerce**
2. Module II: Internet and Network Security (8L) E-Commerce and Internet, IP Address, DNS, ISP, URL, Modes of Internet Connectivity with reference to E-Commerce transactions, Web Architecture, VPN
3. Module III: Electronic Payment Methods and Digital Currencies (12L) Differences between Traditional Payment Methods and Electronic Payment Methods, Types of Electronic Payment Methods, E-Commerce Secure Payment System, Digital Certificate and Digital Signature, SSL, SET, Cyber Cash Model, Digicash, Smart Card, EDI
4. Module IV: Introduction to MIS and ERP (7L) MIS-Definition, Working, Application, DSS, Data Processing, End-user Computing, Introduction to ERP and ERP Systems, ERP Functional Modules, ERP selection issues
5. Module V: Information System Prospective of ERP (8L) Introduction to OLAP, OLTP, Knowledge Base System, MRP, Supply Chain Management – Definition, Components, Process, Customer Relationship Management – Definition, Objectives, Benefits, Process, Business Process Reengineering – Definition, Advantages, Process

Suggested Readings:

1. **Adesh K Pandey – Introduction to E-Commerce and ERP; S K Kataria and Sons**
2. **Ritender Goel - E-Commerce; New Age International**
3. **M.M. Oka – E-Commerce; Everest Publishing House**
4. **Joseph – E-Commerce and Managerial Perspective; PHI**

Paper: Web Technology with PHP-MYSQL
Code : BCAN-E602A
Contacts Hours / Week : 4L+1CE
Credits : 3

1. Module I: Introduction and Installation (4L) Introduction to PHP, MySQL and Apache, Installation of WAMP and XAMPP.
2. Module II: PHP Basic (6L) Syntax, variables, data types, Operators, Strings and constants
3. Module III: Control Statements (4L) If....Else....Else if, Switch
4. Module IV: IterationStatement(4L) while and for
5. Module V: Arrays (4L) Create an array and access array elements
6. Module VI: Functions (4L) Create a user defined function in PHP, PHP function arguments, Returning values
7. Module VII: PHP Interface Design (6L) Form Creation, Form validation (server side), $_GET, $_POST, $_REQUEST
8. Module VIII: PHP Advanced (4L) PHP include, PHP cookies, PHP Sessions, PHP date and time
9. Module IX: Database Connectivity (4L) Create database and table using PHP INSERT data, SELECT data, DELETE data, UPDATE data using PHP

Suggested Readings:

1. **Php & Mysql 1st Edition (English,Mike Mcgrath) Publisher: Mcgraw Higher Ed**
2. **Beginning PHP, Apache, MySQL Web Development**
3. **Michael K. Glass, Yann Le Scouarnec, Elizabeth Naramore, Gary Mailer, Jeremy Stolz, Jason Gerner (Wiley Publishing)**
4. **PHP & MySQL In Easy Steps By Mike Mc Grath (BPB Publications)**
5. **PHP- Beginner's Practical Guide Author: Pratiyush Guleria (BPB Publications)**

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Paper: Advanced DBMS with PLSQL
Code : BCAN-E602B
Contacts Hours / Week : 4L+1CE
Credits : 3

1. Module I: Transaction and Concurrency Control (10L) Transaction processing states and ACID properties, Basic operations of transaction – read, write, commit, abort Concept of System Log. Concurrency Problems Schedules - Serializability, Precedence Graph Concurrency Control Techniques – Binary Lock and Two phase lock, Timestamp oriented concurrency control. Deadlock and Livelock
2. Module II: Recovery (4L) Reasons for database recovery, Deferred and Immediate Update, Log-based recovery, In-place updating, Shadow paging
3. Module III: Normalization and File Organization (10L) Normalization – Multivalued Dependency and 4NF, Join Dependency and 5NF, Domain Key Normal Form (DKNF), 6NF.File Organization – Concept of Dynamic Indices, B Tree and B+ Tree Indices, Hashed File Organization – Hash Functions, Collisions and their Resolution. Record Organization – Fixed Length and Variable Length Records, Spanned and Un-spanned Records. Secondary Storage Structure, RAID
4. Module IV: PL/SQL (6L) Conditional Statements, Loop, Variable Binding, Working with Strings, Function, Procedure, Exception Handling. Cursor, Trigger, View
5. Module V: Advanced Topics (10L) Reference Architecture for Distributed DBMS, Fragmentation, Replication and Allocation Techniques, Top-down and Bottom-up Design, Correctness rules of fragmentation. Introduction to Object Oriented Database, XML Database, Data Warehousing and Data Mining, ODBC

Suggested Readings:

1. **RamezElmasri, Shamkant B Navathe - Fundamentals of Database Systems; Pearson**
2. **Rajiv Chopra - Database Management Systems (DBMS); S. Chand Publications**
3. **Chhanda Ray – Distributed Database Systems; Pearson**
4. **P.S. Deshpande - SQL and PL/SQL for Oracle 10g Black Book; Wiley Dreamtech**

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Paper: Digital Marketing
Code : BCAN-E602C
Contacts Hours / Week : 4L+1CE
Credits : 3

1. Module I: Overview (4L) About Digital Marketing, Difference between Traditional Marketing and Digital Marketing, Benefits of using digital media, Inbound and Outbound Marketing, Online marketing POEM: (Paid, Owned, and Earned Media), Components of Online Marketing (Email, Forum, Social network, Banner, Blog)
2. Module II: Search Engine Optimization (SEO) (4L) About SEO, Need of an SEO friendly website, Search Engine, Role of Keywords in SEO, Off-page Optimization, On-page Optimization concepts, Organic SEO vs Non-organic SEO
3. Module III: Social Media Marketing (SMM) (4L) About Social Media Marketing, Different types of Social Media Marketing
4. Module IV: Content Marketing (4L) About Content Marketing, Goals of Content Marketing, Types Of Contents, etc.
5. Module V: Online Advertising (4L) About Online Advertising, Advantages of Online Advertising, Paid versus Organic, Pay Per Click (PPC) Model. Basic concepts CPC, PPC, CPM, CTR, CR
6. Module VI: Email Marketing (4L) About Email marketing, Email newsletters, Digests, Dedicated Emails, Lead Nurturing, Sponsorship Emails and Transactional Emails, Drawbacks of Email Marketing
7. Module VII: MobileMarketing(4L) About Mobile Marketing, Objectives of Mobile Advertising, Creating a Mobile Marketing Strategy, About SMS Marketing
8. Module VIII: Online Marketing Types (4L) Basics of Affiliate Marketing, Viral Marketing, Influencer Marketing. Referral Marketing
9. Module IX: Web analytics (4L) About Web Analytics, Types of Web Analytics (On-site, Off-site), Importance of Web Analytics
10. Module X: OnlineMarketingImpact(4L) Impact, Pros & Cons

Suggested Readings:

1. **Digital Marketing 1st Edition (English, Vandana Ahuja), Oxford**
2. **Digital Marketing (PROF. SURABHI SINGH), MEWAR UNIVERSITY PRESS**

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Paper: Values and Ethics of Profession
Code : HUN-601
Contacts Hours / Week : 4L+1CE
Credits : 2

1. Module I: Introduction to Ethical Theories (4L) Consequentialist and Non-consequentialist theories, Hedonism, Utilitarianism, Virtue Ethics, Ethical Relativism, Ethical Naturalism
2. Module II: Ethics and Morality (6L) Ethics and Morals, Ethics in Indian Tradition, Building character in workplace, Moral and Ethical Judgement: Cannons of ethics, Ethics of duty, Ethics of responsibility
3. Module III: Ethics and Environment (8L) Rapid technological growth and depletion of resources, Sources of energy, Energy crisis, Reports of Club of Rome, Environmental degradation, Environmental Regulations, Environmental Ethics, Eco-friendly technologies, Sustainable Development, Important and recent national and international conventions on environment, Appropriate Technology Movement of Schumacher: Later developments
4. Module IV: Technology and Developing Nations- Technology transfer (8L) Problems of technology transfer, Stages of technology transfer, Problems of technology transfer, Technology Impact Assessment, Problems of man machine interaction, Impact of Assembly line, Automation, Corporate Social Responsibility
5. Module V: Ethics of Profession (8L) Attributes of a profession, Science, Technology and Engineering as Knowledge and as Social and Professional Activities, Engineering profession: Ethical issues in engineering practice, Conflicts between business demands and professional ideals, Social and ethical responsibilities of Technologists, Codes of professional ethics, Whistle blowing and beyond. Case studies
6. Module VI: Profession and Human Values (6L) Value Crisis in contemporary society, Nature of values: Value Spectrum of a 'good' life, Psychological values: Integrated personality; mental health, Societal values: The modern search for a 'good' society, justice, democracy, secularism, rule of law; values in Indian Constitution, Aesthetic values: Perception and enjoyment of beauty, simplicity, clarity

Suggested Readings:

1. **Ethics in Mgmt & Indian Ethos, Ghosh, VIKAS**
2. **Business Ethics, G. Pherwani, EPH.**
3. **Ethics, Indian Ethos & Mgmt, Balachandran, Raja & Nair, SHROFF Publishers**
4. **Human Values, A. N. Tripathi, New Age International**