Savitribai Phule Pune University, Pune

Faculty of Commerce and Management

Master of Computer Application (MCA)

Bridge Course Curriculum
(2020-2022)

Preamble:

1. The name of the course shall be Bridge Course for MCA (Pattern 2020)
2. As per AICTE guidelines Bridge course is mandatory for those students who had done graduation in non-computer course (B.Sc. or B.Com. or B.A. with Mathematics at 10+2Level or at Graduation Level
3. The purpose of Bridge Course in MCA (Pattern 2020) is to bring all students on a uniform platform.
4. Bridge course fill gap of prerequisite of MCA program related to content, learning style, and professional norms.
5. After completion of bridge course students are expected to complete various certification courses. Which help to enrich their resume.

Evaluation and Assessment:

1. Evaluation will be of 100 marks.
2. The evaluation will be done at Institute Level
3. Mode of evaluation will be of Objective Type Question (MCQ, fill in the blank, True or False).
4. Institute needs to submit the marks to university with 2 months from the date of commencement of academic year.

Course Structure

Course Code	Course Name	No. of Session (Hrs.)	Marks Weightage	Total Credit
BC101	Essentials of Networking	8	15	4
BC102	Introduction to Web Technology	8	15	
BC103	Fundamentals of Programming/ Problem Solving Techniques	8	15	
BC104	Fundamentals of Database Management System	8	15	
BC105	Fundamentals of Applied Mathematics	7	10	
BC106	Fundamentals of Operating Systems	7	10	
BC107	Recent trends in IT and Job opportunities	7	10	
BC108	Fundamentals of Information systems (various Business Processes Domains)	7	10	
	Total	**60**	**100**	

Detail syllabus of each course

Course Code: BC101
Course Name: Essentials of Networking

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions (in Hrs.)
1	Basics of Data Communication and Networks Data Communication System Components(Message, Sender, Receiver, Transmission Medium, Set of rules (Protocol))	7%	1
2	Data Representation (Binary, Octal, Decimal, Hexadecimal), their conversions, Bit, Byte, ASCII, EBCDIC, Extended EBCDIC, Unicode etc. Data Flow (Simplex, Half Duplex, Full Duplex)	10%	1
3	Network Models (OSI Model, Internet Model)	25%	2
4	Categories of Network (PAN, LAN, WAN, MAN, WLAN, SAN), Network Topologies (Mesh, Bus, Star, Ring, Hybrid)	10%	1
5	Common Devices used in Computer Networks Hub, Switch, Router, Bridge, Gateway, Modem, Repeater, Access Point.	15%	1
6	Switching Techniques (Circuit Switching, Packet Switching) ,Transmission Media (Twisted pair cable, Shielding twisted pair, Coaxial Cable, Optical Fiber, Radio wave)	25 %	1
7	Criteria for Data Communication Network Performance, Consistency, Reliability, Recovery and Security	8%	1
	Total	**100%**	**8**

References

1) Computer Networks Andrew S. Tanenbaum, Pearson,5th Ed 2.
2) Data Communications and Networking Behrouz A. Frozen, TMH,4th Ed
3)Computer Networks and Internets with Internet Applications Douglas Comer

MOOC/Online Course

1) https://www.udacity.com/course/computer-networking--ud436
2) https://www.coursera.org/learn/fundamentals-network-communications
3) https://www.futurelearn.com/courses/effective-networking

Course Code: BC102
Course Name: Introduction to Web Technology

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions (in Hrs.)
1	**Introduction** 1.1 Concept of WWW 1.2 Internet and WWW 1.3 Web Application- Client side and Server Side 1.4 SSL	20%	2
2	**Web Design** 2.1 Concepts of effective web design 2.2 Web design issues including Browser 2.3 Bandwidth and Cache 2.4 Responsive Website 2.5 User Interface/User Experience 2.6 Page Layout and linking 2.7 User centric design 2.8 Sitemap 2.9 Planning and publishing website 2.10 Designing effective navigation	20%	2
3	**HTML** 3.1. Introduction to HTML, WWW, W3C, Common HTML 3.2. Tags and attributes, Ordered & Unordered Lists 3.3. Inserting image 3.4. Client server image mapping 3.5. Text and image links	30%	2

	3.6. Tables 3.7. Frames 3.8. Forms 3.9. Introduction to text box, text area, buttons, List box, radio, checkbox etc. 3.10 Introduction to JSON		
4	**CSS** 4.1 Introduction to Style Sheet 4.2 Types of style Sheets 4.3 Inline, External, Embedded CSS. 4.4 CSS Border, margin, Positioning, color, text, link, background, list, table, padding, image, display properties 4.5 Use of Id & classes in CSS 4.6 use of & 4.7 Introduction of CSS3: Gradients, Transitions, Animations, multiple columns	30%	2
	Total	**100%**	**8**

Reference Books:

1. HTML Black Book, Steven Holzner
2. The Complete Reference HTML & CSS, 5th Edition, Thomas A. Powell

Web References:

1. https://www.w3schools.com/

MOOC/Online Courses:

1. https://www.coursera.org/specializations/web-design
2. https://www.edx.org/course/css-basics
3. https://www.edx.org/course/html5-and-css-fundamentals

Course Code: BC103
Course Name: Fundamentals of Programming/ Problem Solving Techniques

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions (in Hrs.)
1	**Computer Evolution** 1.1 Mainframe, SuperMini/Mini, PC (PC-XT, AT, 286, 386,486, Pentium, Core…) 1.2 Mobile Computers (Tablet computer, Smartphone, Palmtop PC, Handheld PC) 1.3 Wearable Computer (Smartwatch, Smartglasses) 1.4 Industry 1.0, 2.0, 3.0, 4.0 (Industrial Internet of Things) 1.5 Cloud Computing / Services 1.6 Mainframe based Applications / Dumb Terminal clients 1.7 Thick Client Server, Web based, Mobile App	15%	1
2	**Number System** 2.1 Introduction to binary, octal, decimal and hexadecimal number system 2.2 Introduction to Unicode standards	15%	1
3	**OFFICE AUTOMATION TOOLS** 3.1 Microsoft Word 3.2 Microsoft Excel 3.3 Microsoft Power point	15%	1
4	**Basic Program Design and Abstractions, Programming Environment** 4.1 Program structure- Temporary storage (variable/constant/homogeneous/heterogeneous/enumerated) 4.2 Data Types- Primitive, Non-primitive (only introduction) 4.3 Simple I/O	15%	1

	4.4 Compiler and Run-Time Errors 4.5 Algorithms, Big-O notation and complexity 4.6 Types of programming languages		
5	**Control Structures (Flowchart and Algorithms)** 5.1 Conditional Statements 5.2 Iterative Statements	10%	1
6	**Program Decomposition and Functions (Flowchart and Algorithms)** 6.1 Subroutine Procedure 6.2 Functions 6.3 Recursion	10%	1
7	**Arrays, Pointers and Strings (Flowchart and Algorithms)** 7.1 1-D, 2-D Arrays 7.2 Dynamic Memory Allocation 7.3 Strings	10%	1
8	**File System** 8.1 Why File 8.2 Types of file 8.3 File Operations	10%	1
	Total	**100%**	**8**

Reference Books:

1. Fundamentals of Computers, E Balgurusamy
2. Programming Languages: Principles and Paradigms (Undergraduate Topics in Computer Science) 2010th Edition by Maurizio Gabbrielli (Author), Simone Martini (Author)
3. The Self-Taught Programmer: The Definitive Guide to Programming Professionally (ISBN-13: 978-0999685907 / ISBN-10: 0999685902)
   by Cory Althoff
4. Beginning Programming All-in-One Desk Reference For Dummies 1st Edition by Wallace Wang (Author)
5. Robert W. Sebesta, “Concepts of Programming Languages”, Tenth Edition, Addison Wesley, 2012
6. Programming Languages, Principles & Paradigms, 2ed, Allen B Tucker, Robert E Noonan, TMH
7. R. Kent Dybvig, “The Scheme progring language”, Fourth Edition, MIT Press, 2009

Course Code: BC104
Course Name: Fundamentals of Database Management System

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions (in Hrs.)
1	**1 Basic concepts** 1.1 Introduction- why database? 1.2 Database Types (brief introduction) RDBMS, OODBMS, Distributed Database, Big Data, Cloud Database 1.3 DBA, DBA role, significance of DBA in the organization, 1.4 Introduction to various database Oracle, Sybase, MySQL, SQL, NoSQL	40%	3
2	**2 Database design** 2.1 Introduction to functional dependency 2.2. Concept of Atomic domain and Normalization 2.2 Different types of keys, Integrity Constraints 2.3 Database Languages - DDL, DML	40%	3
3	**Database Security** 3.1 Introduction of Database security 3.2 access control based on grant & revoking privilege	20%	2
	Total	**100%**	**8**

Reference Books:

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, McGrawHill Education, 3rd Edition, 2003.
2. Data base System Concepts, A.Silberschatz, H.F. Korth, S.Sudarshan, McGraw Hill, VI edition, 2006.
3. Introduction to database systems C.J.Date, Pearson.
4. Principles of Database Management James Martin, PHI

MOOC/Online Courses:

1) https://nptel.ac.in/courses/106/105/106105175/
2) https://www.coursera.org/courses?query=database%20management
3) https://www.edx.org/learn/databases

Course Code: BC105
Course Name: Fundamentals of Applied Mathematics

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions (in Hrs.)
1	**Relation and Function** 1.1 Equivalence Relation 1.2 Bijection	10%	1
2	**Basic of Correlation** 2.1 Definition of Correlation, 2.2 Karl Pearson correlation coefficient 2.3 Rank correlation coefficient	15%	1
3	**Linear Regression** 3.1 Definition of linear regression, 3.2 Two regression equations 3.3 regression coefficient and its significance	15%	1
4	**Concept of Probability** 4.1 Concept of probability, 4.2 Sample space and its type, 4.3 Occurrence of an event	15%	1
5	**Conditional Probability, Bays Theorem** 5.1 Definition of conditional probability, 5.2 Bayes theorem and its applications	15%	1
6	**Hypothesis Testing** 6.1 Test of Hypothesis Concept, 6.2 t and chi square test, 6.3 z test introduction.	15%	1
7	**Normal Distribution** 7.1 Definition of Normal distribution 7.2 its applications in real life	15%	1
	Total	**100%**	**7**

Reference Books:

1. Fundamentals of Mathematical Statistics by S. C. Gupta and V. K. Kapoor
2. Probability and Combinatorics : D. P. Apte
3. Statistical Methods by P. N. Arora , Sumeet Arora and S. Arora
4. Probability & Random Process by T. Veerarajan
5. Statistical Methods by S. P. Gupta

MOOC/Online Courses:

1. https://www.edx.org/learn/probability
2. https://oli.cmu.edu/courses/probability-statistics-open-free/
3 https://online-learning.harvard.edu/course/introduction-probability-edx?delta=1

Course Code: BC106
Course Name: Fundamentals of Operating Systems

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions (in Hrs.)
1	**Basic concepts** 1.1 Introduction 1.1.1 What is Software? 1.1.2 What is Operating System 1.2 Booting 1.2.1 Introduction 1.2.2 Boot Devices 1.2.3 Boot Sequence 1.3 Resource 1.3.1 Types of Resources – Input/output Devices, Memory, File Storage Space, CPU 1.3.2 Operating System as a Resource Manager	35%	3
2	**2 Operating System-Installation** 2.1 Basic Installation steps 2.2 Maintenance 2.3 Windows Control Panel	35%	2
3	**Operating System- Types** 3.1 Types of Operating System (Up to Embedded OS) 3.2 Introduction to Linux File System (Basic) 3.3 Introduction to DOS 3.1.1 Basic DOS Commands	30%	2
	Total	**100%**	**7**

Reference Books:

1. D.M Dhamdhere: Operating systems - A concept-based Approach, 3rd Edition, Tata McGraw- Hill, 2012.
2. “Operating System Concepts” by Avi Silberschatz and Peter Galvin

MOOC/Online Courses:

1. https://nptel.ac.in/courses/106/106/106106144/
2. https://nptel.ac.in/courses/106/105/106105214/

Course Code: BC107
Course Name: Recent Trends in IT and Job Opportunities

Note: **Appropriate syllabus need to be designed at Institute level by considering the trends in the respective year.**

Course Code: BC108
Course Name: Fundamentals of Information Systems

Course Structure:

Sr. No.	Topics Details	Weightage in %	No of Sessions (in Hrs.)
1	**Basic concepts** 1.1 Introduction- Information System 1.2 Management Information System (MIS) 1.3 Decision Support System (DSS) 1.4 Enterprise Resource Planning (ERP)	30%	2
2	**Systems Applications and Products in Data Processing (SAP)** 2.1 Introduction to SAP 2.2. Modules of SAP	35%	2
3	**Business Process Domains (BPD)** 3.1 Introduction to BPD 3.2 Supply Chain Management (SCM) 3.3 Customer Relation Management (CRM) 3.4 E-Commerce	35%	3
	Total	**100%**	**7**

Reference Books:

1. Information Systems for Modern Management - Robert Murdick, Joel e. Ross, PHI
2. Decision Support & Intelligent System - Efraim Turban, Pearson, 8th Ed.
3. Management Information System - Waman S..Jawadekar, TMH,4th Ed.
4. The SAP Material Master - a Practical Guide by Matthew Johnson
5. Using SAP: An Introduction to Learning SAP for Beginners and Business Users (3rd Edition) (SAP PRESS… by Olaf Schulz)
6. Supply Chain Management - Strategy, Planning & Operation by Sunil Chopra, Peter Meindl, D. V. Kalra, Pearson Education.
7. E-Commerce concept-model-strategies, C.S.V. Murthy, Himayalaya Publication House 5
8. Customer Relationship Management by Kristin Anderson and Carol Kerr, TMGH

MOOC/Online Courses:

1) https://www.udemy.com/course/sap-simplified-for-absolute-beginners/
2) https://www.coursera.org/specializations/information-systems
3) https://www.coursera.org/specializations/supply-chain-management?
4) https://www.coursera.org/learn/digital-business-models