DEPARTMENT OF COMPUTER APPLICATIONS

TANSCHE - **CBC**S With OBE

BACHELOR OF COMPUTER APPLICATIONS

PROGRAMME CODE - J

COURSE STRUCTURE

(w.e.f. 2023 – 2024 Batch onwards)

E.M.G. YADAVA WOMENS COLLEGE, MADURAI -14.
(An Autonomous Institution – Affiliated to Madurai Kamaraj University)
(Re –accredited (3rd cycle) with Grade A+ and CGPA 3.51 by NAAC)
TANSCHE - CBCS with OBE

DEPARTMENT OF COMPUTER APPLICATIONS – UG
(w.e.f. 2023– 2024 Batch onwards)

Vision

To achieve brilliance in Professional Education. To make students as Software Professionals with strong understanding in essentials and shine in latest technologies.

Mission

- To develop innovative ideas, talents, problem solving skills, leadership quality among the students.

- To create industrial interaction to improve the entrepreneurship skills.

- To teach the students with latest trends, tools and technologies.

- To strengthening the attitudes and soft skills of the students and encourage resource based projects to the students.

Programme Educational Objectives(PEOs): B.C.A

SL.No.	Programme Educational Objective
PEO1	Equip the students to meet corporate needs
PEO2	Professionally educate the students for pursuing higher education
PEO3	Nurture the students with skills required to become an entrepreneur.
PEO4	Adapt the students with better learning ability in the ever changing software industry.
PEO5	Manage cross culture environment and have peer recognition.
PEO6	Shows continuous improvement in their professional career through lifelong learning, appreciating human values and ethics

Programme Outcomes for Science Graduates

On completion of B.C.A Programmes students will be able to

SL.No.	Programme Outcomes
PO1	Develop necessary foundation in fundamentals, aptitude, applications of sciences and other related subjects. Able to clear competitive examinations, appear with confidence and possess basic skills on the related subjects. Secure jobs in employment in Government / Private / Industry and entrepreneurship.
PO2	Receive basic experimental skills in the observation and study of nature, biological techniques, scientific research and demonstrate proficiency in critical analysis or creativity and provide scientific solutions to the problems of the society.
PO3	Enhance the digital knowledge of statistics and to understand its application in interpreting the obtained data.
PO4	Obtain knowledge with emerging trends in their disciplinary and inter-disciplinary areas. Usage of modern tools and software can also be put to use.
PO5	Lead lifelong learning & contribute sustainability to environment, equip students enough to takeup higher studies upto research in various disciplines to become professionals.
PO6	Imbibe democratic, ethical, moral, social & spiritual values in the minds of the learners to become responsible citizens and build a healthy nation.

Programme Specific Outcome (PSOs):

PSOs	After completion of B.C.A the students will be able to	PO Addressed
PSO-1	**Knowledge & Proficiency** To enable students to apply basic microeconomic, macroeconomic and monetary concepts and theories in real life and decision making.	PO1
PSO-2	**Contribution to Business World** To sensitize students to various economic issues related to Development, Growth, International Economics, Sustainable Development and Environment.	PO2
PSO-3	**Modern tool usage** To familiarize students to the concepts and theories related to Finance, Investments and Modern Marketing.	PO4
PSO-4	**Social responsibility** Evaluate various social and economic problems in the society and develop answer to the problems as global citizens	PO6
PSO-5	**Critical thinking** Enhance skills of analytical and critical thinking to analyze effectiveness of economic policies.	PO5

Qualification for Admission

Candidate should have passed 10+2 Mathematics with Computer Science / Physics / Chemistry as one of the subjects. Candidates should have passed the Higher Secondary Examination, Mathematics as one of the subject, conducted by the Board of Higher Education, Government of Tamilnadu, CBSC & ICSE or any other examination approved by Madurai Kamaraj University as equivalent.

Duration of the Course

The students shall undergo this prescribed course of study for the period of three academic years under Choice Based Credit System (CBCS) semester pattern with Outcome Based Education (OBE).

Medium of Instruction: English

System: Choice Based Credit System with Outcome Based Education Model

Nature of the Course

Courses are classified according to the following nature

1. Knowledge and skill oriented

2. Employability oriented

3. Entrepreneurship oriented

Outcome Based Education (OBE)&Assessment

Students understanding must be built on and assessed for wide range of learning activities, which includes different approaches and are classified along several basis, such as

1. **Based on purpose:**

➢ Continuous Assessment (internal tests, Assignment, seminar, quiz, Documentation, Case lets, ICT based Assignment, Mini projects administered during the learning process)

➢ External Assessment (Evaluation of students' learning at the end of instructional unit)

2. **Based on Domain Knowledge:(for UG Up to K4 levels)**

Assessment through K1, K2, K3& K4

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TANSCHE – CBCS with OBE
(w.e.f. 2023-2024 batch onwards)

(PART I /PART II / PART III)

Internal (Formative)	: 25 marks
External (Summative)	: 75 marks
Total	:100 marks

Formative Test (CIA-Continuous Internal Assessment) : 25 Marks

Components	Marks
Test (Average of two tests) (Conducted for 100 marks and converted into 10 marks)	**10**
Assignment	**5**
Seminar	**5**
Quiz/ Documentation/ Case lets/ ICT based Assignment/ Mini Projects	**5**
Total	**25**

✓ **Centralized system** of Internal Assessment Tests

✓ There will be **Two Internal Assessment** Tests

✓ Duration of Internal assessment test will be **2 hours for Test I & II**

✓ Students shall write **retest** with the approval of HOD on genuine grounds if they are absent.

Question Paper Pattern for Continuous Internal Assessment- Test I and II

Section		Marks
A- Multiple Choice Question	(7x1mark)	7
B- Short Answer	(4x2marks)	8
C-Either Or type	(3/6x5marks)	15
D-Open choice type	(2/3x 10marks)	20
Total		**50**

Conducted for 100 marks and converted into 10 marks.

Question Paper Pattern for Summative Examination

Section	Marks
A-Multiple choice Questions without Choice (10x1 mark)	10
B-Short Answer without choice (5x2marks)	10
C-Either Or type (5/10x5marks)	25
D-Open Choice type (3outof 5x10 marks)	30
Total	**75**

In respect of Summative Examinations passing minimum is **36% for UG.**

Latest amendments and revision as per **UGC** and **TANSCHE** norm sis

taken into consideration in curriculum preparation.

BLUE PRINT FOR INTERNAL ASSESSMENT – I

Articulation Mapping – K Levels with Course Learning Outcomes (CLOs)

Sl. No	CLOs	K- Level	Section A MCQs (No Choice)		Section B Short Answers (No Choice)		Section C (Either or Type)	Section D (Open choice)	Total
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO 1	Upto K3	3	(K1/ K2)	3	(K1/ K2)	2 (K2) / 2 (K3) / 2 (K4) (Each set of questions must be in same level)	2 (K3) & 1 (K4)	
2	CLO 2	Upto K3	2	(K1/ K2)					
3	CLO 3	Upto K4	2	(K1/ K2)	1	(K1/ K2)			
No. of Questions to be asked			7		4		6	3	20
No. of Questions to be answered			7		4		3	2	16
Marks for each question			1		2		5	10	-
Total Marks for each section			7		8		15	20	50

BLUE PRINT FOR INTERNAL ASSESSMENT – II

Articulation Mapping – K Levels with Course Learning Outcomes (CLOs)

Sl. No	CLOs	K-Level	Section A MCQs (No Choice)		Section B Short Answers (No Choice)		Section C (Either or Type)	Section D (Open choice)	Total
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO 3	Upto K4	2	(K1/ K2)	1	(K1/ K2)	2 (K2) / 2 (K3) / 2 (K4) (Each set of questions must be in same level)	2 (K3) & 1 (K4)	
2	CLO 4	Upto K3	2	(K1/ K2)	3	(K1/ K2)			
3	CLO 5	Upto K4	3	(K1/ K2)					
No. of Questions to be asked			7		4		6	3	20
No. of Questions to be answered			7		4		3	2	16
Marks for each question			1		2		5	10	-
Total Marks for each section			7		8		15	20	50

Distribution of Marks with K-Levels CIA I and CIA II

CIA	K Levels	Section -A MCQ (No choice)	Section -B Short Answer (No choice)	Section -C (Either or Type)	Section –D (Open choice)	Total Marks	% of Marks
I & II	K1	4	4	-	-	8	10
	K2	3	4	10	-	17	23
	K3	-	-	10	20	30	40
	K4	-		10	10	20	27
	Marks	**7**	**8**	**30**	**30**	**75**	**100**

Articulation Mapping - K Levels with Course Learning Outcomes (CLOs) for External Assessment

Sl. No	CLOs	K-Level	Section A MCQs (No choice)		Section B Short Answers (No choice)		Section C (Either/or Type)	Section D (open choice)	Total
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO 1	Upto K3	2	K1/K2	1	K1/K2	2 (K3& K3)	1(K2)	
2	CLO 2	Upto K3	2	K1/K2	1	K1/K2	2(K2& K2)	1(K3)	
3	CLO 3	Upto K4	2	K1/K2	1	K1/K2	2 (K4&K4)	1(K4)	
4	CLO 4	Upto K 3	2	K1/K2	1	K1/K2	2 (K3& K3)	1(K3)	
5	CLO 5	Upto K 4	2	K1/K2	1	K1/K2	2 (K4& K4)	1(K4)	
No. of Questions to be asked			10		5		10	5	30
No. of Questions to be answered			10		5		5	3	23
Marks for each question			1		2		5	10	
Total Marks for each section			10		10		25	30	75

Distribution of Section-wise Marks with K Levels for External Assessment

K Levels	Section A (MCQ'S) (No choice)	Section B (Short Answer) (No choice)	Section C (Either or Type)	Section D (Open Choice)	Total Marks	% of Marks
K1	9	6	-	--	**15**	13
K2	1	4	10	10	**25**	21
K3	-	-	20	20	**40**	33
K4	-	-	20	20	**40**	33
Total Marks	10	10	50	50	**120**	100

K1- Remembering and recalling facts with specific answers
K2- Basic understanding of facts and stating main ideas with general answers
K3- Application oriented- Solving Problems, Justifying the statement and deriving inferences
K4- Examining, analyzing, presentation and make inferences with evidences

EVALUATION (THEORY)

(PART IV - SEC / DSEC)

Internal (Formative)	: 25 marks
External (Summative)	: 75 marks
Total	: 100 marks

Formative Test (CIA-Continuous Internal Assessment): 25 Marks

Components	Marks
Test (Average of two tests) (Conducted for 60 marks and converted into 20 marks)	**20**
Assignment / Seminar/ Quiz/ Documentation (from Unit 5)	**5**
Total	**25**

- ✓ There will be two Internal Assessment Test
- ✓ Duration of Internal assessment test will be 1 hour for Test

Students shall write retest with the approval of HOD on genuine grounds if they are absent.

Question Paper Pattern for Continuous Internal Assessment Test I & II

Section		Marks
A- Multiple Choice Question	(4x1mark)	4
B- Short Answer	(3x2marks)	6
C- Either Or type	(2/4 x5marks)	10
D- Open choice type	(1/2 x10marks)	10
Total		**30**

Conducted for 60 marks and converted into 20 marks

Question Paper Pattern for External Examination

Section		Marks
A- Multiple Choice Question	(10x1mark)	10
B- Short Answer	(5x2marks)	10
C- Either Or type	(5/5 x5marks)	25
E- Open choice type	(3/5 x10marks)	30
Total		**75**

BLUE PRINT FOR INTERNAL ASSESSMENT –I
Articulation Mapping - K Levels with Course Learning Outcomes (CLOs)

Sl. No	CLOs	K- Level	Section A MCQs (No Choice)		Section B Short Answers (No Choice)		Section C (Either or Type)	Section D (Open choice)	Total
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO 1	Upto K3	2	K1	3	K1	1 (K2) / 1 (K3) (Each set of questions must be in same level)	1 (K2) & 1 (K3)	
2	CLO 2	Upto K3	2						
No. of Questions to be asked			4		3		4	2	13
No. of Questions to be answered			4		3		2	1	10
Marks for each question			1		2		5	10	-
Total Marks for each section			4		6		10	10	30

BLUE PRINT FOR INTERNAL ASSESSMENT –II
Articulation Mapping - K Levels with Course Learning Outcomes (CLOs)

Sl. No	CLOs	K- Level	Section A MCQs (No Choice)		Section B Short Answers (No Choice)		Section C (Either or Type)	Section D (Open choice)	Total
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO 3	Upto K3	2	K1	3	K1	1 (K2) / 1 (K3) (Each set of questions must be in same level)	1 (K2) & 1 (K3)	
2	CLO 4	Upto K3	2						
No. of Questions to be asked			4		3		4	2	13
No. of Questions to be answered			4		3		2	1	10
Marks for each question			1		2		5	10	-
Total Marks for each section			4		6		10	10	30

Distribution of Marks with K Levels – CIA I & II

CIA	K Levels	Section A MCQ	Section B (Short Answers)	Section C (Either Or Type)	Section D (Open Choice)	Total Marks	% of Marks
I & II	K1	4	6	-	-	10	20
	K2	-	-	10	10	20	40
	K3	-	-	10	10	20	40
	Marks	**4**	**6**	**20**	**20**	**50**	**100**

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Articulation Mapping - K Levels with Course Learning Outcomes (CLOs) for External Assessment

Sl. No	CLOs	K-Level	Section A MCQs No. of Questions	Section A MCQs K-Level	Section B Short Answers No. of Questions	Section B Short Answers K-Level	Section C (Either or Type)	Section D (Open Choice)	Total
1	CLO 1	Upto K3	2	K1	1	K1	6(K2) & 4(K3) (Each set of questions must be in same level)	2(K2) & 3(K3)	
2	CLO 2	Upto K3	2		1				
3	CLO 3	Upto K3	2		1				
4	CLO 4	Upto K 3	2		1				
5	CLO 5	Upto K 3	2		1				
No. of Questions to be asked			10		5		10	5	30
No. of Questions to be answered			10		5		5	3	23
Marks for each question			1		2		5	10	
Total Marks for each section			10		10		25	30	75

Distribution of Section-wise Marks with K Levels for External Assessment

K Levels	Section A (MCQ's)	Section B (Short Answer)	Section C (Either or Type)	Section D (Open Choice)	Total Marks	% of Marks
K1	10	10	-	--	**20**	16
K2	-	-	30	20	**50**	42
K3	-	-	20	30	**50**	42
Total Marks	10	10	50	50	**120**	100

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DEPARTMENT OF COMPUTER APPLICATIONS – UG
TANSCHE - CBCS with OBE
COURSE STRUCTURE
(w.e.f. 2023 – 2024 Batch onwards)

Semester	Part	Course Code	Course Title	Teaching hrs (per week)	Duration of Exam (hrs.)	CIA	S.E	Total	Credits
I	I	23OU1TA1	Tamil	6	3	25	75	100	3
	II	23OU2EN1	General English -I	6	3	25	75	100	3
	III	23OUCA11	Core Course 1:Python Programming	5	3	25	75	100	5
		23OUCA1P	Core Course 2: Python Programming Lab	5	3	40	60	100	5
		23OUCADSE1	DSEC 1:Digital Logic Fundamentals	4	3	25	75	100	3
	IV	23OUCASECN1	SEC 1 (NME): Office Automation	2	3	25	75	100	2
		23OUCAFC1	FC 1:Structured Programming in C	2	3	25	75	100	2
II	I	23OU1TA2	Tamil	6	3	25	75	100	3
	II	23OU2EN2	General English – II	6	3	25	75	100	3
	III	23OUCA21	Core Course 3: Object Oriented Programming Concepts using C++	5	3	25	75	100	5
		23OUCA2P	Core Course – 4: C++Programming Lab	5	3	40	60	100	5
		23OUCAGECOM2	GEC 1:Financial Accounting	4	3	25	75	100	3
	IV	23OUCASECN2	SEC 2 (NME): Introduction to HTML	2	3	25	75	100	2
		23OUCASEC3	SEC 3: Multimedia Systems	2	3	25	75	100	2
			Total						46

Department of Computer Applications				Class: I B.C.A				
Sem	Category	Course Code	Course Title	Credits	Hours/ Week	CIA	External Exam	Total
I	Core	23OUCA11	Python Programming	5	5	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship oriented
✔	✔	✔

Course Objectives:

1. To make students understand the concepts of Python programming.
2. To apply the OOPs concept in Python programming.
3. To impart knowledge on demand and supply concepts
4. To make the students learn best practices in Python programming
5. To know the costs and profit maximization

Course Content:

Unit-I Basics of Python Programming: History of Python-Features of Python-Literal-Constants-Variables - Identifiers–Keywords-Built-in Data Types-Output Statements – Input Statements-Comments – Indentation- Operators-Expressions-Type conversions. **Python Arrays:** Defining and Processing Arrays – Array methods.

Unit-II Control Statements: Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. Iterative Statements: while loop, for loop, else suite in loop and nested loops. **Jump Statements:** break, continue and pass statements**.**

Unit-III Functions: Function Definition – Function Call – Variable Scope and its Lifetime-Return Statement. **Function Arguments**: Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments- Recursion. **Python Strings:** String operations- Immutable Strings - Built-in String Methods and Functions - String Comparison. **Modules**: import statement- The Python module – dir() function –Modules and Namespace – Defining our own modules.

Unit-IV Lists: Creating a list -Access values in List-Updating values in Lists-Nested lists -Basic list Operations-List Methods. **Tuples:** Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples– Difference between

lists and tuples. **Dictionaries:** Creating, Accessing, Updating and Deleting Elements in a Dictionary – Dictionary Functions and Methods - Difference between Lists and Dictionaries.

Unit- V Python File Handling: Types of files in Python - Opening and Closing files-Reading and Writing files: write () and wirelines() methods- append() method – read() and readlines() methods – with keyword – Splitting words – File methods - File Positions- Renaming and deleting files.

Book for Study:

Reema Thareja, (2017) *",Python Programming using problem solving approach",* 1st Edition, Oxford University Press.

Chapters:

      Unit-I   **:** 3.1, 3.2, 3.5 – 3.13, 3.16

      Unit-II   **:** 4.2 – 4.8

      Unit-III **:** 5.2 – 5.6,5.11,6.1,6.2,6.4, 6.8

      Unit- IV **:** 8.2.1 – 8.2.6, 8.4.1 – 8.4.5, 8.4.9, 8.6.1 – 8.6.4, 8.6.8,8.6.9, 8.6.12

      Unit -V   **:** 7.3 – 7.7

Books for Reference:

1. Dr. R. Nageswara Rao, (2017), Core Python Programming‖,1st Edition, Dream tech Publishers.

2. Charles Dierbach, (2015) "*Introduction to Computer Science using Python*", Wiley, 2015

3. Downey, A. et al., (2015), "*How to think like a Computer Scientist: Learning with Python*", John Wiley.

Web Resources/ E.Books:

1. https://www.programiz.com/python-programming

2. https://www.guru99.com/python-tutorials.html

3. https://www.w3schools.com/python/python_intro.asp

Pedagogy:

    Chalk and Talk, PPT, group discussion, quiz, ICT tools and Peer Teaching.

Rationale for nature of Course:

Knowledge and Skill: To make students aware of the role of Programming skill in Python and improve their program writing in Python Programming

Activities to be given: Students shall be allowing to write Python program in many concepts

Course Learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge According to Bloom's Taxonomy (Up to K level)
CLO1	Learn the basics of python, Do simple programs on python, Learn how to use an array.	K1 to K3
CLO2	Develop program using selection statement, Work with Looping and jump statements, Do programs on Loops and jump statements.	K1 to K4
CLO3	Concept of function, function arguments, Implementing the concept strings in various application, Significance of Modules, Work with functions, Strings and modules.	K1 to K4
CLO4	Work with List, tuples and dictionary, Write program using list, tuples and dictionary.	K1 to K4
CLO5	Usage of File handlings in python, Concept of reading and writing files, Do programs using files.	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	1	1	2	2	2
CLO2	3	3	2	3	2	1
CLO3	3	2	2	3	2	2
CLO4	2	3	2	3	2	1
CLO5	2	2	3	3	2	1

1-Basic Level   2- Intermediate Level   3- Advanced Level

LESSON PLAN: TOTAL HOURS (75 HRS)

UNIT	DESCRIPTION	HRS	MODE
I	Basics of Python Programming: History of Python-Features of Python-Literal-Constants-Variables - Identifiers–Keywords-Built-in Data Types-Output Statements – Input Statements-Comments – Indentation- Operators-Expressions-Type conversions. Python Arrays: Defining and Processing Arrays – Array methods.	18	Chalk and Talk, PPT, group discussion , quiz, on the spot test

II	Control Statements: Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. Iterative Statements: while loop, for loop, else suite in loop and nested loops. Jump Statements: break, continue and pass statements.	13	Chalk and Talk, PPT, group discussion, quiz, on the spot test
III	Functions: Function Definition – Function Call – Variable Scope and its Lifetime- Return Statement. Function Arguments: Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments- Recursion. Python Strings: String operations- Immutable Strings - Built-in String Methods and Functions - String Comparison. Modules: import statement- The Python module – dir() function – Modules and Namespace – Defining our own modules.	13	Chalk and Talk, PPT, group discussion, quiz, on the spot test
IV	Lists: Creating a list -Access values in List-Updating values in Lists-Nested lists -Basic list Operations- List Methods. Tuples: Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples– Difference between lists and tuples. Dictionaries: Creating, Accessing, Updating and Deleting Elements in a Dictionary – Dictionary Functions and Methods - Difference between Lists and Dictionaries.	15	Chalk and Talk, PPT, group discussion, quiz, on the spot test

V	Python File Handling: Types of files in Python - Opening and Closing files- Reading and Writing files: write() and writelines() methods- append() method – read() and readlines() methods – with keyword – Splitting words – File methods - File Positions- Renaming and deleting files.	16	Chalk and Talk, PPT, group discussion, quiz, on the spot test

Course Designer

Mrs. P. INDHUJA

Department of Computer Applications				Class: I B.C.A				
Sem	Category	Course Code	Course Title	Credits	Hours/ Week	CIA	External Exam	Total
I	Core	**23OUCA1P**	**Python Programming Lab**	5	5	40	60	100

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✔	✔	

PROGRAM LIST

1. Program using variables, constants, I/O statements in Python.
2. Program using Operators in Python.
3. Program using Conditional Statements.
4. Program using Loops.
5. Program using Jump Statements.
6. Program using Functions.
7. Program using Recursion.
8. Program using Arrays.
9. Program using Strings.
10. Program using Modules.
11. Program using Lists.
12. Program using Tuples.
13. Program using Dictionaries.

Books for Reference:

1. Reema Thareja, (2017) *Python Programming using problem solving approach,* 1st Edition, Oxford University Press.

2. Dr. R. Nageswara Rao, (2017) *Core Python Programming‖,* 1st Edition, Dream tech Publishers.

3. Jeeva Jose & P.SojanLal,(2016), "*Introduction to Computing and Problem Solving with PYTHON*", Khanna Publishers, New Delhi, 2016

Pedagogy

Practical Test with viva voce, Group Discussion, Interaction, Quiz.

LESSON PLAN FOR PRACTICAL: TOTAL HOURS (75 HRS)

CYCLE	DESCRIPTION	HRS	MODE
1	1. Program using variables, constants, I/O statements in Python. 2. Program using Operators in Python. 3. Program using Conditional Statements	14	Writing and executing the program in a system
2	4. Program using Loops. 5. Program using Jump Statements. 6. Program using Functions.	16	Writing and executing the program in a system
3	7. Program using Strings. 8. Program using Modules. 9. Program using Lists.	17	Writing and executing the program in a system
4	10. Program using Modules. 11. Program using Lists. 12. Program using Tuples.	14	Writing and executing the program in a system
5	13. Program using Dictionaries. 14. Program for File Handling.	14	Writing and executing the program in a system

Course Designer

Mrs. P. INDHUJA

EVALUATION (PRACTICAL)
Core Lab / Skill Enhancement Course Lab

Internal (Formative)   : 40 marks

External (Summative)   : 60 marks

Total   :100 marks

Question Paper Pattern for Internal Practical Examination: 40 Marks

- ✓ There will be Two Internal Practical Examination.
- ✓ Duration of Internal Examination will be 2 hours.

S.No	Components	Marks
1.	I – Writing the Program (2x8)	16
2.	II – Test and Debug the Program (2x4)	08
3.	III - Printing the Correct Output (2x4)	08
4.	IV- Viva	03
5.	V –Record book	05
	Total	**40**

Question Paper Pattern for External Practical Examination: 60 Marks
- ✓ Duration of External Examination will be 3 hours.

S.No	Components	Marks
1.	I – Writing the Program (2x10)	20
2.	II – Test and Debug the Program (2x10)	20
3.	III- Printing the Correct Output (2x5)	10
4.	IV – Viva	5
5.	V - Record book	5
	Total	**60**

Department of Computer Applications				Class: I B.C.A				
Sem	Category	Course Code	Course Title	Credits	Hours/ Week	CIA	External Exam	Total
I	Discipline Specific Elective Course	**23OUCADSE1**	**Digital Logic Fundamentals**	3	4	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✔	✔	

Course Objectives:

1. Classify various gates, binary codes and illustrate laws and theorem 's of Boolean Algebra
2. Convert numbers from one radix to another and build logic circuits with optimal design
3. Apply binary addition, subtraction 2's complement arithmetic to implement arithmetic Circuits
4. Assess the functioning of multiplexer, decoder, flip flop, register and memory
5. Design a digital circuit using the knowledge acquired from combinational logic, sequential logic, and K-map

Course Content:

Unit -I Number Systems and Codes: Number System–Base Conversion – Binary Codes – Code Conversion. **Digital Logic:** Logic Gates – Truth Tables – Universal Gates.

Unit -II Boolean Algebra: Laws and Theorems – SOP, POS Methods – Simplification of Boolean Functions – Using Theorems, K-Map, Prime – Implicant Method – **Binary Arithmetic:** Binary Addition – Subtraction – Various Representations of Binary Numbers–Arithmetic Building Blocks–Adder– Subtractor.

Unit -III Combinational Logic: Logic: Multiplexers -16 to 1 Multiplexer-nibble multiplexer Demultiplexers –1 to 16 Demultiplexer Decoders – 1 of 16 Decoder- BCD- to Decimal Decoder- Encoders- Decimal to BCD encoders –Parity Generators and Checkers.

Unit- IV Sequential Logic: RS, JK, D, and T Flip-Flops–Master-Slave Flip Flops. **Registers:** Shift Registers -Types of Shift Registers.

Unit –V Counters: Asynchronous and Synchronous Counters - Ripple, Mod, Up-Down Counters– Ring Counters. **Memory:** Basic Terms and Ideas –Types of ROMs –Types of RAMs.

Book for Study:

Donald P Leach, Albert Paul Malvino & Goutam Saha (2015), *Digital Principles and Applications* ,8th Edition, Third reprint, McGraw Hill Education (India) Private Limited, New Delhi.

Chapters:

Unit - I:	5, 2
Unit -II:	3, 6
Unit -III:	3,4
Unit- IV:	8,9
Unit- V:	10,13

Books for Reference:

1. V.Rajaraman and T.Radhakrishnan, (2008), *An Introduction to Digital Computer Design,*4th Edition, Prentice Hall of India.

2. M.Morris Mano, (2019), *"Digital Logic and Computer Design",* 2nd Edition, Prentice Hall of India.

3. B. R. Gupta and T. Singhal, (2012)"*Digital Electronics*", 4th Edition, S.K Kataria & sons, India.

Web Resources/ E.Books:

1. https://www.tutorialspoint.com/digital_circuits/digital_circuits_logic_gates.html

2. https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/

3. https://krishnamoorthymca99.wordpress.com/digital-logic-fundamentals/

Pedagogy:

Chalk and Talk, PPT, group discussion, quiz, ICT tools and Peer Teaching.

Rationale for nature of Course:

Knowledge and Skill:

To make students to design and analyze combinational logic circuits. Be able to design and analyze sequential logic circuits.

Activities to be given:

Students shall be allowing to write fundamental concepts in digital circuits in many concepts

Course Learning Outcomes (CLO's):

CLO	Course Outcomes Statement	Knowledge According to Bloom's Taxonomy (Up to K level)
CLO1	Understand the Basic concept of Number System and Universal Gates.	K1 to K3
CLO2	Study the Various Boolean Algebra and Binary Arithmetic	K1 to K3
CLO3	Apply Combinational Logic, Parity Generators and Checkers	K1 to K4
CLO4	Identify the Sequential Logic and Types of Shift Registers	K1 to K4
CLO5	Analyze Counters and Memory, Types of RAMs	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	2	2	3	2
CLO2	2	1	3	2	1	2
CLO3	3	3	1	1	1	2
CLO4	2	3	3	1	1	1
CLO5	3	2	3	1	1	1

1-Basic Level   2- Intermediate Level   3- Advanced Level

LESSON PLAN: TOTAL HOURS (60 HRS)

UNIT	DESCRIPTION	HRS	MODE
I	Number Systems and Codes: Number System–Base Conversion – Binary Codes – Code Conversion. Digital Logic: Logic Gates – Truth Tables – Universal Gates.	10	Chalk and Talk, PPT, group discussion, quiz, on the spot test
II	Boolean Algebra: Laws and Theorems – SOP, POS Methods – Simplification of Boolean Functions – Using Theorems, K-Map, Prime – Implicant Method – Binary Arithmetic: Binary Addition – Subtraction – Various Representations of Binary Numbers– Arithmetic Building Blocks–Adder– Subtractor.	15	Chalk and Talk, PPT, group discussion, quiz, on the spot test
III	Combinational Logic: Logic: Multiplexers -16 to 1 Multiplexer- nibble multiplexer Demultiplexers 1 to 16 Demultiplexer Decoders – 1 of 16 Decoder- BCD- to Decimal Decoder- Encoders- Decimal to BCD encoders –Parity Generators and Checkers.	15	Chalk and Talk, PPT, group discussion, quiz, on the spot test
IV	Sequential Logic: RS, JK, D, and T Flip-Flops–Master-Slave Flip Flops. Registers: Shift Registers -Types of Shift Registers.	10	Chalk and Talk, PPT, group discussion, quiz, on the spot test

V	Counters: Asynchronous and Synchronous Counters - Ripple, Mod, Up- Down Counters– Ring Counters. Memory: Basic Terms and Ideas – Types of ROMs –Types of RAMs.	10	Chalk and Talk, PPT, group discussion, quiz, on the spot test

Course Designer

Mrs. K. KRISHNAVENI

Department of Computer Applications				Class: I B.C.A				
Sem	Category	Course Code	Course Title	Credits	Hours/ Week	CIA	External Exam	Total
I	Skill Enhancement Course SEC- 1 (NME)	**23OUCASECN1**	**Office Automation**	2	2	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✔	✔	

Course Objectives

1. Understand the basics of computer systems and its components.
2. Understand and apply the basic concepts of a word processing package.
3. Understand and apply the basic concepts of electronic spreadsheet software.
4. Understand and apply the basic concepts of database management system.
5. Understand and create a presentation using PowerPoint tool.

Course Content:

Unit-I Introductory concepts: Memory unit– CPU-Input Devices: Key board, Mouse and Scanner. **Output devices:** Monitor, Printer. Introduction to Operating systems &its features: DOS–UNIX–Windows. Introduction to Programming Languages

Unit-II Word Processing: Open, Save and close word document; Editing text – tools, formatting, bullets; Spell Checker - Document formatting – Paragraph alignment, indentation, headers and footers, numbering; printing– Preview, options, merge.

Unit- III Spreadsheets: Excel –opening, entering text and data, formatting, navigating; Formulas – entering, handling and copying; Charts – creating, formatting printing, analysis tables, preparation of financial statements, introduction to data analytics.

Unit- IV Database Concepts: The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of data files; Understanding Programming environment in DBMS; Developing menu drive applications in query language(MS–Access).

Unit -V Power point: Introduction to Power point - Features – Understanding slide typecasting & viewing slides – creating slide shows. Applying special object – including objects & pictures – Slide transition– Animation effects, audio inclusion, timers.

Book for study:

Vikas Gupta, (2006)," *Comdex Computer Course Kit*", Dream tech Press, New Delhi First Edition.

Chapters :

> **Unit – I :** i - (1)
> **Unit – II :** ii - (1 – 7)
> **Unit – III :** iii – (1 – 3)
> **Unit – IV :** iv- (1 - 3)
> **Unit – V :** V (1)

Books for Reference:

1. Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, (2003) "*Microsoft Office 2003: The Complete Reference*" , McGraw-Hill Education, 2nd edition.

2. Dr. P. Rizwan Ahmed,(2016),"*Office Automation" Margham Publications*",6 th edition.

3. Dr. Archana Kumar, (2019), "*Computer Basics with Office Automation*" First Edition, Dreamtech Press

Web Resources / E.Books:

1. https://www.ebookbou.edu.bd/Books/Text/SST/DCSA/dcsa_1302/Unit-01.pdf

2.https://www.tndalu.ac.in/econtent/8_Computer_Fundamentals_and_Office_Automation.pdf

3. https://www.ebookbou.edu.bd/Books/Text/SST/DCSA/dcsa_1302/Unit-02.pdf

Pedagogy:

Chalk and Talk, PPT, Group discussion, Quiz.

Rationale for nature of Course:

Knowledge and Skill:

There are three basic activities of an office automation system: storage of information, data exchange, and data management.

Activities to be given:

Students shall be allowed to write program in many concepts.

Course learning Outcomes (CLO's):

CLO	Course learning Outcomes (CLO's)	Knowledge According to Bloom's Taxonomy (Up to K level)
CLO1	Possess the knowledge on the basics of computers and its components	K1 to K3
CLO2	Gain knowledge on Creating Documents, spreadsheet and presentation.	K1 to K3
CLO3	Learn the concepts of Database and implement the Query in Database.	K1 to K3
CLO4	Demonstrate the understanding of different automation tools.	K1 to K4
CLO5	Utilize the automation tools for documentation, calculation and presentation purpose.	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

(SCIENCE)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	2	3	3	1
CLO2	3	1	2	3	3	3
CLO3	3	2	1	2	1	3
CLO4	3	3	2	2	2	1
CLO5	2	2	1	3	1	3

1-Basic Level   2- Intermediate Level   3- Advanced Level

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

(ARTS)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	1	1	1	2	1
CLO2	3	2	2	2	3	2
CLO3	2	2	1	2	2	2
CLO4	3	2	3	2	3	2
CLO5	2	2	2	2	3	2

LESSON PLAN: TOTAL HOURS (30 HRS)

UNIT	DESCRIPTION	HRS	MODE
I	Introductory concepts: Memory unit–CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems &its features: DOS–UNIX–Windows. Introduction to Programming Languages	7	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs.
II	Word Processing: Open, Save and close word document; Editing text – tools, formatting, bullets; Spell Checker - Document formatting – Paragraph alignment, indentation, headers and footers, numbering; printing– Preview, options, merge.	7	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs.

III	Spreadsheets: Excel –opening, entering text and data, formatting, navigating; Formulas – entering, handling and copying; Charts – creating, formatting printing, analysis tables, preparation of financial statements, introduction to data analytics.	6	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs
IV	Database Concepts: The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of data files; Understanding Programming environment in DBMS; Developing menu drive applications in query language(MS–Access).	5	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs
V	Power point: Introduction to Power point - Features – Understanding slide typecasting & viewing slides – creating slide shows. Applying special object – including objects & pictures – Slide transition– Animation effects, audio inclusion, timers	5	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs

Course Designer

Mrs. G. ALAMELU

Department of Computer Applications				Class: I B.C.A				
Sem	Category	Course Code	Course Title	Credits	Hours/ Week	CIA	External Exam	Total
I	Foundation Course	23OUCAFC1	**Structured Programming in C**	2	2	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✔	✔	

Course Objectives

1. To familiarize the students with the Programming basics and the fundamentals of C,
2. To understand the concept using if statements and loops
3. This unit covers the concept of Arrays
4. This unit covers the concept of Functions
5. To understand the concept of implementing pointers.

Course Content:

Unit-I Overview of C: Importance of C, sample C program, C program structure, executing C program. **Constants, Variables, and Data Types:** Character set, C tokens, keywords and identifiers, constants, variables, data types, declaration of variables, assigning values to variables--Assignment statement, declaring a variable as constant, as volatile. Operators and Expression.

Unit-II Decision Making and Branching: Decision making with If, simple IF, IF ELSE, nested IF ELSE, ELSE IF ladder, switch, GOTO statement. **Decision Making and Looping:** While, Do- While, For, Jumps in loops.

Unit- III Arrays: Declaration and accessing of one & two-dimensional arrays, initializing two-dimensional arrays, multidimensional arrays.

Unit- IV Functions: The form of C functions, Return values and types, calling a function, categories of functions, Nested functions, Recursion, functions with arrays, call by value, call by reference, storage classes-character arrays and string functions

Unit -V Pointers: definition, declaring and initializing pointers, accessing a variable through address and through pointer, pointer expressions, pointer increments and scale factor, pointers and arrays, pointers and functions, pointers and structures.

Book for Study:

E.Balagurusamy,(2010), "*Programming in ANSI C*", Fifth Edition, Tata McGraw-Hill,

Chapters :

> **Unit – I** :2,3,4
> **Unit – II** : 6,7
> **Unit – III:** 8
> **Unit IV** : 10
> **Unit V** : 12

Books for Reference:

1. Brian Kernighan.W & Dennis Ritchie (2015), *C Programming Language*, 2nd Edition.,Pearson Education India.

2. David Griffiths , Dawn Griffiths (2012), *Head First C: A Brain-Friendly Guide,* 1st edition*.* Shroff Publicaitons.

3. Herbert Schildt (2017) , *C: The Complete Reference*, 4th Edition,. McGraw Hill Education.

Web Resources / E.Books:

1. https://codeforwin.org/
2. https://www.geeksforgeeks.org/c-programming-language/
3. http://en.cppreference.com/w/c

Pedagogy:

Chalk and Talk, PPT, Group discussion, Quiz.

Rationale for nature of Course:

Knowledge and Skill:

C is an object-oriented programming language having some additional features like Constants, Variables, and Data Types, etc.

Activities to be given:

Students shall be allowed to write C program in many concepts.

Course learning Outcomes (CLO's):

CLO	Course learning Outcomes (CLO's)	Knowledge According to Bloom's Taxonomy (Up to K level)
CLO1	Remember the program structure of C with its syntax and semantics	K1 to K3
CLO2	Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	K1 to K3
CLO3	Apply the programming principles learnt in real-time problems	K1 to K3
CLO4	Analyze the various methods of solving a problem and choose the best method.	K1 to K4
CLO5	Code, debug and test the programs with appropriate test cases	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	1	2	2	2	2	1
CLO2	2	2	2	2	1	2
CLO3	3	2	2	1	1	2
CLO4	3	2	2	1	2	1
CLO5	1	2	2	2	2	3

1-Basic Level   2- Intermediate Level   3- Advanced Level

LESSON PLAN: TOTAL HOURS (30 HRS)

UNIT	DESCRIPTION	HRS	MODE
I	Introductory concepts: Memory unit– CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems &its features: DOS–UNIX–Windows. Introduction to Programming Languages	7	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs.
II	Word Processing: Open, Save and close word document; Editing text – tools, formatting, bullets; Spell Checker - Document formatting – Paragraph alignment, indentation, headers and footers, numbering; printing– Preview, options, merge.	6	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs.
III	Spreadsheets: Excel –opening, entering text and data, formatting, navigating; Formulas – entering, handling and copying; Charts – creating, formatting printing, analysis tables, preparation of financial statements, introduction to data analytics.	7	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs
IV	Database Concepts: The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of data files; Understanding Programming environment in DBMS; Developing menu drive	5	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs

	applications in query language(MS–Access).		
V	Power point: Introduction to Power point - Features – Understanding slide typecasting & viewing slides – creating slide shows. Applying special object – including objects & pictures – Slide transition– Animation effects, audio inclusion, timers	5	Chalk and Talk, PPT, group discussion , OHP presentations, quiz, on the spot test and Virtual Labs

Course Designer

Mrs. G. ALAMELU

Department of Computer Applications				Class: II BCA				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Hours/ Week**	**CIA**	**External Exam**	**Total**
II	Core	**23OUCA21**	**Object Oriented Programming Concepts using C++**	5	5	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship Oriented**
✓	✔	

Course Objectives

1. Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects

2. Understand dynamic memory management techniques using pointers, constructors, destructors, etc

3. Describe the concept of function overloading, operator overloading, virtual functions and polymorphism

4. Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming

5. Demonstrate the use of various OOPs concepts with the help of programs

Course Content:

Unit-I Introduction to C++ - key concepts of Object-Oriented Programming – Advantages – Object Oriented Languages - C++ Declarations. - new and delete operators - Control Structures: Decision Making and Statements: If..else, jump, goto, break, continue, Switch case statements - Loops in C++ :for, while, do - **Functions in C++:** inline functions – Function Overloading.

Unit-II Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – **Constructor & Destructor**: Constructor – Destructor – Parameterized Constructor.

Unit- III Operator Overloading: Overloading unary, binary operators – Overloading Friend functions –type conversion **– Inheritance**: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid -Virtual base Classes – Abstract Classes.

Unit- IV Pointers: – Declaration – Pointer to Class, Object – this pointer – Pointers to derived classes - Polymorphism and Virtual Functions. **Managing console I/O Operations:** Introduction – C++ stream – C++ stream classes – Unformatted I/O - Formatted I/O.

Unit -V Files: File stream classes – file modes – Sequential Read / Write operations – Random Access Operation**. Manipulating Strings:** Introduction – Creating Objects – Manipulating String Objects – Relational Operations – String Characteristics – Accessing Characters in Strings – Comparing and Swapping.

Book for Study:

E. Balagurusamy, (2013), " *Object-Oriented Programming with C++ "*, TMH, 7th Edition.

Chapters:

> **Unit – I   :** 1.5 – 1.7, 3.11,3.17, 3.25, 4.1, 4.6, 4.10
>
> **Unit – II :** 5.3, 5.4, 5.11 – 5.13, 5.15, 6.2, 6.3, 6.11
>
> **Unit – III :** 7.2, 7.5, 7.9, 8.1, 8.3, 8.5 – 8.10
>
> **Unit IV   :** 9.2 – 9.7, 10.1 – 10.5
>
> **Unit V   :** 11.2, 11.5, 11.7, 11.8, 15.1 – 15.7

Books for Reference:

1. Herbert Schildt (2017), *"C++: The complete Reference"* ,4th Edition, TMH Publications,New Delhi.

2. Mike McGrath (2017), *C++ Programming in easy steps*, 5th Edition.Dreamtech Press, New Delhi.

3. Debasish jana. P (2014) , *C++ And Object-Oriented Programming Paradigm ,* 3rd Edition, PHI Learning Pvt. Ltd, New Delhi.

Web Resources / E.Books:

1**.** https://www.tutorialspoint.com/cplusplus/cpp_tutorial.pdf

2. https://thatchna.weebly.com

3. https://www.geeksforgeeks.org/c-plus-plus/

Pedagogy:

Chalk and Talk, PPT, Group discussion, Quiz.

Rationale for nature of Course:

Knowledge and Skill:

C++ is an object-oriented programming language having some additional features like Encapsulation, Data Hiding, Data Abstraction, Inheritance, Polymorphism, etc.

Activities to be given:

Students shall be allowed to write C++ program in many concepts.

Course learning Outcomes (CLO's):

CLO	Course learning Outcomes (CLO's)	Knowledge According to Bloom's Taxonomy (Up to K level)
CLO1	Remember the program structure of C with its syntax and semantics	K1 to K3
CLO2	Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	K1 to K3
CLO3	Apply the programming principles learnt in real-time problems	K1 to K4
CLO4	Analyze the various methods of solving a problem and choose the best method.	K1 to K4
CLO5	Code, debug and test the programs with appropriate test cases	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	3	2	2	1
CLO2	2	3	3	2	2	2
CLO3	1	2	3	2	3	2
CLO4	3	3	2	2	3	2
CLO5	2	3	3	2	3	2

1-Basic Level   2- Intermediate Level   3- Advanced Level

LESSON PLAN: TOTAL HOURS (75 HRS)

UNIT	DESCRIPTION	HRS	MODE
I	Introduction to C++ - key concepts of Object-Oriented Programming – Advantages – Object Oriented Languages - C++ Declarations. - new and delete operators - Control Structures: Decision Making and Statements: If..else, jump, goto, break, continue, Switch case statements - Loops in C++ :for, while, do - Functions in C++: inline functions – Function Overloading. .	15	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs.
II	Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Constructor & Destructor: Constructor – Destructor – Parameterized Constructor.	15	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs.
III	Operator Overloading: Overloading unary, binary operators – Overloading Friend functions –type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid - Virtual base Classes – Abstract Classes.	15	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs
IV	Pointers: Declaration – Pointer to Class, Object – this pointer – Pointers to derived classes - Polymorphism and Virtual Functions. Managing console I/O Operations: Introduction – C++ stream –	16	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs

	C++ stream classes – Unformatted I/O - Formatted I/O.		
V	Files: File stream classes – file modes – Sequential Read / Write operations – Random Access Operation. Manipulating Strings: Introduction – Creating Objects – Manipulating String Objects – Relational Operations – String Characteristics – Accessing Characters in Strings – Comparing and Swapping.	14	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs

Course Designer

Mrs. P. INDHUJA

Department of Computer Applications				Class : II B.C.A				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Hours/ Week**	**CIA**	**External Exam**	**Total**
II	Core	**23OUCA2P**	**C++ Programming Lab**	5	5	40	60	100

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Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✔	✔	

PROGRAM LIST

Data Structures:

1. Write a C++ program to demonstrate function overloading, Default Arguments and Inline function.

2. Write a C++ program to demonstrate Class and Objects

3. Write a C++ program to demonstrate the concept of Passing Objects to Functions

4. Write a C++ program to demonstrate the Friend Functions

5. Write a C++ program to demonstrate the concept of Passing Objects to Functions

6. Write a C++ program to demonstrate Constructor and Destructor

7. Write a C++ program to demonstrate Unary Operator Overloading

8. Write a C++ program to demonstrate Binary Operator Overloading

9. Write a C++ program to demonstrate:

•   Single Inheritance

•   Multilevel Inheritance

•   Multiple Inheritance

•   Hierarchical Inheritance

•   Hybrid Inheritance

10. Write a C++ program to demonstrate Virtual Functions.

11. Write a C++ program to manipulate a Text File.

12. Write a C++ program to perform Sequential I/O Operations on a file.

13. Write a C++ program to find the Biggest Number using Command Line Arguments.

14. Write a C++ program to demonstrate Class Template

15. Write a C++ program to demonstrate Function Template.

16. Write a C++ program to demonstrate Exception Handling.

Books for Reference:

1. Ravichandran.D(2002), "*Programming with C++*" , 2nd Edition, TMH Publications, New Delhi,

2. Robert Laffore (2002), "*Object Oriented Programming using C++*",4th Edition.Sams Publishing,

3. Bjarne Stroustrup (2013), "*The C++ Programming language*", Addison-Wesley.

Web Resources/ E.Books:

1. https://www.cplusplus.com/files/tutorial.pdf

2. https://www.tutorialspoint.com/cplusplus/cpp_tutorial.pdf

3. http://www.lmpt.univ-tours.fr/~volkov/C++.pdf

Pedagogy

Practical Test with viva voce, Group Discussion, Interaction, Quiz.

LESSON PLAN FOR PRATICAL: TOTAL HOURS (75 HRS)

CYCLE	DESCRIPTION	HRS	MODE
1	1. Write a C++ program to demonstrate function overloading, Default Arguments and Inlinefunction. 2. Write a C++ program to demonstrate Class and Objects 3. Write a C++ program to demonstrate the concept of Passing Objects to Functions	15	Writing and executing the program in a system
2	4. Write a C++ program to demonstrate the Friend Functions 5. Write a C++ program to demonstrate the concept of Passing Objects to Functions 6. Write a C++ program to demonstrate Constructor and Destructor 7. Write a C++ program to demonstrate Unary Operator Overloading	15	Writing and executing the program in a system
3	8. Write a C++ program to demonstrate Binary Operator Overloading 9. Write a C++ program to demonstrate: • Single Inheritance • Multilevel Inheritance • Multiple Inheritance • Hierarchical Inheritance	15	Writing and executing the program in a system

	• Hybrid Inheritance 10. Write a C++ program to demonstrate Virtual Functions..		
4	11. Write a C++ program to manipulate a Text File. 12. Write a C++ program to perform Sequential I/O Operations on a file. 13. Write a C++ program to find the Biggest Number using Command Line Arguments.	16	Writing and executing the program in a system
5	14. Write a C++ program to demonstrate Class Template 15. Write a C++ program to demonstrate Function Template. 16. Write a C++ program to demonstrate Exception Handling.	17	Writing and executing the program in a system

Course Designer

Mrs. P. INDHUJA

EVALUATION (PRACTICAL)

Core Lab / Skill Enhancement Course Lab

Internal (Formative)   : 40 marks

External (Summative)   : 60 marks

Total   : 100 marks

Question Paper Pattern for Internal Practical Examination: 40 Marks

- ✓ There will be Two Internal Practical Examination.
- ✓ Duration of Internal Examination will be 2 hours.

S.No	Components	Marks
1.	I – Writing the Program (2x8)	16
2.	II – Test and Debug the Program (2x4)	08
3.	III - Printing the Correct Output (2x4)	08
4.	IV- Viva	03
5.	V –Record book	05
	Total	**40**

Question Paper Pattern for External Practical Examination: 60 Marks

- ✓ Duration of External Examination will be 3 hours.

S.No	Components	Marks
1.	I – Writing the Program (2x10)	20
2.	II – Test and Debug the Program (2x10)	20
3.	III- Printing the Correct Output (2x5)	10
4.	IV – Viva	5
5.	V - Record book	5
	Total	**60**

Department of Computer Applications				Class: II BCA				
Sem	Category	Course Code	Course Title	Credits	Hours/ Week	CIA	External Exam	Total
II	Generic Elective Course - 1	23OUCAGE COM2	**Financial Accounting**	3	4	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship Oriented**
✓	✔	

Course Objectives

1. To understand the basic accounting concepts and standards.
2. To know the basis for accounts, Journals, Ledger
3. To know the basis for calculating profit and loss.
4. To learn the methods of creating company, ledger creation using Tally
5. To gain knowledge about voucher creation.

Course Content:

Unit-I Financial Accounting: Meaning, Nature and scope, Limitations –**Accounting Principles:** Basic Concepts and Conventions – Objectives of accounting – Accounting rules.

Unit-II Books and records: Recording of business transactions – Types of accounts – Journal – Ledger – Journal Vs Ledger, Subsidiary books – Trial balance

Unit- III Final Accounts: Introduction – Trading account – Profit and loss account –

Balance sheet. (Simple problems)

Unit- IV Introduction to Tally: Features of Tally 9 – Company info: Create, Select, Alter and Close or Shut Company – Ledger Creation: Creating, Displaying, Altering and Deleting. F11 – Features and F12 – Configuration

Unit -V Voucher Creation: Receipt, Payment, Contra, Journal, Sales, Purchase, Memo, Display, Alter, Delete, Insert, Statement of Reports: Trail balance, Profit and Loss account, Balance sheet.

Books for Study:

1. R.S.N. Pillai and Bagavathi, S.Chand,, (2007), "*Financial Accounts*" First Edition.
2. C.NellaiKannan , (2007), " *Tallly (version 9)*"

Chapters:

1. R.S.N. Pillai and Bagavathi, S.Chand,, (2007), "*Financial Accounts*" First Edition.

Unit I: Pg. Numbers – 1 to 22

Unit II : Pg. Numbers – 30 – 65

Unit III: Pg. Numbers – 154 to 170

2. C.NellaiKannan , (2007), " Tallly (version 9).

Chapters:

Unit IV : Pg. Numbers – 5 to 61

Unit V : Pg. Numbers – 62 to 102

Books for Reference:

1. Raman.B.S (2012), "*Financial Accounting"* United Publishers,Mangalore.

2.Maheswari .S.N (2017)," *Financial Accounting"*, Vikas Publishing House,New Delhi.

3. Jain .S.P and Narang.K.L ,(2014) , *"Financial Accounting-I",,* S.Chand & Sons,New Delhi, New Delhi

Web Resources / E.Books:

1.https://drnishikantjha.com/booksCollection/Financial%20Accounting%20%20BMS%20.pdf

2. https://www.geektonight.com/financial-accounting-notes/

3. https://deeppanacademy.com/pdf/cma/foundation/fundamentals-of-accounting.pdf

Pedagogy:

Chalk and Talk, PPT, Group discussion, Quiz.

Rationale for nature of Course:

Knowledge and Skill:

They include knowledge of standard principles of accounting, computing abilities, quantitative analysis and financial market forecasting and modeling techniques.

Activities to be given:

Students shall be allowed to write the accounting process includes summarizing, analyzing, and reporting these transactions to oversight agencies, regulators, and tax collection entities.

Course learning Outcomes (CLO's):

CLO	Course learning Outcomes (CLO's)	Knowledge According to Bloom's Taxonomy (Up to K level)
CLO1	Remember the basic accounting concepts and Accounting Principles	K1 to K3
CLO2	Understand the Books and records and Trial balance	K1 to K3
CLO3	Apply the concepts of Final Accounts	K1 to K4
CLO4	Analyze the various methods of Tally	K1 to K4
CLO5	To understand the voucher Creation Receipt, Payment, Contra	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	3	2	3	2
CLO2	2	1	3	2	1	2
CLO3	3	3	2	2	3	2
CLO4	3	3	2	1	1	1
CLO5	2	3	3	1	1	1

1-Basic Level   2- Intermediate Level   3- Advanced Level

LESSON PLAN: TOTAL HOURS (60 HRS)

UNIT	DESCRIPTION	HRS	MODE
I	Financial Accounting: Meaning, Nature and scope, Limitations –Accounting Principles: Basic Concepts and Conventions – Objectives of accounting – Accounting rules.	10	Chalk and Talk, group discussion, quiz, on the spot test and
II	Books and records: Recording of business transactions – Types of accounts – Journal – Ledger – Journal Vs Ledger, Subsidiary books – Trial balance.	15	Chalk and Talk, group discussion, quiz, on the spot test and
III	Final Accounts: Introduction – Trading account – Profit and loss account – Balance sheet. (Simple problems)	15	Chalk and Talk, group discussion, quiz, on the spot test
IV	Introduction to Tally: Features of Tally 9 – Company info: Create, Select, Alter and Close or Shut Company – Ledger Creation: Creating, Displaying, Altering and Deleting. F11 – Features and F12 – Configuration	10	Chalk and Talk, group discussion, on the spot test
V	Voucher Creation: Receipt, Payment, Contra, Journal, Sales, Purchase, Memo, Display, Alter, Delete, Insert, Statement of Reports: Trail balance, Profit and Loss account, Balance sheet.	10	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs

Course Designer

Mrs. B.LALITHA SUBHANAM

Department of Computer Applications				Class: II BCA				
Sem	**Category**	**Course Code**	**Course Title**	**Credits**	**Hours/ Week**	**CIA**	**External Exam**	**Total**
II	Skill Enhancement Course SEC- 2 (NME)	**23OUCASECN2**	**Introduction to HTML**	2	2	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship Oriented**
✓	✔	

Course Objectives

1. Insert a graphic within a web page.

2. Create a link within a web page.

3. Create a table within a web page

4. Insert heading levels within a web page.

5. Insert ordered and unordered lists within a web page. Create a web page**.**

Course Content:

Unit-I Introduction: Web Basics: What is Internet – Web browsers – What is Webpage – HTML Basics: Understanding tags**.**

Unit-II Tags for Document structure (HTML, Head, Body Tag). Block level text elements: Headings paragraph (<p> tag) – Font style elements:(bold, italic, font, small, strong, strike, big tags)

Unit- III Lists: Types of lists: Ordered, Unordered– Nesting Lists – Other tags: Marquee, HR, BR-Using Images –Creating Hyperlinks.

Unit- IV Tables: Creating basic Table, Table elements, Caption–Table and cell alignment – Row span, Col span–Cell padding.

Unit -V Frames: Frameset – Targeted Links – No frame – Forms: Input, Text area, Select, Option.

Book for Study:

Mastering, (2014.),” *HTML5 and CSS3* “, Made Easy‖, TeachUComp Inc.

Chapters:

Unit – I	**:** 1.1 - 2.5
Unit – II	**:** 3.1 – 3.2
Unit – III	**:** 6.1 – 6.4, 7.1 – 7.3
Unit- IV	**:** 9.1 -9.3
Unit- V	**:** 10.1, 10.4

Books for Reference:

1. Dr. Vaka Murali Mohan,S.Pratap Singh (2013),”*The Modern Approach to Web Technologies”* , Scirech Publication ,1st Edition ,.

2. Akilandeswari.J & Gopalan.NP (2014), *TCP/IP to Internet Application Architecture, PHI Publications,* New Delhi,2**nd** Edition,.

3. Ivan Bayross,(2012) *Web Technologies part II*, BPB publications, New Delhi, 2nd Edition.

Web Resources / E. Books:

3. https://www.w3schools.com/html/html_intro.asp

4. https://www.javatpoint.com/what-is-html

5. https://developer.mozilla.org/enUS/docs/Learn/Getting_started_with_the_web/HTML_basics

Pedagogy:
Chalk and Talk, PPT, Group discussion, Quiz.

Rationale for nature of Course:

Knowledge and Skill:

To make students allows HTML provides the basic structure of sites, which is enhanced and modified by other technologies.

Activities to be given:

Students shall be allowed to write HTML program in many concepts.

Course learning Outcomes (CLO's):

CLO	Course learning Outcomes (CLO's)	Knowledge According to Bloom's Taxonomy (Up to K level)
CLO1	Knows the basic concept in HTML Concept of resources in HTML	K1 to K3
CLO2	Knows Design concept. Concept of Meta Data Understand the concept of save the files.	K1 to K3
CLO3	Understand the page formatting. Concept of list	K1 to K4
CLO4	Creating Links. Know the concept of creating link to email address	K1 to K4
CLO5	Concept of adding images Understand the table creation.	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

(SCIENCE)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	3	2	2	1
CLO2	2	3	3	2	2	2
CLO3	1	2	3	2	3	2
CLO4	3	3	2	2	3	2
CLO5	2	3	3	2	3	2

1-Basic Level   2- Intermediate Level   3- Advanced Level

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)
(ARTS)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	1	1	2	1
CLO2	3	3	2	2	2	2
CLO3	2	2	1	3	2	2
CLO4	2	3	2	1	2	2
CLO5	2	3	1	2	3	2

LESSON PLAN: TOTAL HOURS (30 HRS)

UNIT	DESCRIPTION	HRS	MODE
I	Introduction : Web Basics: What is Internet–Web browsers–What is Webpage –HTML Basics: Understanding tags..	5	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs.
II	Tags for Document structure (HTML, Head, Body Tag). Block level text elements: Headings paragraph(<p> tag)– Font style elements:(bold, italic, font, small, strong, strike, big tags)	6	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs.
III	Lists: Types of lists: Ordered, Unordered– Nesting Lists–Other tags: Marquee, HR, BR-Using Images –Creating Hyperlinks.	5	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs

IV	Tables: Creating basic Table, Table elements, Caption –Table and cell alignment–Row span, Col span–Cell padding.	7	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs
V	Frames: Frameset– Targeted Links–No frame–Forms: Input, Text area, Select, Option	7	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs

Course Designer

Mrs. G. ALAMELU

Department of Computer Applications				Class: II BCA				
Sem	Category	Course Code	Course Title	Credits	Hours/ Week	CIA	External Exam	Total
II	Skill Enhancement Course SEC- 3	**23OUCASEC3**	**Multimedia Systems**	2	2	25	75	100

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship Oriented**
✓	✔	

Course Objectives

1. Understand the definition of Multimedia
2. To study about the Image File Formats, Sounds Audio File Formats
3. Understand the concepts of Animation and Digital Video Containers
4. To study about the Stage of Multimedia Project
5. Understand the concept of Ownership of Content Created for Project Acquiring Talent

Course Content:

Unit- I **Multimedia:** Definition- Use of Multimedia- Delivering Multimedia- **Text:** About Fonts and Faces - Using Text in Multimedia - Computers and Text Font Editing and Design Tools- Hypermedia and Hypertext.

Unit-II Images: Plan Approach - Organize Tools - Configure Computer Workspace -Making Still Images - Color - Image File Formats. **Sound:** The Power of Sound – Digital Audio-Midi Audio- Midi vs .Digital Audio- Multimedia System Sounds Audio File Formats - Vaughan's Law of Multimedia Minimums – Adding Sound to Multimedia Project

Unit- III Animation: The Power of Motion-Principles of Animation-Animation by Computer - Making Animations that Work. **Video:** Using Video - Working with Video and Displays- Digital Video Containers - Obtaining Video Clips -Shooting and Editing Video.

Unit- IV Making Multimedia: The Stage of Multimedia Project - The Intangible Needs -The Hardware Needs - The Software Needs - An Authoring System's Needs- Multimedia Production Team.

==Unit -V Planning and Costing:== The Process of Making Multimedia a-Scheduling-Estimating - RFPs and Bid Proposals. **Designing and Producing** - **Content and Talent:** Acquiring Content- Ownership of Content Created for Project- Acquiring Talent

Book for Study:

Tay Vaughan, (2011)" *Multimedia: Making It Work*", Osborne/McGraw- Hill, 8th Edition.

Chapters:

Unit – I   : 1,2
Unit – II   : 3,4
Unit – III   : 5,6
Unit- IV   : 7,8
Unit- V   : 9,10,11

Books for Reference:

1. R K Jain, (2015)" *Introduction to Multimedia*", Khanna Publishers, 1st Edtion.

2. Ranjan Rarekh, (2017), "Principles of Multimedia" McGraw Hill Education, 2nd Edition.

3. Tay Vaughan, (2017) "*Multimedia: Making it Work*", McGraw Hill Education ―C++ for you‖, 9th Edition.Vikas publication 2002

Web Resources / E.Books:

1. https://www.geeksforgeeks.org/what-is-multimedia/

2. https://www.scribd.com/doc/123725067/63096974-Multimedia-Systems-NOTES-pdf

3. https://www.javatpoint.com/what-is-multimedia

Pedagogy:

Chalk and Talk, PPT, Group discussion, Quiz.

Rationale for nature of Course:

Knowledge and Skill:

Multimedia is a form of communication that uses a combination of different content forms such as writing, audio, images, animations, or video.

Activities to be given:

Students shall be allowed to prepare the project for the recording and the playing of audio and video.

Course learning Outcomes (CLO's):

CLO	Course learning Outcomes (CLO's)	Knowledge (According to Bloom's Taxonomy) (Up to K level)
CLO1	Understand the concepts, importance, application and the process of developing multimedia	K1 to K3
CLO2	To have basic knowledge and understanding about image related processings	K1 to K3
CLO3	To understand the framework of frames and bit images to animations	K1 to K4
CLO4	Speaks about the multimedia projects and stages of requirement in phases of project.	K1 to K4
CLO5	Understanding the concept of cost involved in multimedia planning, designing, and producing	K1 to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	3	2	2	1
CLO2	2	3	3	2	2	2
CLO3	1	2	3	2	3	2
CLO4	3	3	2	2	3	2
CLO5	2	3	3	2	3	2

1-Basic Level   2- Intermediate Level   3- Advanced Level

LESSON PLAN: TOTAL HOURS (30 HRS)

UNIT	DESCRIPTION	HRS	MODE
I	Multimedia Definition- Use of Multimedia- Delivering Multimedia- Text: About Fonts and Faces - Using Text in Multimedia -Computers and Text Font Editing and Design Tools- Hypermedia and Hypertext.	7	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs.
II	Images: Plan Approach - Organize Tools - Configure Computer Workspace -Making Still Images - Color - Image File Formats. Sound: The Power of Sound – Digital Audio-Midi Audio- Midivs .Digital Audio- Multimedia System Sounds Audio File Formats - Vaughan's Law of Multimedia Minimums – Adding Sound to Multimedia Project.	6	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs.
III	Animation: The Power of Motion- Principles of Animation-Animation by Computer - Making Animations that Work. Video: Using Video - Working with Video and Displays- Digital Video Containers-Obtaining Video Clips - Shooting and Editing Video.	7	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs
IV	Making Multimedia: The Stage of Multimedia Project - The Intangible Needs -The Hardware Needs - The Software Needs - An Authoring System's Needs-Multimedia Production Team.	5	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs

V	Planning and Costing: The Process of Making Multimedia a-Scheduling- Estimating - RFPs and Bid Proposals. Designing and Producing - Content and Talent: Acquiring Content- Ownership of Content Created for Project- Acquiring Talent.	5	Chalk and Talk, PPT, group discussion, OHP presentations, quiz, on the spot test and Virtual Labs

Course Designer

Mrs. G. ALAMELU