

CURRICULUM
BACHELOR OF COMPUTER APPLICATIONS
CHOICE BASED CREDIT SYSTEM

STUDENTS LEARNING OUTCOMES

The curriculum and syllabi of Bachelor of Computer Applications (BCA) program (2017-18) conform to Outcome Based Education (OBE) for a flexible and structured Choice Based Credit system (CBCS). In general, TEN STUDENT OUTCOMES (a-j) have been identified and the curriculum and syllabi have been chosen in such a way that each of the modules meets one or more of these outcomes. Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program. Further, each module in the program spells out clear instructional objectives which are mapped to the student outcomes.

Learning Outcomes are:

- (a) Ability to apply knowledge of Mathematics and science in solving computational problems.
- (b) Ability to understand the Computing concepts and their applications using the acquired board based knowledge.
- (c) Ability to design, set up and conduct practical.
- (d) Ability to use the techniques, skills, and modern Software tools for software development.
- (e) Ability to identify and analyze software application problems in multiple aspect including coding, testing and implementation in industrial applications.
- (f) Ability to design, develop and verify software systems to meet desired needs within realistic constraints ensuring quality, reliability, security in addition to satisfying economical, ethical, social and environmental constraints.
- (g) Ability to apply Enterprise level application software for design of diverse software products.
- (h) An ability to communicate effectively in diverse groups and exhibit leadership qualities.
- (i) An understanding of professional and ethical responsibility.
- (j) To develop an understanding on global environment and its protection.

BACHELOR OF COMPUTER APPLICATIONS

SUMMARY OF PROGRAM CURRICULUM

Category			Total Number of Credits (BCA)	Min Required Credits (BCA)	Percentage of Total Credits
G	General	G	12	8	8%
BCA	Computing	Program Core (PC)	88	88	
		Program Elective (PE)	20	20	
		Generic Elective (GE)	8	4	
		Project (PD)	12	12	
Total : Computing			128	124	80%
M	Management	M	7	7	4%
P	Professional Enrichment	Ability Enhancement (AE)	8	7	
		Skill Enhancement (SE)	2	2	
		Creativity & Innovation (CI)	1	0	
		Co-Curricular Activity (CA)	1	0	
Total Professional Enrichment			12	9	8%
Overall Total			159	148	100%

Note:

Students are to earn at least 148 credits out of 159 credits to become eligible for the award of BCA degree.

PROGRAM SCHEME

SEMESTER I

MODULE CODE	CATEGORY	SUB-CATEGORY	MODULE	L	T	P	C
	G		MATHEMATICS	4	0		4
	BCA	PC	COMPUTER FUNDAMENTAL AND PROGRAMMING	3	1	0	3.5
	BCA	PC	PROGRAMMING WITH C	4	0	4	6
	BCA	PC	PC SOFTWARE	4	0	4	6
	G		INTRODUCTION TO DIGITAL ELECTRONICS	4	0	0	4
	M		MANAGEMENT & PROFESSIONAL LEADERSHIP	3	0	0	3
			TOTAL CREDITS	22	1	8	26.5

L = Lecture

T = Tutorial

P = Practical

C = Credit Point

SEMESTER II

MODULE CODE	CATEGORY	SUB CATEGORY	MODULE	L	T	P	C
	P	AE	APTITUDE I	2	0	0	2
	BCA	PC	INTRODUCTION TO WEB TECHNOLOGIES	4	0	4	6
	BCA	PC	OBJECT ORIENTED LANGUAGE USING C++	4	0	4	6
	BCA	PC	DATABASE MANAGEMENT SYSTEM	4	0	4	6
	BCA	PC	COMPUTER ARCHITECTURE	4	0	0	4
	BCA	PE	ELECTIVE-I	3	1	0	3.5
	P	SE	SOFT SKILLS-I	0	0	2	1
TOTAL CREDITS				21	1	14	28.5

- L = Lecture**
T = Tutorial
P = Practical
C = Credit Point

ELECTIVES

PROGRAM ELECTIVE I
1. MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE
2. SYSTEM PROGRAMMING
3. SYSTEM ANALYSIS AND DESIGN

SEMESTER -III

MODULE CODE	CATEGORY	SUB CATEGORY	MODULE	L	T	P	C
	P	AE	APTITUDE II	2	0	0	2
	BCA	PC	DATA STRUCTURE USING C++	4	0	4	6
	BCA	PC	OPERATING SYSTEM	3	1	0	3.5
	BCA	PC	JAVA	4	0	4	6
	BCA	PE	ELECTIVE-II	3	1	0	3.5
	BCA	PD	INDUSTRIAL TRAINING I (TRAINING TO BE UNDERGONE AFTER II SEMESTER)	0	0	1	1
	BCA	PD	SPECIALIZED MINOR PROJECT (GROUP)	0	0	4	2
	P	A	YOGA/MEDITATION/NCC/NSS	0	0	2	1
	P	SE	SOFT SKILLS-II	0	0	2	1
	G		FOREIGN LANGUAGE PART-I#	2	0	0	2
TOTAL CREDITS				18	2	17	28

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

FOREIGN LANGUAGE

one foreign language out of the following

1. Arabic
2. French
3. German
4. Russian
5. Spanish

ELECTIVES

PROGRAM ELECTIVE II

- | |
|--|
| 1. OBJECT ORIENTED ANALYSIS AND DESIGN |
| 2. MULTIMEDIA TECHNOLOGIES |
| 3. MOBILE COMPUTING |

SEMESTER IV

MODULE CODE	CATEGORY	SUB CATEGORY	MODULE	L	T	P	C
	BCA	PC	SOFTWARE ENGINEERING	3	1	0	3.5
	BCA	PC	VB.NET	4	0	4	6
	BCA	PC	UNIX AND SHELL PROGRAMMING	4	0	4	6
	BCA	PE	ELECTIVE-III	3	1	0	3.5
	BCA	GE	ELECTIVE - A ^ψ	4	0	0	4
	G		FOREIGN LANGUAGE PART-II#	2	0	0	2
	BCA	PD	SPECIALIZED MINOR PROJECT (INDIVIDUAL)	0	0	4	2
	P	AE	ACADEMIC WRITING	0	0	2	1
TOTAL CREDIT				20	2	14	28

L = Lecture
T = Tutorial
P = Practical
C = Credit Point

ELECTIVES

PROGRAM ELECTIVE III

- | |
|--------------------------------------|
| 1. DATA COMMUNICATION AND NETWORKING |
| 2. ADVANCED SYSTEM ADMINISTRATION |
| 3. DATAWAREHOUSE AND MINING |

GENERIC ELECTIVE - A^ψ

- | |
|--------------------------|
| 1. SAP (ABAP/MM/SD) |
| 2. ONE/TWO MOOCS MODULES |

FOREIGN LANGUAGE

One foreign language out of the following

- | |
|------------|
| 1. Arabic |
| 2. French |
| 3. German |
| 4. Russian |
| 5. Spanish |

^ψAdditional fee, if any, shall be borne by the student.

SEMESTER V

MODULE CODE	CATEGORY	SUB CATEGORY	MODULE	L	T	P	C
	BCA	PC	ARTIFICAL INTELLIGENCE	4	0	4	6
	BCA	PC	SOFTWARE TESTING	3	1	0	3.5
	BCA	PE	ELECTIVE-IV	4	0	4	6
	BCA	PE	ELECTIVE-V	3	1	0	3.5
	BCA	GE	ELECTIVE-B **	4	0	0	4
	BCA	PD	SPECIALIZED MAJOR PROJECT (GROUP) ##	0	0	4	2
			INDUSTRIAL TRAINING II (Training to be undergone after IV semester)	0	0	2	1
	P	CI	CREATIVITY AND INNOVATION/ACADEMIC WRITING	0	0	0	1
	P	CA	CO-CURRICULAR ACTIVITY	0	0	0	1
TOTAL CREDITS				18	2	14	28

- L = Lecture**
T = Tutorial
P = Practical
C = Credit Point

ELECTIVES

PROGRAM ELECTIVE IV	PROGRAM ELECTIVE V
1. COMPUTER GRAPHICS	1. MANAGEMENT INFORMATION SYSTEM
2. WINDOWS PROGRAMMING	2. E-COMMERCE AND IT MANAGEMENT
3. PROGRAMMING WITH PYTHON	3. SOFT COMPUTING

** To be chosen from Generic Electives offered by departments other than the parent Department.

Only advisory support shall be provided by the faculty.

SEMESTER VI

MODULE CODE	CATEGORY	SUB CATEGORY	MODULE	L	T	P	C
	BCA	PC	CLOUD COMPUTING	4	0	0	4
	BCA	PC	.NET TECHNOLOGIES	4	0	4	6
	P	AE	ENVIRONMENTAL SCIENCES	2	0	0	2
	M		ENTREPRENEURSHIP	4	0	0	4
	BCA	PD	SPECIALIZED MAJOR PROJECT (INDIVIDUAL)##	0	0	8	4
Total CREDITS				14	0	12	20

L = Lecture

T = Tutorial

P = Practical

C = Credit Point

Only advisory support shall be provided by the faculty.

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BACHELOUR OF COMPUTER APPLICATIONS

PROGRAM SCHEME: BCA

SEMESTER – I

MODULE CODE	CATEGORY	MODULE	L	T	P	C
	G	MATHEMATICS	4	0	0	4
	PC	COMPUTER FUNDAMENTAL AND PROGRAMMING	3	1	0	3.5
	PC	PROGRAMMING WITH C	4	0	0	4
	PC	PC SOFTWARE	4	0	0	4
	G	INTRODUCTION TO DIGITAL ELECTRONICS	4	0	0	4
	M	MANAGEMENT & PROFESSIONAL LEADERSHIP	3	0	0	3
	PC	PROGRAMMING WITH C LAB	0	0	4	2
	PC	PC SOFTWARE LAB	0	0	4	2
TOTAL CREDITS			22	1	10	26.5

Abbreviations:

L Lecture

T Tutorial

P Practical

C Credit Point

G General

M Management

PC Program Core

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BACHELOR OF COMPUTER APPLICATIONS

MATHEMATICS

L T P
4 0 0

MODULE CODE	
CREDIT POINTS	4
FORMATIVE ASSESMENT MARKS	30
SUMMATIVE ASSESMENT MARKS	70
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS: In total SEVEN questions will be set. Question ONE will be compulsory and will cover all units. Remaining six questions are to be set taking at least one question from each unit. The students are to attempt five questions in total, first being compulsory.

OBJECTIVES:

A study of the subject matter presented in this course will enable the student to become familiar with:

1. Basic set theory, relations and functions
2. Basis of determinants and matrices
3. How to solve simultaneous equations using determinants and matrix theory
4. Limits and continuity, differentiation and integration.

LEARNING OUTCOMES:

On successful completion of this module, students should be able to:

1. Students will understand how to use limits to compute the derivative of a function.
2. Students will be able to utilize methods of integration.
3. Students will become skilled in computations and applications of matrices to solve industrial problems.
4. Solve problems using mathematics in unfamiliar settings.
5. Solve applied problems using differentiation and integration.

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MODULE CONTENT:

<p><u>Unit I: Matrices</u> Definition; Types of Matrices; Addition; Subtraction; Scalar Multiplication and Multiplication of Matrices; Adjoint; Inverse; Determinates: Definition; Minors; Cofactors; Properties of Determinants. Solving simultaneous linear equations using matrices and Determinants.</p>
<p><u>Unit II: Sets</u> Sets; Subsets; Equal Sets Universal Sets; Finite and Infinite Sets; Operation on Sets; Union; Intersection and Complements of Sets; Cartesian Product; Cardinality of Set; Simple Applications.</p>
<p><u>Unit III: Relations and functions</u> Properties of Relations; Equivalence Relation; Partial Order Relation Function: Domain and Range; Onto; Into and One to One Functions; Composite and Inverse Functions.</p>
<p><u>Unit IV: Limits and continuity</u> Limit at a Point; Properties of Limit; Computation of Limits of various types of functions; Continuity at a Point; Continuity over an Interval; Type of Discontinuities</p>
<p><u>Unit V: Differentiation</u> Derivative; Derivatives of Sum; Differences; Product and Quotients; Chain Rule; Derivatives of Composite Functions; Logarithmic Differentiation; Rolle's Theorem; Mean Value Theorem; L' Hospitals Rule; Maxima and Minima.</p>
<p><u>Unit VI: Integration</u> Integral as Limit of Sum; Riemann Sum; Fundamental Theorem of Calculus; Indefinite Integrals; Methods of Integration Substitution; By Parts; Partial Fractions; Integration of Algebraic and Transcendental Functions;.</p>

RECOMMENDED BOOKS

TEXT BOOK	<ol style="list-style-type: none"> Advanced Engineering Mathematic by Reyszig Erwin, John Wiley and Sons Ohio State University Columbus, Ohio. Elementary Engineering Mathematics by Dr B S Grewal, Khanna Publications, New Delhi.
REFERENCE BOOK	<ol style="list-style-type: none"> Advanced Engineering Mathematics by H K Dass, S Chand and Sons, New Delhi. Integral Calculus by Shanti and Narayan, S Chand and Company, New Delhi. Differential Caluculs by Shanti and Narayan, S Chand and Company, New Delhi.

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METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES

This subject will be evaluated for a total of 100 marks.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	2	10
2.	Sessional Test	2	10
3.	Group Discussion	2	10
4.	End Semester Exam	1	70

MAPPING OF ASSESSMENT METHODS AGAINST THE LEARNING OUTCOMES

Assessments	1	2	3	4	5
Class Test	x	x	x	x	
Quiz	x	x			
Assignment	x	x		x	

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j	k
Course Learning Outcomes	3,5	2	1		4						

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BACHELOUR OF COMPUTER APPLICATIONS

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
BACHELOR OF COMPUTER APPLICATIONS

COMPUTER FUNDAMENTAL AND PROGRAMMING

L T P
3 1 0

MODULE CODE	
CREDIT POINTS	3.5
FORMATIVE ASSESMENT MARKS	30
SUMMATIVE ASSESMENT MARKS	70
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS: In total SEVEN questions will be set. Question ONE will be compulsory and will cover all units. Remaining six questions are to be set taking at least one question from each unit. The students are to attempt five questions in total, first being compulsory.

OBJECTIVES:

A study of the subject matter presented in this course will enable the student to become familiar with:

1. Fundamental of computer system
2. Working of operating system
3. Various types of virus
4. Nature of networking

LEARNING OUTCOMES:

This is an elementary course in computers and information technology. Upon completion of this course the student should be able to:

1. Discuss the evolution of computers in different generations.
2. Classify computers in different categories based on their capabilities.
3. Describe the major components of computers and information technology applications: Hardware, software, data, processes, computer networks and people.
4. Demonstrate an understanding of the importance of algorithms in the development of IT applications.

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BACHELOUR OF COMPUTER APPLICATIONS

MODULE CONTENT:

<p><u><i>UNIT-I: Computer Fundamentals</i></u> Generations of Computers, Definition, Block Diagram along with its components, characteristics & classification of computers, Limitations of Computers, Human-Being VS Computer, Applications of computers in various fields. Memory: Concept of primary & secondary memory, RAM, ROM, types of ROM.</p>
<p><u><i>UNIT-II: Computer Hardware & Software</i></u> I/O devices, definition of software, relationship between hardware and software, types of software.</p>
<p><u><i>UNIT-III: Flowcharts</i></u> Flowchart: Definition, Define, symbols of flowchart, Advantages and disadvantages, Examples.</p>
<p><u><i>UNIT-IV: Overview of Operating System</i></u> Definition, functions of operating system, concept of multiprogramming, multitasking, multiprocessing, time-sharing, real time, single-user & multi-user operating system.</p>
<p><u><i>UNIT-V: Overview of Networking</i></u> An introduction to computer networking, Network types (LAN, WAN, MAN), Network topologies, Modes of data transmission, Forms of data transmission, Transmission channels (media).</p>
<p><u><i>UNIT-VI: Introduction to Internet</i></u> Uses of internet, Applications of internet, Hardware and Software requirements for internet, Intranet, Applications of intranet.</p>

RECOMMENDED BOOKS:

<p>TEXT BOOKS</p>	<ol style="list-style-type: none">1. Computing Fundamentals and Programming in C by Gill Nasib Singh, Khanna Books Publishing Co., New Delhi.2. Computing Fundamentals and C Programming by Balagurusamy E, Tata McGraw Hill.3. Fundamental of Computers by P. K. Sinha, B.P.B. Publications.
<p>REFERENCEBOOKS</p>	<ol style="list-style-type: none">1. Application of IT to Business by Chhillar, Rajender Singh, Ramesh Publishers, Jaipur.2. Fundamental of Computers by V. Rajaraman, B.P.B. Publications.

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METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 100 marks for theory.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	2	10
2.	Sessional Test	2	10
3.	Group Discussion	2	10
4.	End Semester Exam	1	70

MAPPING OF ASSESSMENT METHODS AGAINST THE LEARNING OUTCOMES

Theory:

Assessments	1	2	3	4
Class Test	x	x		
Quiz	x		x	
Assignment	x		x	x

MAPPING OF COURSE LEARNING OUTCOMES

Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
Course Learning Outcomes		1		3	4						2

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BACHELOUR OF COMPUTER APPLICATIONS

EVALUATION

At the end of semester, course faculty will submit an evaluation / review report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the course with respect to its strengths as well as those areas which could be improved. The review report contains the following areas:

- Problems encountered in the content delivery;
- Suggested remedies / corrective measures;
- Approved refinement decisions due for implementation;
- Actions taken based on previous course review; and
- Report discussed and analysed; actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
BACHELOUR OF COMPUTER APPLICATIONS

PROGRAMMING WITH C

L T P
4 0 0

MODULE CODE	
CREDIT POINTS	4
FORMATIVE ASSESMENT MARKS	30
SUMMATIVE ASSESMENT MARKS	70
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS: In total SEVEN questions will be set. Question ONE will be compulsory and will cover all units. Remaining six questions are to be set taking at least one question from each unit. The students are to attempt five questions in total, first being compulsory.

OBJECTIVES:

This course aims to familiarize the trainee with basic concepts of computer programming and developer tools and teach students how to design, write and Execute a Program in ‘C’.

1. To teach the behavior of basic Data types, Control Structures and Various Programming techniques.
2. To understand and analyze a Problem and then try to write the C-Codes to solve the problem.
3. To make students familiar with basic Computer Programming Array, Pointers, Functions & File Handling in C
4. To present the syntax and semantics of the “C” language as well as data types offered by the language help the students to write their own programs using standard language infrastructure regardless of the hardware or software platform

LEARNING OUTCOMES:

1. Design an algorithmic solution for a given problem
2. Write a maintainable C program for a given algorithm.
3. Trace the given C program manually and Write C program for simple applications of real life using Functions, Arrays, Pointers, Structures and Files.
4. Trace out the error and resolve it using debugging and develop the logical and analytical thinking.

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BACHELOUR OF COMPUTER APPLICATIONS

MODULE CONTENT:

Unit-I: Introduction

C character set Identifiers and keywords, Data types, constants, variables and arrays; declarations, expressions statements, symbolic constants, compound statements, arithmetic operators, unary operator, relational and logical operators, assignment operators, conditional operators, bit operators. C constructs, If statement; if...else statement; if.....else if...else statement, while statement and do...while statement, for statement, switch statement, nested control statement, break and continue keyword, comma operator, go to statement , Typecast and its operators.

Unit-II: Functions

Functions, why? How to declare, define and invoke a function Variables' scope, local variables and function parameters, Pointers, arrays and structures as function parameters, Calling of a Function, Function result and return statement, Functions Parameters, Parameterizing the main function, Header files and their role.

Unit-III: Arrays

Arrays, How to declare and use an array in C, Initiators: a simple way to set an array, the meaning of array indexing, different types of an array(One- Dimensional, two dimensional), Arrays of arrays and multidimensional arrays, Void type, Arrays of pointers vs. multidimensional arrays, Structures – why? Declaring, using and initializing structures Pointers to structures and arrays of structures, Basics of recursive data collections .

Unit-IV: Pointers, Macros &Memory Management in C

Pointers: another kind of data in “C” An address, a reference, a dereference and the sizeof operator, Simple pointer and pointer to nothing (NULL) & operator, value at (*) and address of (and) operator, pointer to pointer, Pointers arithmetic, Pointers vs. arrays, Using strings: basics , Basic functions dedicated to string manipulation pointer to arrays; array of pointers; pointers to functions; array of pointers to functions; Pre-processor directives: #include; #define; macro’s with arguments; the operators # and ##; conditional compilations; multiple file programming. Memory management and structures, Memory allocation and deallocation: malloc() and free() functions.

Unit-V: Structures and unions and Storage Classes in C

Structures; Unions; structure passing to functions. Structures – why? Declaring, using and initializing structures, Pointers to structures and arrays of structures, Basics of recursive data collections. *Storage classes:* Automatic; external (global); static and Registers.

Unit-VI: File handling

FILE structure, Opening and closing a stream, Open modes, Read Modes, Write Modes, Reading and writing to/from a stream, Predefined streams: stdin, stdout and stderr, Stream manipulation: fgetc(), fputc(), fgets() and fputs() functions Raw input/output: fread() and fwrite() functions

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RECOMMENDED BOOKS:

TEXT BOOKS	<ol style="list-style-type: none">1. Peter Norton, 2006, "Introduction to Computers", Sixth Edition, Tata McGraw Hill Publication,2. E. Balaguruswamy, 2002, "Programming in ANSI C", Third edition, Tata McGraw Hill Publications,3. Yaswant Kanetkar, "Let us C ", BPB Publications: 14th edition.
REFERENCEBOOKS	<ol style="list-style-type: none">1. Programming with C by Bryon's Gottfried, Tata Mcgraw Hill.2. The C Programming 2nd Edition, By Brian W Kernigham and Dennis M Ritchie", PHI.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 100 marks for theory.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	2	10
2.	Sessional Test	2	10
3.	Group Discussion	2	10
4.	End Semester Exam	1	70

MAPPING OF ASSESSMENT METHODS AGAINST THE LEARNING OUTCOMES

Theory:

Assessments	1	2	3	4
Class Test	x	x	x	x
Quiz	x	x		
Assignment	x	x	x	x

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BACHELOR OF COMPUTER APPLICATIONS

MAPPING OF COURSE LEARNING OUTCOMES

Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
Course Learning Outcomes		1,2,4	1,3,4	3,4		1,3		4			

EVALUATION

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- Suggested remedies / corrective measures;
- Approved refinement decisions due for implementation;
- Actions taken based on previous course review; and Report discussed and analysed; actions taken as a result of this process and are communicated to the main stakeholders.

PDM UNIVERSITY
BACHELOUR OF COMPUTER APPLICATIONS

PC SOFTWARE

L T P
4 0 0

MODULE CODE	
CREDIT POINTS	4
FORMATIVE ASSESMENT MARKS	30
SUMMATIVE ASSESMENT MARKS	70
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS: In total SEVEN questions will be set. Question ONE will be compulsory and will cover all units. Remaining six questions are to be set taking at least one question from each unit. The students are to attempt five questions in total, first being compulsory.

OBJECTIVES:

A study of the subject matter presented in this course will enable the student to become familiar with:

1. Make student aware of MS-Word.
2. Acquire knowledge on MS-Excel.
3. Get familiar with the concepts of MS-Powerpoint.
4. Enable learner to understand MS-Access

LEARNING OUTCOMES:

On successful completion of this module, students should be able to:

1. Practical knowledge and use of the Windows operating system.
2. Creating word documents for office use.
3. Formatting techniques and presentation styles.
4. Knowledge of mail merge.
5. Use of Basic functions and formulas.
6. Using excel workbooks and templates.

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BACHELOUR OF COMPUTER APPLICATIONS

MODULE CONTENT:

UNIT-I: Ms-Windows

Basics of Windows. Basic components of windows; icons; types of icons; taskbar; activating windows; using desktop; title bar; running applications; exploring computer; managing files and folders.

UNIT-II: Copying and moving files and folders

Control panel – display properties; adding and removing software and hardware; setting date and time; screensaver and appearance.

UNIT-III: Documentation Using MS-Word

Introduction to word processing interface, Toolbars, Menus, Creating & Editing Document, Formatting Document, Finding and replacing text, Format painter, Header and footer, Drop cap, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Previewing and printing document, Advance Features of MS-Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.

UNIT-IV: Electronic Spread Sheet using MS-Excel

Introduction to MS-Excel, Cell, cell address, Creating & Editing Worksheet, Formatting and Essential Operations, Moving and copying data in excel, Header and footer, Formulas and Functions, Charts, Cell referencing, Page setup, Macros, Advance features of MS-Excel-Pivot table & Pivot Chart, Linking and Consolidation, Database Management using Excel-Sorting, Filtering, Validation, What if analysis with Goal Seek, Conditional formatting.

UNIT-V: Presenation using Ms Powerpoint

Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect

UNIT-VI: Ms Access

Introduction to databases, Introduction to objects, Getting started in Access, Working with tables, Modifying tables, Working with Forms, Sorting and Filtering records, Designing a query, Creating reports, Advanced report options..

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RECOMMENDED BOOKS:

TEXT BOOKS	<ol style="list-style-type: none"> 1. Microsoft Office Complete Reference: Jennifer Kettell, Guy Hart-Davis and Curt Simmons McGraw Hill, New York 2. Learn Microsoft Office: Russell A Stultz B P B Publications, New Delhi
REFERENCEBOOKS	<ol style="list-style-type: none"> 1. Microsoft Office 2000 Courter: Gini Courter and Annette Marquis Sybex Inc; Hoboken United States 2. Microsoft Office XP Fast and Easy: Diane Koers Prentice Hall of India, Patparganj Industrial State, Delhi 3. Office XP: The Complete Reference: Julia Kelly and Stephen L Nelson Tata McGraw Hill, India

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 100 marks for theory.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	2	10
2.	Sessional Test	2	10
3.	Group Discussion	2	10
4.	End Semester Exam	1	70

MAPPING OF ASSESSMENT METHODS AGAINST THE LEARNING OUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x	x			x	x
Quiz	x		x			x
Assignment	x		x	x		

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MAPPING OF COURSE LEARNING OUTCOMES

Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
Course Learning Outcomes		1		3	4			5	6		2

EVALUATION

At the end of semester, course faculty will submit an evaluation / review report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the course with respect to its strengths as well as those areas which could be improved. The review report contains the following areas:

- Problems encountered in the content delivery;
- Suggested remedies / corrective measures;
- Approved refinement decisions due for implementation;
- Actions taken based on previous course review; and
- Report discussed and analysed; actions taken as a result of this process and are communicated to the main stakeholders.

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INTRODUCTION TO DIGITAL ELECTRONICS –I

L T P
4 0 0

MODULE CODE	
CREDIT POINTS	4
FORMATIVE ASSESMENT MARKS	30
SUMMATIVE ASSESMENT MARKS	70
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS: In total SEVEN questions will be set. Question ONE will be compulsory and will cover all units. Remaining six questions are to be set taking at least one question from each unit. The students are to attempt five questions in total, first being compulsory.

OBJECTIVES:

This course aims at providing insight and knowledge about architectures and protocols for mobile and wireless communication.

1. To acquire foundation knowledge for Digital Electronics.
2. To get knowledge about the number system.
3. To get better inside of binary logic circuit and k-maps.
4. To evaluate circuit designs within the context of digital and combinational circuits.

LEARNING OUTCOMES:

1. Understand the basic concepts of digital electronics.
2. Understand number system.
3. Learn Boolean algebra, Boolean Theorems and K-maps.
4. Introduction to circuit design, basic gate design.
5. Learn to design combinational and digital circuits.

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MODULE CONTENT:

<u>UNIT-I: Information Representation</u> Number Systems(decimal ,binary,octal and hexadecimal number system)
<u>UNIT-II: Binary Logic</u> Binary Arithmetic (addition , subtraction multiplication and division) Fixed-point and Floating point representation of numbers, BCD Codes,
<u>UNIT-II: Error –Detection Code</u> Error detecting and correcting codes, Character Representation – ASCII, EBCDIC, Unicode Boolean Algebra, Boolean Theorems, Boolean Functions and Truth Tables,
<u>UNIT-III: Boolean Algebra & Digital Logic</u> Canonical and Standard forms of Boolean functions, Simplification of Boolean Functions – Venn Diagram, Karnaugh Maps .Introduction to digital signals, Basic Gates – AND, OR, NOT, UniversalGates and their implementation – NAND, NOR, Other Gates – XOR, XNOR etc. NAND,NOR, AND-OR-INVERT and OR-AND-INVERT implementations of digital circuits,
<u>UNIT-V: Combinational Circuits-I</u> Encoders, Decoders, Multiplexers, Demultiplexers, Comparators, Code Converters, BCD to Seven-Segment Decoder.
<u>UNIT-VI: Combinational Circuits-II</u> Encoders , Decoders, Multiplexers, Demultiplexers, Comparators, Code Converters, BCD to Seven-Segment Decoder

RECOMMENDED BOOKS:

TEXT BOOKS	1.M. Morris Mano, “Digital Logic and Computer Design”, Prentice Hall of India Pvt. Ltd.
REFERENCEBOOKS	1. Nicholas Carter, “Schaum’s Outlines Computer Architecture”, Tata McGraw-Hill 2. V. Rajaraman, T. Radhakrishnan, “An Introduction to Digital Computer Design”, Prentice Hall of India Pvt. Ltd. 3. Andrew S. Tanenbaum, “Structured Computer Organization”, Prentice Hall of India Pvt. Ltd. 4. Gill, Nasib Singh and Dixit J.B.: “Digital Design and Computer Organization”,University Science Press (Laxmi Publications), New Delhi.

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EVALUATION

At the end of semester, course faculty will submit an evaluation / review report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the course with respect to its strengths as well as those areas which could be improved. The review report contains the following areas:

- Problems encountered in the content delivery;
- Suggested remedies / corrective measures;
- Approved refinement decisions due for implementation;
- Actions taken based on previous course review; and
- Report discussed and analysed; actions taken as a result of this process and are communicated to the main stakeholders.

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MANAGEMENT & PROFESSIONAL LEADERSHIP

L T P
3 0 0

MODULE CODE	
CREDIT POINTS	3
FORMATIVE ASSESMENT MARKS	30
SUMMATIVE ASSESMENT MARKS	70
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

INSTRUCTIONS: In total SEVEN questions will be set. Question ONE will be compulsory and will cover all units. Remaining six questions are to be set taking at least one question from each unit. The students are to attempt five questions in total, first being compulsory.

OBJECTIVES:

The aim of this subject is to teach students how to design, write, and analyse the financial data of a firm or a company. It will also enable students to learn the complete accounting process.

1. To provide knowledge and understanding of the basics of management.
2. To develop an understanding of leadership and its styles.
3. To make them understand the role of planning, organizing and decision making to lead the organization.
4. To identify value of group involvement and team building.
5. To make them understand the role of communication to lead the organization.
6. To provide an understanding of role of motivation to lead in the organization.

LEARNING OUTCOMES

Following this course student will be able to:

1. Develop an understanding of the process of management in the organizations and to apply that process for effective utilization of resources.
2. Develop an understanding of role of leadership in the organizations.
3. Acquaint themselves to apply leadership styles and theories as it relates to management practices.
4. Identify value of motivation, emotional intelligence and stability in resolving organizational problems.
5. Develop an understanding of communication and its role to the organization.
6. Analyse group formations, work team and team building strategies of the organization.

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MODULE CONTENT

<u>Unit I: Management–introduction</u> Nature and functions of management, principles of management, levels of management, management as an art, management as science and profession, management process, managerial skills and roles; Evolution of Management Thoughts; Managerial competencies.
<u>Unit II:: Basic concepts of Leadership</u> Leadership: Functions of leaders, styles of leadership , leadership theories- Trait theory, Behavioral Theory
<u>Unit III: Planning, Organizing and Decision making</u> Planning- process of planning, elements of planning; steps in Organizing , authority and responsibility , delegation, centralization vs. decentralization; decision making, rationality in decision making.
<u>Unit IV:: Team Development</u> Work team , nature of work teams, types of team, stages of team development, role of leadership in team development.
<u>UNIT-V: Communication</u> Communication: Communication process, importance of communication, communication channels, Roles and barriers to communication.
<u>Unit VI: Motivation</u> Motivation: Process and motivation models/approaches; relevance of motivation theories in Business.

RECOMMENDED BOOKS

TEXT BOOK	<ol style="list-style-type: none">1. Fundamentals of Management by Robbins, S.P. and Decenzo, D.A Pearson Education Asia, New Delhi2. Organizational Behaviour by F Luthan’s, Tata McGraw Hill, New Delhi
REFERENCE	<ol style="list-style-type: none">1. Organizational behaviour by S P Robbins, Prentice Hall of India, New Delhi2. Essentials of management by Chhabra T.N. , Sun India publications

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

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This subject will be evaluated for a total of 100 marks for Theory.

Theory:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1.	Class Test	4	05
2.	Sessional Test	2	20
3.	Group Discussion	4	05
4.	End Semester Exam	1	70

MAPPING OF ASSESSMENT METHODS AGAINST THE LEARNING OUTCOMES

Theory:

Assessments	1	2	3	4	5	6
Class Test	x			x		
Quiz			x			x
Assignment	x	x		x		x

MAPPING OF COURSE LEARNING OUTCOMES

Program Outcomes	a	b	c	d	e	f	g	h	i	j	k
Course Learning Outcomes		1,2		3			5		4	6	

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

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PROGRAMMING WITH C LAB

L T P
0 0 4

MODULE CODE	
CREDIT POINTS	2
FORMATIVE ASSESSMENT MARKS	30
SUMMATIVE ASSESSMENT MARKS	70
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

OBJECTIVES

1. To understand the Programming skills and develop the Program.
2. To understand the Structure, flow and Working of a C Program.
3. To develop analyzing and problem solving skills and use the same for writing programs in C.
4. To familiarize the trainee with basic concepts of computer programming and developer tools.
5. To present the syntax and semantics of the “C” language as well as data types offered by the language.
6. To allow the trainee to write their own programs using standard language infrastructure regardless of the hardware or software platform

LEARNING OUTCOMES

Following this course, students will be able to:

1. Do the Compilation and develop the Software using C Program.
2. Deal with the basic scalar data types and their operators.
3. Know and Implement the Flow control.
4. Understand and Implement the Complex data types: arrays, structures and pointers.
5. Structuring the code: functions and modules.
6. Do the Preprocessing of Source Code.

LIST OF EXPERIMENTS

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1.	Write a C Program to check if a given number is Odd or even.
2.	Write a C Program to reverse a number and check whether it is palindrome or not.
3.	Write a C Program to compute Sum of Digit in a given Number.
4.	Write a C Program to find whether a given number is Prime or Not.
5.	To write a C Program, Using Switch to Implement Simple Calculator (ADD, MIN, DIV, MUL).
6.	To write a C program to illustrate Call by Value and Call by Reference.
7.	To write a C Program to Find Factorial of a Number using Recursion.
8.	To write a C program to check whether a given string is palindrome or not.
9.	To write a C program for to read two strings and concatenate the Strings.
10.	To write a C Program to implement the following Pointer Concept: a) Pointer to Pointer b) Pointer to Structure. c) Pointer to Function.
11.	Using Array, write a C Program to Implement the transpose of a Matrix.
12.	Using Array, write a C Program to Implement the Multiplication of a Matrix.
13.	Using Structure in C, write a Program to create the record of 10 students consisting of Name, Age, Address & their marks In Percentage.
14.	To write a C program to Create a file and store the Information.
15.	To write a C program to illustrate reading of Data from a File.
Experiments based on advanced topics:	
16.	To implement all the above concept: 1. Develop a Minor Project for Hotel Management System
17.	To implement all the above concept: 1. Develop a Minor Project for Library Management System

Note: At least 12 Experiments out of the list must be done in the semester.

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The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 100 marks for practical.

Practical:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	30
2	External Assessment	1	70

MAPPING OF COURSE LEARNING OUTCOMES

Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
Course Learning Outcomes		1,2,4	1,3,4	3,4		1,3		4			

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
- Suggested remedies / corrective measures, and
- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.

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0 0 4

MODULE CODE	
CREDIT POINTS	2
FORMATIVE ASSESSMENT MARKS	30
SUMMATIVE ASSESSMENT MARKS	70
END SEMESTER EXAM DURATION	3 hrs
LAST REVISION DATE	

OBJECTIVES:

A study of the subject matter presented in this course will enable the student to become familiar with:

1. Make student aware of MS-Word.
2. Acquire knowledge on MS-Excel.
3. Get familiar with the concepts of MS-Powerpoint.
4. Enable learner to understand MS-Access

LEARNING OUTCOMES:

On successful completion of this module, students should be able to:

1. Practical knowledge and use of the Windows operating system.
2. Creating word documents for office use.
3. Formatting techniques and presentation styles.
4. Knowledge of mail merge.
5. Use of Basic functions and formulas.
6. Using excel workbooks and templates.

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LIST OF EXPERIMENTS

1.	How to Create, Edit and Format documents in MS Word.
2.	How to insert Header and footer in MS Word.
3.	How to use Drop Cap Spelling and Grammar tool in MS Word.
4.	How to make Macro in MS Word.
5.	How to use Mail Merge in MS Word.
6.	How to Creating and editing worksheet in MS Excel
7.	How to use Formula and functions in MS Excel
8.	How to create Charts, pivot chart and pivot table in MS Excel
9.	Database management-sorting, filtering, validation, conditional formatting in MS Excel
10.	MS Powerpoint <ul style="list-style-type: none">• Manipulating and enhancing slides• Word art• Animations and sounds• Sound effect
11.	Working with tables in MS Access
12.	Working with forms in MS Access
13.	Designing a query in MS Access
14.	Creating reports in MS Access
Experiments based on advanced topics:	
15.	To implement all the above concept: 1. Develop a Minor Project for your college.

Note: At least 14 Experiments out of the list must be done in the semester.

METHODS OF TEACHING AND STUDENT LEARNING

The subject is delivered through lectures, on-line support, text book / course material reading and practical exercises. Some videos will be shown to demonstrate certain concepts and research areas will be discussed. Resource material is provided with the help of PDM Educational Directory Services (PEDS).

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ASSESSMENT METHODOLOGIES:

This subject will be evaluated for a total of 100 marks for practical.

Practical:

Assessment #	Type Of Assessment	Per Semester	Maximum Mark
1	Internal Assessment	2	30
2	External Assessment	1	70

MAPPING OF COURSE LEARNING OUTCOMES

Student Outcomes	a	b	c	d	e	f	g	h	i	j	k
Course Learning Outcomes		1,2,4	1,3,4	3,4		1,3		4			

EVALUATION

At the end of semester, Subject teacher will submit an evaluation report. The purpose of this report is to identify aspects that will be highlighted by students and faculty's feedback for the subject with respect to its strengths as well as those areas which could be improved. The review report contains the following:

- Approved refinement decisions due for implementation,
- Actions taken based on previous subject review,
- Problems encountered in the subject delivery,
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- Report discussed and analysed, actions taken as a result of this process and are communicated to the main stakeholders.