

DON BOSCO ARTS & SCIENCE COLLEGE
(Affiliated to Kannur University)
ANGADIKADAVU, IRITTY, KANNUR



COURSE PLAN

BCA

SEMESTER - 3

ACADEMIC YEAR 2015 - 16

SL No.	Name of Subjects	Name of the Teacher	Duty Hours per week	
	III Sem BCA (2014 - 17)			
1.	3A12 BCA – Data Structure	Vineetha Mathew	6	
2.	3A13 BCA – Data Base Management System	Sindhu PM	6	
3.	3B06 BCA – Computer Organization	Mullu Joy	4	
4.	3B07 BCA – Introduction to Microprocessor	Kevinson Kurian	4	
5.	3C03 MAT – Mathematics III	Jimi Joseph	5	

TIME TABLE

Day	9.50am– 10.45am	10.45am– 11.40am	11.55am– 12.50am	1.40am– 2.35am	2.35am – 3.30am
1	3A12 BCA – Data Structure	3A13 BCA – Data Base Management System	3C03 MAT – Mathematics III	3B06 BCA – Computer Organization	3A12 BCA – Data Structure
2	3A13 BCA – Data Base Management System	3A12 BCA – Data Structure	3C03 MAT – Mathematics III	3B06 BCA – Computer Organization	3A12 BCA – Data Structure
3	3A13 BCA – Data Base Management System	3B07 BCA – Introduction to Microprocessor	3B07 BCA – Introduction to Microprocessor	3C03 MAT – Mathematics III	3A13 BCA – Data Base Management System
4	3B06 BCA – Computer Organization	3A13 BCA – Data Base Management System	3C03 MAT – Mathematics III	3A12 BCA – Data Structure	3B06 BCA – Computer Organization
5	3C03 MAT- Mathematics III	3B07 BCA – Introduction to Microprocessor	3B07 BCA – Introduction to Microprocessor	3A13 BCA – Data Base Management System	3A12 BCA – Data Structure

3A12 BCA - DATA STRUCTURE

No of Credits: 4

No of contact hours: 106

Objectives: -

- To familiarize students with concept of data structures and its relevance in computer science.
- To introduce the concept of analysis of algorithms and ability to compare algorithms based on time and space complexity.
- To familiarize with selected linear and nonlinear data structures.
- To enhance skill in programming.

SYLLABUS

Module – I Data structures: Definition and Classification. Analysis of Algorithms : Apriori Analysis; Asymptotic notation; Time complexity using O notation; Average, Best and Worst complexities. Arrays :- Operations; Number of elements; Array representation in memory. Polynomial- Representation with arrays; Polynomial addition. Sparse Polynomial:-representation. Sparse matrix: Efficient representation with arrays; Addition of sparse matrices. Recursive algorithms: examples – factorial and Tower of Hanoi problem.

Module – II Search : Linear and Binary search; Time complexity; comparison. Sort: Insertion, bubble, selection, quick and merge sort; Comparison of Sort algorithms.

Module – III Stack: Operations on stack; array representation. Application of stack- i. Postfix expression evaluation. ii. Conversion of infix to postfix expression. Queues: Operation on queue. Array Implementation; Limitations; Circular queue; Dequeue, and priority queue. Application of queue: Job scheduling.

Module – IV Linked list – Comparison with arrays; representation of linked list in memory. Singly linked list- structure and implementation; Operations – traversing/printing; Add new node; Delete node; Reverse a list; Search and merge two singly linked lists. Stack with singly linked list. Circular linked list – advantage. Queue as Circular linked list. Head nodes in Linked list – Singly linked list with head node – Add / delete nodes; Traversal / print. Doubly linked list – structure; Operations – Add/delete nodes ; Print/traverse. Advantages.

Module – V Tree and Binary tree: Basic terminologies and properties; Linked representation of Binary tree; Complete and full binary trees; Binary tree representation with array. Tree traversal: Recursive inorder, preorder and postorder traversals. Binary search tree - Definition and operations (Create a BST, Search, Time complexity of search). Application of binary tree: Huffman algorithm.

Text Book

- Data Structures and Algorithms: Concepts, Techniques and Applications; GAV Pai, Mc Graw Hill, 2008

References: -

- Data Structures in C, Achuthsankar and Mahalekshmi, PHI, 2008
- Fundamentals of Data structures in C++ , 2nd Edn, Horowitz Sahni, Anderson, Universities Press
- Classic Data structures, Samanta, Second Edition, PHI

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	01-06-2015 To 05-06-2015	1	Introduction
		2	DS Definition and classification
		3	Algorithm: Definition, Properties
		4	Algorithm: Structure And Development
		5	Practical Computer lab
2	08-06-2015 To 12-06-2015		Spoken English Course
			Spoken English Course
			Spoken English Course
			Spoken English Course
			Spoken English Course
3	15-06-2015 To 19-06-2015	6	Analysis of algorithm: Apriori analysis
		7	Asymptotic notations
		8	Time complexity of an algorithm using O notation, Average, best & worst complexities
		9	Analysis of Recursive Programs: Tower of Hanoi Puzzle
		10	Practical Computer lab
		11	Practical Computer lab
4	22-06-2015 To 26-06-2015	12	Analysis of Recursive Programs: Factorial of a number
		13	Arrays, Array operations, number of elements in an array
		14	Representation of arrays in memory: one dimensional array, two dimensional array
		15	Representation of arrays in memory: three dimensional array, N dimensional array
		16	Practical Computer lab
		17	Practical Computer lab
5	29-06-2015 To 03-07-2015	18	Polynomial- representation with arrays, polynomial addition
		19	Sparse polynomial:- representation
		20	Sparse matrix:- Efficient representation with arrays, Addition of sparse matrices
		21	Search: Linear search, Binary search, Time complexity, comparison
		22	Practical Computer lab
		23	Practical Computer lab
6	06-07-2015 To 10-07-2015	24	Sorting: Bubble sort, Insertion sort
		25	Selection sort, merge sort
		26	Quick sort, Comparison of sort algorithms

No of Weeks	Dates	Session	Topic
		27	Revision
		29	Practical Computer lab
		30	Practical Computer lab
7	13-07-2015 To 17-07-2015	31	Test paper for module II
		32	Stack: Operations on stack
		33	Array representation of Stack
		34	Application of stack- 1. Postfix expression evaluation
		35	Practical Computer lab
		36	Practical Computer lab
8	20-07-2015 To 24-07-2015	37	Application of stack- 1. Postfix expression evaluation
		38	Application of stack- 2. Conversion of infix to postfix expression
		39	Queues: Operation on queue
		40	Queue Implementation
		41	Practical Computer lab
		42	Practical Computer lab
9	27-07-2015 To 31-07-2015	43	Limitations of queues
		44	Circular Queues
		45	Dequeues
		46	Priority queues
		47	Practical Computer lab
		48	Practical Computer lab
10	03-08-2015 To 07-08-2015	49	Application of queues: Job scheduling
		50	Application of queues: Job scheduling
		51	Test paper for module III
		52	Linked list, Drawbacks of sequential data structure, Merits of linked data structure
		53	Practical Computer lab
		54	Practical Computer lab
11	10-08-2015 To 14-08-2015	55	Comparison with array, Singly linked list
		56	Representation of Singly linked list
		57	Practical Computer lab
			First internal for UG/PG
			First internal for UG/PG
			Karkkida Vavu -Holiday
12	17-08-2015 To 21-08-2015		First internal for UG/PG
			First internal for UG/PG
			First internal for UG/PG
			First internal for UG/PG
		Onam Celebration	
13	24-08-2015 To 28-08-2015		Holiday
			Holiday
			Holiday
			Holiday

No of Weeks	Dates	Session	Topic
			Holiday
14	31-08-2015 To 04-09-2015	58	Singly linked list : Operations: Traversing/Printing
		59	Singly linked list : Operations: Add new node;
		60	Singly linked list : Delete node
		61	Singly linked list : Operations: Reverse a list; Search and Merge two lists
		62	Practical Computer lab
		63	Practical Computer lab
15	07-09-2015 To 11-09-2015	64	Circular linked list, Advantages
		65	Queues as circular linked list
		66	Head nodes in linked list- Singly linked list with head node
		67	Add/ delete nodes; Traversal/print
		68	Practical Computer lab
		69	Practical Computer lab
16	14-09-2015 To 18-09-2015	70	Doubly linked list- Structure
		71	Doubly linked list Operations: Add/Delete nodes
		72	Practical Computer lab
			Annual Retreat
			Annual Retreat
			Annual Retreat
17	21-09-2015 To 25-09-2015		Sree Narayana Guru Samadhi - Holiday
		73	Doubly linked list: Print/ Traversal ; Advantages
		74	Revision
		75	Test paper for module IV
		76	Practical Computer lab
			Bakrid - Holiday
18	28-09-2015 To 02-10-2015	77	Tree
		78	Binary tree
		79	Basic terminologies and properties
		80	Linked representation of Binary tree
		81	Practical Computer lab
		82	Practical Computer lab
19	05-10-2015 To 09-10-2015		Second internal for UG/PG
			Second internal for UG/PG
			Second internal for UG/PG
			Second internal for UG/PG
			Second internal for UG/PG
			Second internal for UG/PG
20	12-10-2015 To 16-10-2015	83	Complete binary trees
		84	Full binary trees
		85	Binary tree representation with array
		86	Tree traversal: Recursive

No of Weeks	Dates	Session	Topic
		87	Practical Computer lab
		88	Practical Computer lab
21	19-10-2015 To 23-10-2015	89	Tree traversal: inorder
		90	Tree traversal: preorder
		91	Tree traversal: postorder
		92	Binary search tree: Definition
		93	Practical Computer lab
		94	Practical Computer lab
22	26-10-2015 To 30-10-2015	95	Binary search tree: Operations
		96	BST search, Time complexity of search
		97	Application of binary tree: Huffman algorithm
		98	Revision
		99	Practical Computer lab
		100	Practical Computer lab
23	02-11-2015 To 06-11-2015	101	Test paper for module V
		102	Previous year question paper discussion
		103	Previous year question paper discussion
		104	Previous year question paper discussion
		105	Practical Computer lab
		106	Practical Computer lab
24	09-11-2015 To 13-11-2015		Study Leave
			Study Leave
			Study Leave
			Study Leave
25	16-11-2015 To 20-11-2015		Study Leave
			Study Leave
			Study Leave
		18 – Nov	III Sem UG University Exam Begins

3A13 BCA - DATABASE MANAGEMENT SYSTEM

No of Credits: 4

No of contact hours: 90

Objectives: -

- Introduce the basic concepts in DBMS.
- Skill in designing database.
- Familiarization of different DBMS models.
- Skill in writing queries using MySQL.

SYLLABUS

Module – I Introduction – purpose of Database systems. View of Data, data Models, transaction management, database structure, DBA, Data Base Users.

Module – II E-R model, Basic concepts; design issues; Mapping Constraints; Keys; Primary, Foreign, candidate, E-R diagram; Weak entity set; Extended E-R features. Normal forms – 1NF, 2NF, 3NF and BCNF; functional dependency, Normalization.

Module – III SQL : database languages; DDL; create, alter, Drop, DML, Insert into, Select, update, Delete,. DCL commands, Data types in SQL; Creation of database and user. Case study : MySQL.

Module IV Developing queries and sub queries; Join operations; Set operations; Integrity constraints, views, Triggers, functions and Sequences .Case study : MySQL

Module V Relational model – Structure of Relational database. Relational Algebra; Fundamental operations; Relational calculus; Tuple and domain calculus.

References: -

- Database system concepts; Silberschatz, Korth and Sudarsan, 5th Edn; McGraw Hill.
- Fundamentals of Database systems, E. Navathe, 4th edn, Pearson Education.

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	01-06-2015 To 05-06-2015	1	Introduction
		2	Purpose of data base system
		3	Characteristics and advantages, Functions of DBMS
		4	Database structure
		5	Practical Computer lab
2	08-06-2015 To 12-06-2015		Spoken English Course
			Spoken English Course
			Spoken English Course
			Spoken English Course
3	15-06-2015 To 19-06-2015	5	Data models- Hierarchical, Network, Relational
		6	Three schema architecture
		7	DBA
		8	Database users
		9	Practical Computer lab
		10	Practical Computer lab
4	22-06-2015 To 26-06-2015	11	Revision
		12	Test paper for module I
		13	Entity Type
		14	Entity Set, Attributes
		15	Practical Computer lab
		16	Practical Computer lab
5	29-06-2015 To 03-07-2015	17	E-R diagrams E-R Model, design issue
		18	Total and partial E-R, Mapping cardinality
		19	Weak entity set
		20	Extended E-R Features
		21	Practical Computer lab
		22	Practical Computer lab
6	06-07-2015 To 10-07-2015	23	Keys-candidate, primary, super and foreign
		24	Normalization- Functional dependencies ,1 NF
		25	2 NF ,3 NF, BCNF
		26	Revision
		27	Practical Computer lab
		28	Practical Computer lab
7	13-07-2015 To 17-07-2015	29	Test paper for module II
		30	SQL
		31	Orientation for teachers
		32	DDL->create, alter, drop
		33	Practical Computer lab
			Ramsan – Holiday
8	20-07-2015 To 24-07-2015	34	DML->insert, update, delete
		35	DCL->grant, revoke
		36	Data types

No of Weeks	Dates	Session	Topic
		37	Data types
		38	Practical Computer lab
		39	Practical Computer lab
9	27-07-2015 To 31-07-2015	40	Creation of database
			Election
		41	Revision
		42	Test paper for module III
		43	Practical Computer lab
		44	Practical Computer lab
10	03-08-2015 To 07-08-2015	45	Developing queries
		46	Subqueries
		47	Join operation
		48	Inner, outer join Operation
		49	Practical Computer lab
		50	Practical Computer lab
11	10-08-2015 To 14-08-2015	51	Views
		52	Question paper discussion
			First internal for UG
			First internal for UG
12	17-08-2015 To 21-08-2015		Karkkida Vavu –Holiday
			First internal for UG
			First internal for UG
			First internal for UG
			First internal for UG
13	24-08-2015 To 28-08-2015		Onam Celebration
			Holiday
			Holiday
			Holiday
			Holiday
14	31-08-2015 To 04-09-2015	53	Functions and sequences
		54	Constraints
		55	Set operations
		56	Revision
		57	Practical Computer lab
		58	Practical Computer lab
15	07-09-2015 To 11-09-2015	59	Test paper for module IV
		60	Relational model
		61	Structure of relational model
		62	Structure of relational model
		63	Practical Computer lab
		64	Practical Computer lab
16	14-09-2015 To 18-09-2015	65	Relational algebra
		66	Operations->Select, project
		67	Union, Intersection, Set difference etc
			Annual Retreat

No of Weeks	Dates	Session	Topic
			Annual Retreat
			Annual Retreat
			Sree Narayana Guru Samadhi - Holiday
17	21-09-2015 To 25-09-2015	68	Relational Calculus
		69	Tuple calculus
		70	Practical Computer lab
			Bakrid - Holiday
18	28-09-2015 To 02-10-2015	71	Domain Calculus
		72	Revision
		73	Test paper for module V
		74	Practical Computer lab
		75	Practical Computer lab
			Gandhi Jayanthi - Holiday
19	05-10-2015 To 09-10-2015		Second internal for UG
			Second internal for UG
			Second internal for UG
			Second internal for UG
			Second internal for UG
			Second internal for UG
20	12-10-2015 To 16-10-2015	76	Revision module I
		77	Revision module II
		78	Revision module III
		79	Practical Computer lab
		80	Practical Computer lab
		81	Practical Computer lab
21	19-10-2015 To 23-10-2015	82	Revision module IV
		83	Revision module V
		84	Test paper for module i
			Mahanavami - Holiday
			Vijayadasami - Holiday
22	26-10-2015 To 30-10-2015	85	Test paper for module II
		86	Test paper for module III
		87	Test paper for module I V
23	02-11-2015 To 06-11-2015	88	Test paper for module V
		89	Question paper discussion
		90	Question paper discussion
			Study Leave
24	09-11-2015 To 13-11-2015		Study Leave
			Study Leave
			Study Leave
25	16-11-2015 To 20-11-2015		Study Leave
			Study Leave
			Study Leave
		18 - Nov	III Sem UG University Exam Begins

3B06 BCA - COMPUTER ORGANIZATION

Hours per Week: Theory - 4

Credit: 3

Objectives:

- To introduce the basic terminology of computer hardware.
- To familiarize the functional units of a computer system.
- To understand the basic operation of a computer system.
- To understand the memory organization in a computer system

Module I: Basic structure of computer-Types of computers-Functional Units-Basic operational Concepts-Bus structure-Multiprocessors and Multi computers-Data representation-Fixed Point representation and floating Point representation.

Module II: Register Transfer and Micro operations – Register Transfer language-Register Transfer-Bus and memory Transfer-Three state bus buffers-Memory Transfer-Basic Computer Organization and Design – Instruction Codes – Fetch & Decode Instructions – Register Reference Instructions – Memory Reference Instruction – Input output & Interrupt.

Module III: Micro Programmed Control – Control Memory – Address sequencing – Central Processing Unit – General Register Organization – Control word – Stack Organization – Register stack - Memory Stack – Reverse Polish notation – Evolution of Arithmetic expressions – Instruction Formats – Addressing modes – Data Transfer and Manipulations – reduced Instruction set computer(RISC)

Module IV: Input Output Organization – Peripheral Devices – Input/Output Interfaces – Asynchronous Data Transfer – Modes of transfer –Priority Interrupt – Direct Memory Access (DMA) - Input Output Processor - Serial Communications.

Module V: Memory Organization – Hierarchy – Main memory – Auxiliary Memory – Associative Memory – Cache memory – Mapping – Multiprocessors – Characteristics of multiprocessors - Inter connection structures – Inter Processor Arbitration.

Text Books

- 1: Computer system Architecture –M.Morris Mano - PHI Pvt Limited
2. Computer Organization - Carl Hamacher –International Edition

References

1. Computer Organization and Architecture , William Stallings, 7th Edn, Pearson Education.
2. Computer Architecture & Organization John P Hayes –Mc Graw Hill

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	01-06-2015 To 05-06-2015	1	Basic structure of computer
		2	Types of computers
		3	Basic operational Concepts
		4	Bus structure
2	08-06-2015 To 12-06-2015		Spoken English Course
			Spoken English Course
			Spoken English Course
			Spoken English Course
			Spoken English Course
3	15-06-2015 To 19-06-2015	5	Multiprocessors and Multi computers
		6	Data representation
		7	Data representation
		8	Fixed Point representation
4	22-06-2015 To 26-06-2015	9	Floating Point representation
		10	Test Paper Module I
		11	Register Transfer language-Register Transfer
		12	Bus and memory Transfer
5	29-06-2015 To 03-07-2015	13	Three state bus buffers, Memory Transfer
		14	Instruction Codes
		15	Fetch & Decode Instructions
		16	Register Reference Instructions
6	06-07-2015 To 10-07-2015	17	Memory Reference Instruction
		18	Input output & Interrupt
		19	Test Paper Module II
		20	Control Memory
7	13-07-2015 To 17-07-2015	21	Address sequencing
		22	Central Processing Unit
		23	General Register Organization
		24	Control word
8	20-07-2015 To 24-07-2015	25	Stack Organization
		26	Register stack
		27	Memory Stack
		28	Reverse Polish notation
9	27-07-2015 To 31-07-2015	29	Evolution of Arithmetic expressions
		30	Instruction Formats
		31	Addressing modes
		32	Data Transfer and Manipulations
10	03-08-2015 To 07-08-2015	33	Reduced Instruction set computer(RISC)
		34	Test Paper Module III
		35	Peripheral Devices
		36	Input/Output Interfaces

No of Weeks	Dates	Session	Topic
11	10-08-2015 To 14-08-2015	37	Asynchronous Data Transfer
			First internal for UG/PG
			First internal for UG/PG
			Karkkida Vavu –Holiday
12	17-08-2015 To 21-08-2015		First internal for UG/PG
			First internal for UG/PG
			First internal for UG/PG
			First internal for UG/PG
			Onam Celebration
13	24-08-2015 To 28-08-2015		Holiday
			Holiday
			Holiday
			Holiday
			Holiday
14	31-08-2015 To 04-09-2015	38	Modes of transfer
		39	Priority Interrupt
		40	Direct Memory Access (DMA)
		41	Direct Memory Access (DMA)
15	07-09-2015 To 11-09-2015	42	Input Output Processor
		43	Serial Communications.
		44	Revision
		45	Test Paper Module IV
16	14-09-2015 To 18-09-2015	46	Memory Organization
			Annual Retreat
			Annual Retreat
			Annual Retreat
17	21-09-2015 To 25-09-2015		Sree Narayana Guru Samadhi – Holiday
		47	Memory Organization
		48	Hierarchy
			Bakrid - Holiday
18	28-09-2015 To 02-10-2015	49	Main memory
		50	Auxiliary Memory
		51	Associative Memory
		52	Associative Memory
19	05-10-2015 To 09-10-2015		Second internal for UG/PG
			Second internal for UG/PG
			Second internal for UG/PG
			Second internal for UG/PG
			Second internal for UG/PG
20	12-10-2015 To 16-10-2015	53	Cache memory
		54	Mapping
		55	Mapping
		56	Multiprocessors
21	19-10-2015	57	Characteristics of multiprocessors

No of Weeks	Dates	Session	Topic
	To 23-10-2015	58	Inter connection structures
		59	Inter Processor Arbitration.
			Vijayaddashami – Holiday
			Mahanavami – Holiday
22	26-10-2015 To 30-10-2015	60	Test Paper Module V
		61	Revision
		62	Previous year question paper discussion
		63	Previous year question paper discussion
23	02-11-2015 To 06-11-2015	64	Revision
		65	Revision
		66	Revision
		67	Revision
24	09-11-2015 To 13-11-2015		Study Leave
			Study Leave
			Study Leave
			Study Leave
25	16-11-2015 To 20-11-2015		Study Leave
			Study Leave
			Study Leave
		18-Nov	III Sem UG University Exam Begins

3B07 BCA - INTRODUCTION TO MICROPROCESSOR

No of Credits: 3

No of contact hours: 68

Objectives: -

- Familiarize with 8085 architecture.
- Familiarize with 8086 architecture.
- Skill in writing assembly language programs.
- Understand Interrupts and DMA techniques.

SYLLABUS

Module I Introduction: History of Microprocessors, Introduction to 8-bit microprocessor - 8085, Architecture of 8085, Bus organization of 8085, Internal Data Operations and 8085 registers.

Module II Introduction to 16-bit microprocessor – 8086, Architecture of 8086, Functional Block Diagram, Register Organization of 8086, Signal Description of 8086, Physical Memory Organization, Memory Mapped and I/O Mapped Organization, General Bus Operation, I/O Addressing Capability, Minimum and Maximum Mode 8086 System and Timings.

Module III Addressing Modes of 8086, Machine Language Instruction Format, Assembly Language Programming of 8086, Instruction Set of 8086-Data transfer instructions, Arithmetic and Logic instructions, Branch instructions, Loop instructions, Processor Control instructions, Flag Manipulation instructions, Shift and Rotate instructions, String instructions, Assembler Directives and operators.

Module IV Introduction to Stack, STACK Structure of 8086, Interrupts and Interrupt Service Routines, Interrupt Cycle of 8086, Non-Maskable and Maskable Interrupts.

Module V Data transfer schemes – Programmed IO, Interrupt driven IO and DMA. Programmable Peripheral Interface 8255, DMA Controller 8257, Programmable Interrupt Controller 8259A

Text Book

- Advanced Microprocessors and Peripherals – Architecture, Programming and Interfacing
- by A.K. Ray and K.M. Bhurchand, Tata McGraw Hill, 2002 Edition

References

- Microprocessors and Interfacing – Programming and Hardware by Douglas V Hall, 2nd Edition, Tata McGraw Hill, 2002.

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	01-06-2015 To 05-06-2015	1	Introduction
		2	History of Microprocessors
		3	Introduction to 8-bit microprocessor - 8085
		4	Architecture of 8085
			Sent off to Fathers (Morning Half Day)
2	08-06-2015 To 12-06-2015		Spoken English Course
			Spoken English Course
			Spoken English Course
			Spoken English Course
			Spoken English Course
3	15-06-2015 To 19-06-2015	5	Bus organization of 8085
		6	Internal Data Operations and 8085 registers.
		7	Revision
		8	Test paper for module I
4	22-06-2015 To 26-06-2015	9	Introduction to 16-bit microprocessor – 8086
		10	Architecture of 8086
		11	Functional Block Diagram
		12	Register Organization of 8086
5	29-06-2015 To 03-07-2015	13	Signal Description of 8086
		14	Physical Memory Organization
		15	Memory Mapped Organization
		16	I/O Mapped Organization
6	06-07-2015 To 10-07-2015	17	General Bus Operation
		18	I/O Addressing Capability
		19	Minimum and Maximum Mode 8086 System
		20	8086 System Timings.
7	13-07-2015 To 17-07-2015	21	Revision
		22	Test paper for module II
		23	Addressing Modes of 8086
		24	Machine Language Instruction Format
			Ramsan- Holiday
8	20-07-2015 To 24-07-2015	25	Assembly Language Programming of 8086
		26	Assembly Language Programming of 8086
		27	Instruction Set of 8086
		28	Data transfer instructions
9	27-07-2015 To 31-07-2015	29	Arithmetic and Logic instructions
		30	Branch instructions
		31	Loop instructions
		32	Processor Control instructions
10	03-08-2015 To 07-08-2015	33	Flag Manipulation instructions
		34	Shift instructions
		35	Rotate instructions
		36	String instructions

No of Weeks	Dates	Session	Topic
	To 16-10-2015	57	DMA Controller 8257
		58	Programmable Interrupt Controller 8259A
		59	Revision
21	19-10-2015 To 23-10-2015	60	Test paper for module V
		61	Revision- Module I
		62	Revision- Module II
			Mahanavami – Holiday
22	26-10-2015 To 30-10-2015	63	Revision- Module III
		64	Revision- Module IV
		65	Revision- Module V
		66	Previous year question paper discussion
23	02-11-2015 To 06-11-2015	67	Previous year question paper discussion
		68	Previous year question paper discussion
			Study Leave
			Study Leave
24	09-11-2015 To 13-11-2015		Study Leave
			Study Leave
			Study Leave
			Study Leave
24	16-11-2015 To 20-11-2015		Study Leave
			Study Leave
			Study Leave
		18- Nov	III Sem UG University Exam Begins

3C03 MAT- BCA - MATHEMATICS FOR BCA - III

No of Credits: 3

No of contact hours: 90

Objectives: -

- To provide education in mathematics of the highest quality at the undergraduate level and produce graduates of the caliber sought by industries and public service as well as academic teachers and researchers of the future.
- To attract outstanding students from all backgrounds.
- To provide an intellectually stimulating environment in which the students have the opportunity to develop their skills and enthusiasms to the best of their potential.
- To maintain the highest academic standards in undergraduate teaching.
- To impart the skills required to gather information from resources and use them.

SYLLABUS

Module - I: First Order Ordinary Differential Equations (20 hrs)

Basic concepts, Modeling, and ideas, Geometrical meaning of $y' + P(x)y = Q(x)$. Direction Fields, Separable ODEs, Modeling, Exact ODEs, Integrating Factors, Linear ODEs, Bernoulli Equation, Population Dynamics, Orthogonal Trajectories, Existence and Uniqueness of Solution (proof of theorem omitted). (Chapter 1 Sections 1.1 to 1.7).

Module – II: Second Order Ordinary Differential Equations (20 hrs)

Homogeneous Linear ODEs of second order, Homogeneous Linear ODEs with constant coefficients, Differential Operators, Euler-Cauchy Equation, Existence and Uniqueness of Solutions – Wronskian (statement of Theorems only, proofs omitted), Nonhomogeneous ODEs, Solution by variation of Parameters.

Module – III: Laplace Transforms (20 hrs)

Laplace Transform, Inverse Transform, Linearity, s -Shifting, Transforms of Derivatives and Integrals, ODEs, Unit step Function, t - Shifting, Short Impulses, Dirac's Delta Function, Partial Fractions, Convolution, Integral Equations, Differentiation and integration of Transforms, Systems of ODEs, Laplace Transform, General Formulas, Table of Laplace Transforms. [Chapter 6 Sections 6.1 to 6.9 (Proofs omitted)]

Module – IV : Fourier Series and Partial Differential Equations (30 hrs)

Fourier Series : Fourier series, Functions of any period $p = 2L$, Even and Odd functions, Half-range Expansions. [Chapter 11 Sections 11.1 to 11.3 (Proofs omitted)]

Partial Differential Equations: Basic Concepts, Modeling, Vibrating String, Wave Equation, Solution by Separating Variables, Use of Fourier Series, D'Alembert's solution of the wave equation, Heat Equation, Solution by Fourier Series. [Chapter 12 sections 12.1 to 12.5 (*Excluding* steady two dimensional heat problems and Laplace equation of 12.5)]

Text Book

- E. Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, Inc.

References:

- S.S. Sastry, Engineering Mathematics, Volume II, 4th Edition, PHI.
- M. R. Spiegel, Advanced Calculus, Schaum's Outline Series.
- M. R. Spiegel, Laplace Transforms, Schaum's Outline Series.

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	01-06-2015 To 05-06-2015	01	College reopens after summer break
		02	Periodic functions
		03	Fourier series of 2π periodic function defined over $[-\pi, \pi]$
		04	Convergence and sum of fourier series
		05	Even and odd functions
2	08-06-2015 To 12-06-2015		Spoken English Course
			Spoken English Course
			Spoken English Course
			Spoken English Course
3	15-06-2015 To 19-06-2015	06	Even and odd functions
		07	Fourier cosine series for even 2π periodic functions
		08	Fourier sine series for odd 2π periodic functions
		09	Fourier series of $2L$ periodic function defined over $[-L, L]$
4	22-06-2015 To 26-06-2015	10	Fourier series of $2L$ periodic function defined over $[-L, L]$
		11	Fourier cosine series for even $2L$ periodic functions
		12	Fourier sine series for odd $2L$ periodic functions
		13	Half range Fourier sine series formula defined over $[0, \pi]$
		14	Half range Fourier cosine series formula defined over $[0, \pi]$
5	29-06-2015 To 03-07-2015	15	Half range Fourier sine series formula defined over $[-L, L]$
		16	Half range Fourier cosine series formula defined over $[-L, L]$
		17	Test paper
		18	Laplace transforms
6	06-07-2015 To 10-07-2015	19	Laplace transforms
		20	Linearity of the laplace transformation
		21	Inverse laplace transforms
		22	Linearity of the laplace transformation
		23	Inverse laplace transforms
7	13-07-2015 To 17-07-2015	24	Laplace transforms of derivatives
		25	Laplace transform of the integral of a function
		26	Application of laplace transforms
		27	Unit step function
8	20-07-2015 To	28	Dirac's delta function
		29	Differentiation of transforms
			Ramsan – Holiday
8	20-07-2015 To	30	Integration of transforms
		31	Convolution theorem

No of Weeks	Dates	Session	Topic
	24-07-2015	32	Differential equations
		33	Integral equations
		34	Test paper
9	27-07-2015 To 31-07-2015	35	Differential equations
		36	Solution of first order differential equations
		37	Separable equations
		38	Equations reducible to separable form by substitution
		39	Equations reducible to separable form by homogenous equation
10	03-08-2015 To 07-08-2015	40	Exact differential equations
		41	Integrating factors
		42	Linear first order differential equations
		43	Bernoulli's equation
		44	Families of curves
11	10-08-2015 To 14-08-2015	45	Orthogonal trajectories
		46	Revision
			First Internal for UG/PG
			First Internal for UG/PG
			Karkkida Vavu –Holiday
12	17-08-2015 To 21-08-2015		First Internal for UG/PG
			First Internal for UG/PG
			First Internal for UG/PG
			First Internal for UG/PG
			Onam Celebration
13	24-08-2015 To 28-08-2015		Holiday
			Holiday
			Holiday
			Holiday
			Holiday
14	31-08-2015 To 04-09-2015	47	Existence and uniqueness of solutions
		48	Differential equations of second order
		49	Solution of a second order differential equation
		50	Initial value problem and boundary value problem
		51	Initial value problem and boundary value problem
15	07-09-2015 To 11-09-2015	52	Solution of second order differential equations by reducing to first order
		53	Solution by reducing to first order when one solution is known
		54	second order differential equations with constant coefficient
		55	second order differential equations with two distinct real roots
		56	second order differential equations with double roots
16	14-09-2015 To 18-09-2015	57	Bicentenary
		58	second order differential equations with complex roots

