Key Indicator - 2.6 Student Performance and Learning Outcomes

2.6.1 The institution has stated learning outcomes (programme and course outcome)/graduate attributes which are integrated into the assessment process and widely publicized through the website and other documents and the attainment of the same are evaluated by the institution.

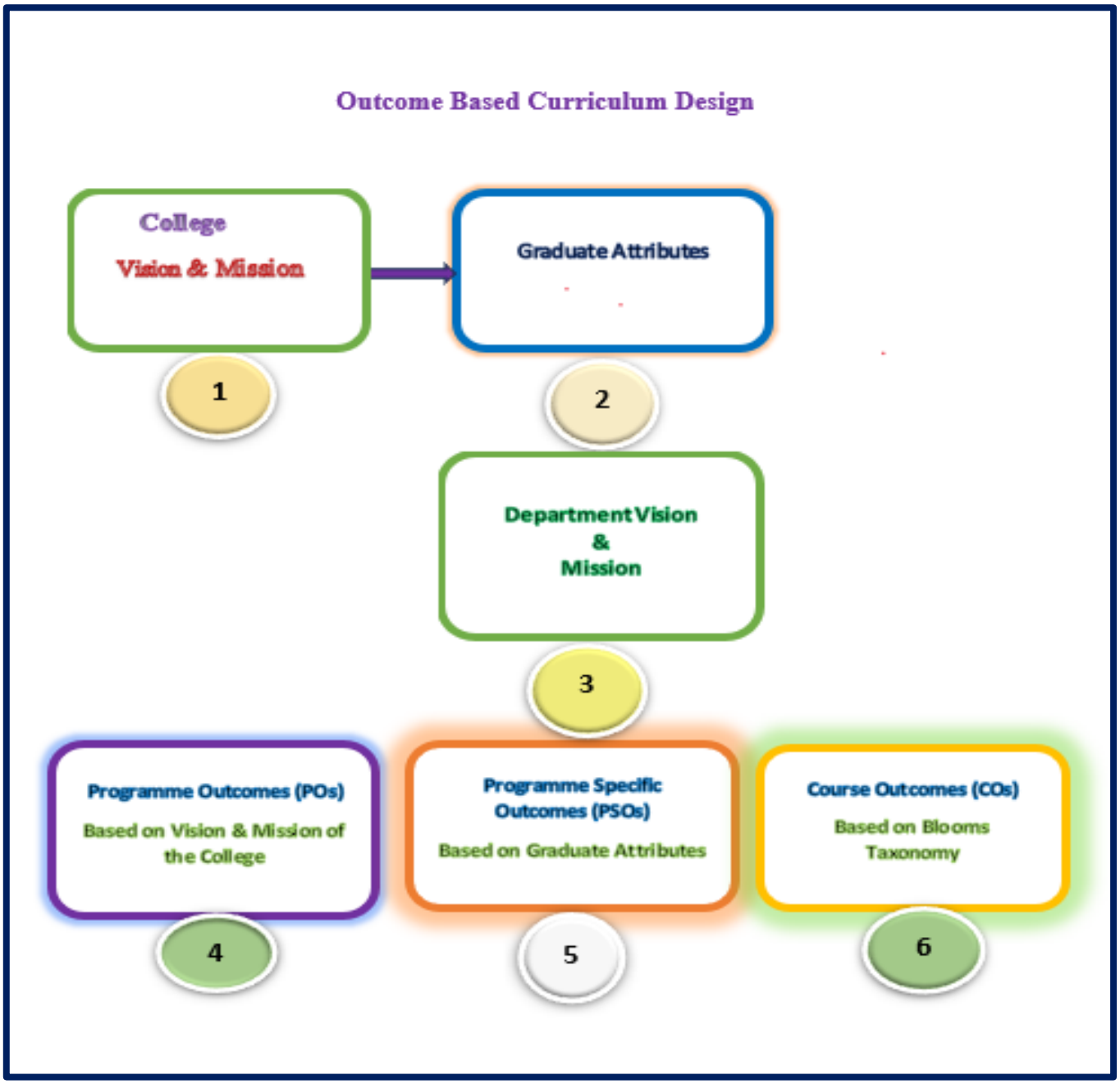
Additional Information

The Institution exhibits its commitment to transparency and accountability in offering high-quality education by publishing the Programme and Course Outcomes on its website and educating students and teachers about them. This allows suggestions from stakeholders, like students and employers, to enhance the institution's programmes and courses.

Learning Outcomes Assessed and Publicized in Website by the Institution	
POs and PSOs link Publicized in Institutional Website	
Evaluation Components Used in Attainment of Outcomes	
Outcome Based Curriculum Design	CLICK HERE
Framework of Assessment Process Integrated with Learning Outcomes	CLICK HERE
FDP on Outcome Based Education	CLICK HERE
Publicizing POs and COs among Students by the Faculty	CLICK HERE
Teacher's Plan Specified with COs and Knowledge level	CLICK HERE
Syllabus Specified with POs, PSOs and COs	CLICK HERE
Publicizing OBE Framework in Student Induction Programme (SIP)	CLICK HERE
Question Bank Based on COs with Bloom's Taxonomy	CLICK HERE
Continuous Internal Assessment Question Paper Pattern with COs and knowledge level	CLICK HERE

Outcome Based Curriculum Design

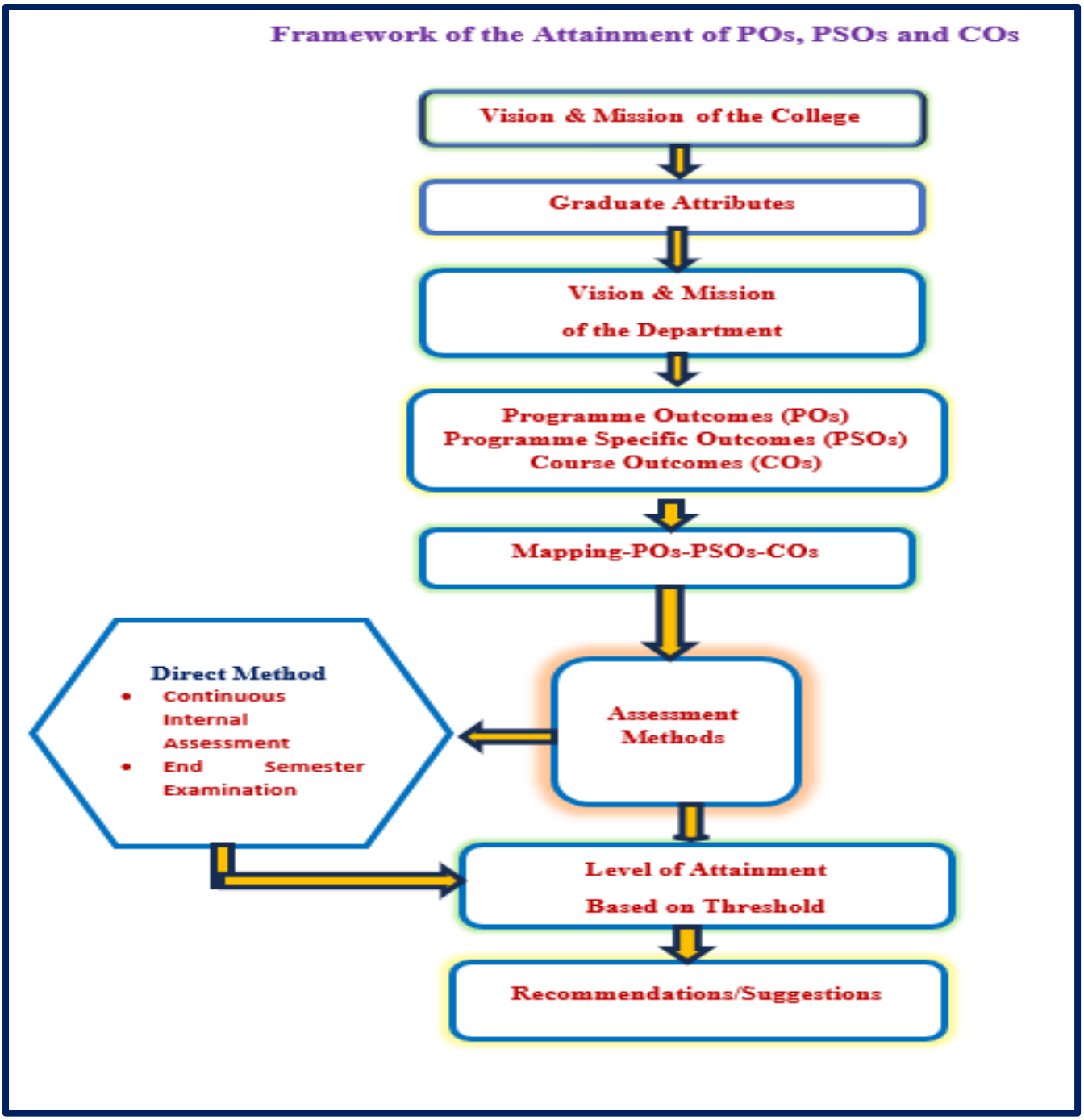
Teachers were trained about the outcome-based curriculum design of all programmes by the institution to make sure that everyone aware of the objectives of the course or programme and could work towards reaching the objectives.



CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

Framework of Assessment Process Integrated with Learning Outcomes

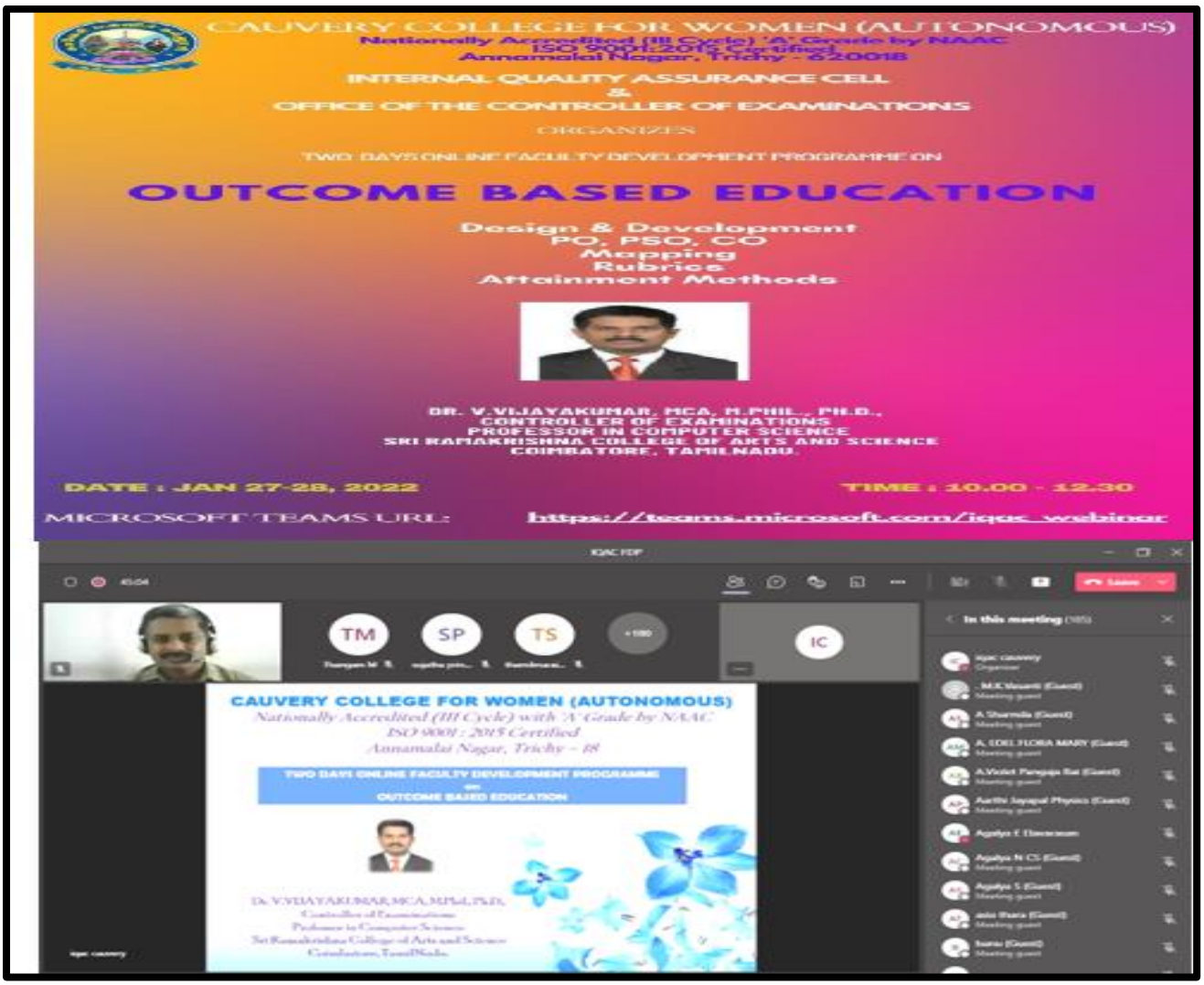
Learning Outcomes based Curriculum Framework (LOCF) has been adopted by the institution mandated by the UGC to achieve the goals of the programme or courses and to promote the quality education.



FDP on Outcome Based Education

Faculty Development Programmes, Workshops and Seminars were organized for faculty members in accordance with the OBE on content delivery at various Knowledge levels as well as assessment and evaluation processes.

Outcome Based Education – Design and Development – PO, PSO, CO – Mapping, Rubrics, Attainment Methods



Dr. V. Vijayakumar, Controller of Examinations, Professor in Computer Science, Sri Ramakrishna College of Arts and Science, Coimbatore, Tamil Nadu embellished about Outcome Based Education – Design and Development – PO, PSO, CO - Mapping, Rubrics, and Attainment Methods on 27.01.2022 and 28.01.2022.

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

FDP on Reformation of Programme Structure and Evaluation Pattern, Learning Outcome Based Curriculum Framework and Calculation of Attainment

Dr.V. Sujatha, Principal Personifies the Reformation of Programme Structure and Evaluation Pattern on 10.03.2022.

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

Reformation of Programme Structure and Evaluation Pattern, Learning Outcome Based Curriculum Framework and Calculation of Attainment

Dr.V. Sinthu Janita Prakash, IQAC Coordinator & Dean of Science has epitomized Learning Outcome Based Curriculum Framework on 12.04.2022.

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

Reformation of Programme Structure and Evaluation Pattern, Learning Outcome Based Curriculum Framework and Calculation of Attainment

Dr. N. Sivapriya, Deputy Controller of Examinations has delineated doubts about Calculation of Attainment on 12.04.2022

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

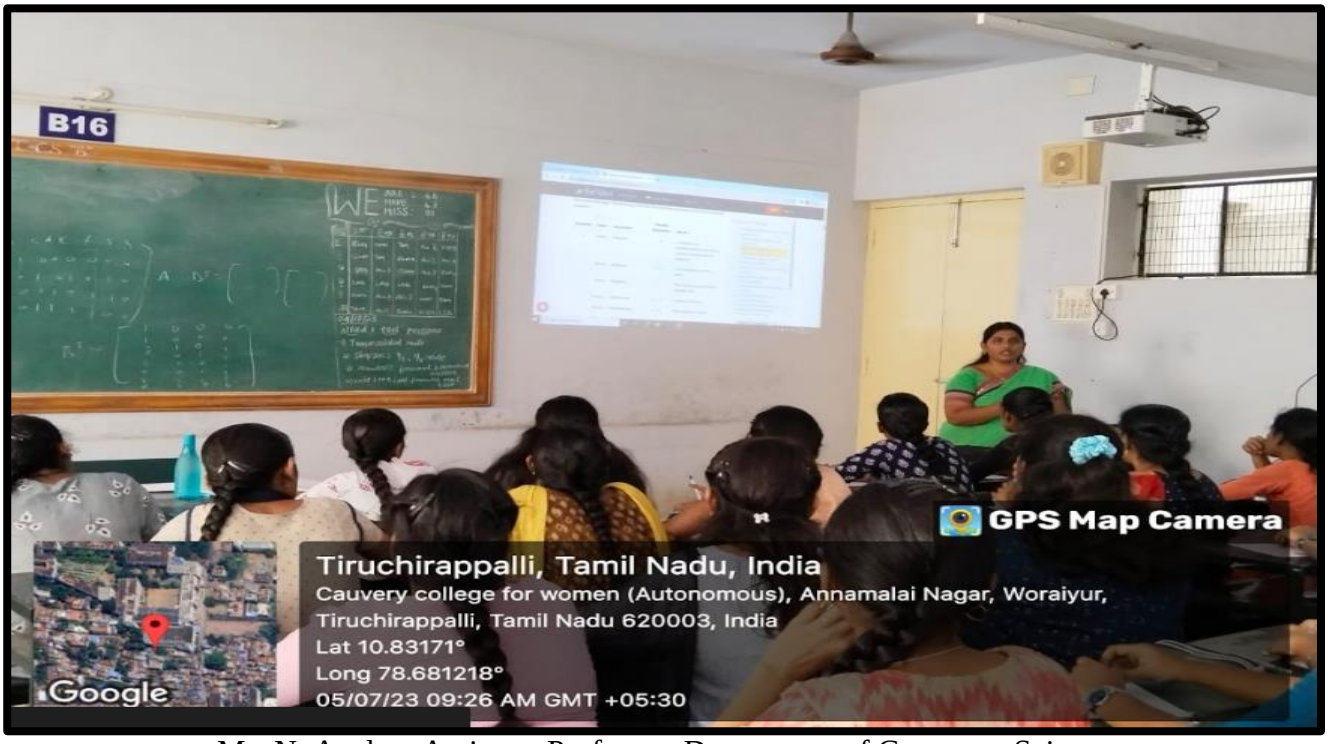
Publicizing POs and COs among Students by the Faculty

Programme Outcomes and Course Outcomes for all Programmes offered by the institution are shared with students by the faculty to ensure that everyone understands the goals of the programme or course and can work towards achieving the goals.

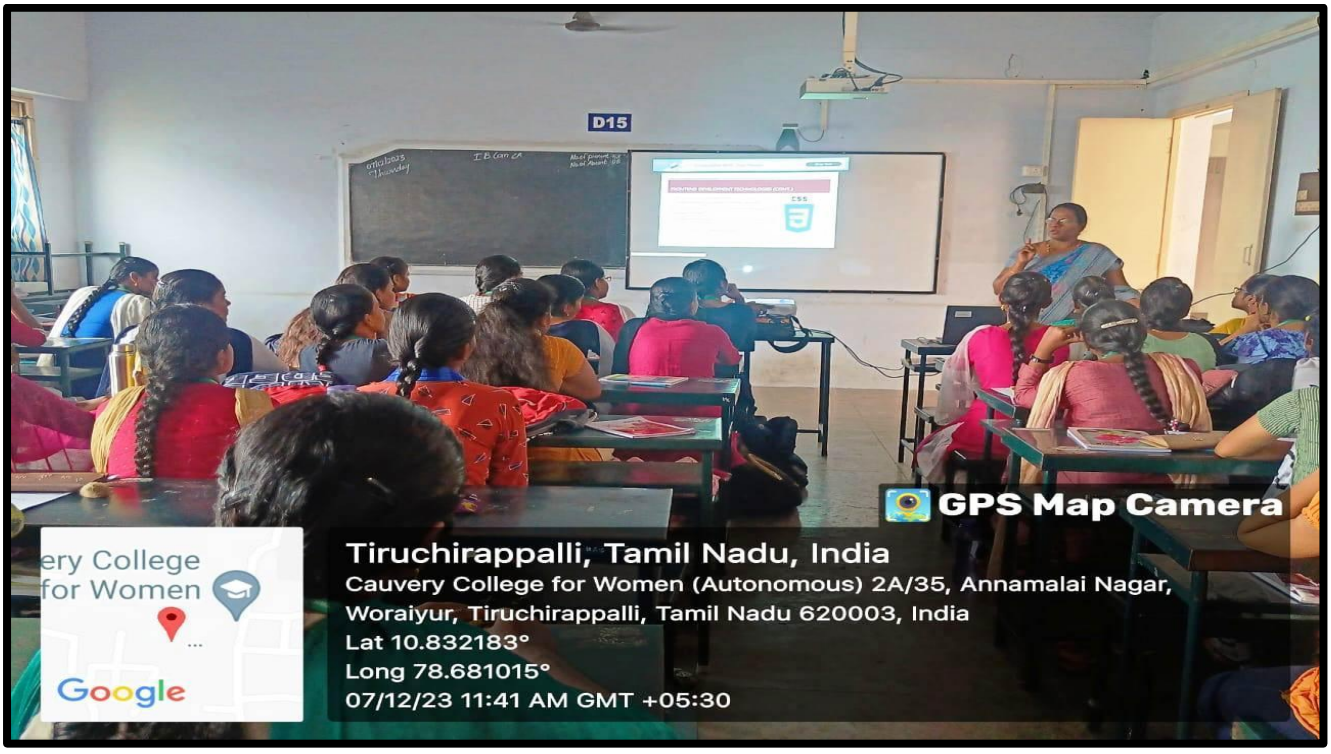
Programme and Course Outcomes Shared with the Students in the Class Room by the Faculty

Dr.N. Savithri, Dean of Arts & Head, Department of Commerce

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

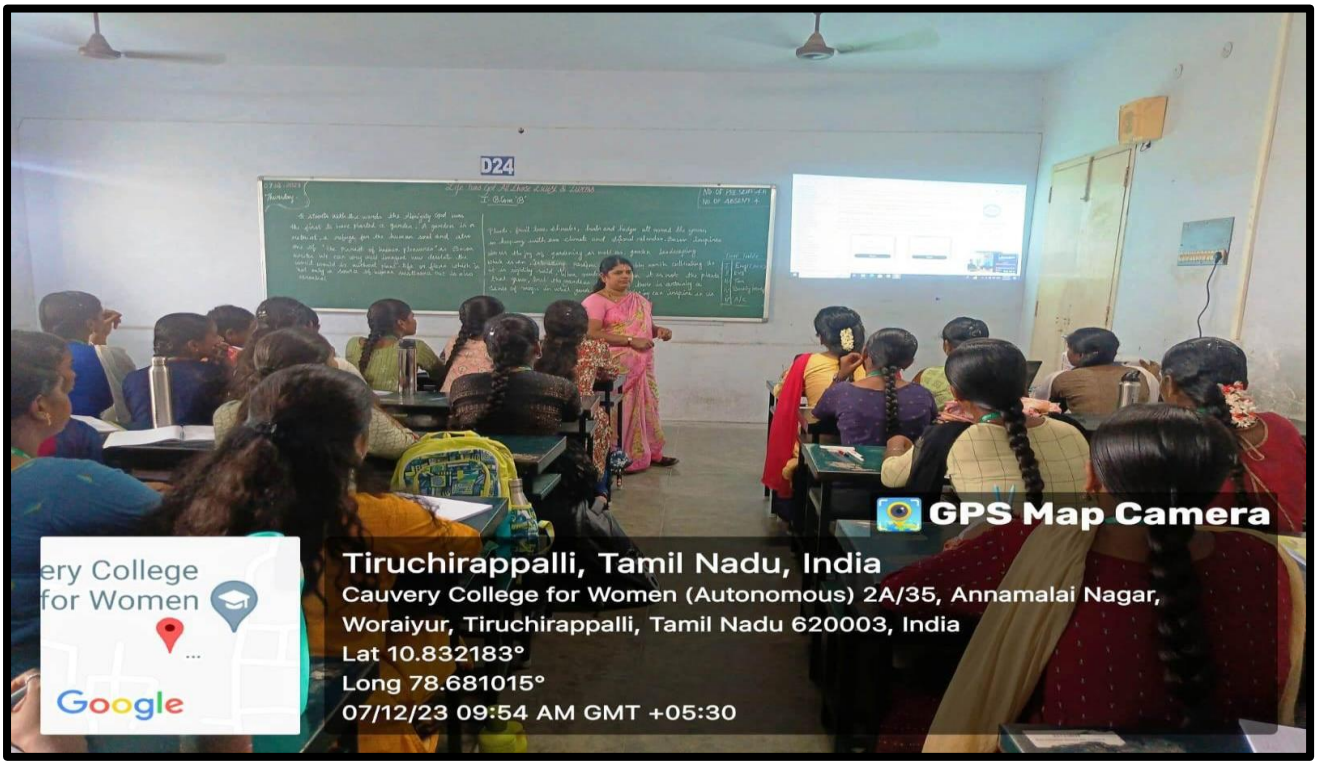


Ms. N. Agalya, Assistant Professor, Department of Computer Science



Dr. K. Akila, Associate Professor, Department of Computer Applications

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**



Dr. S. Senthil Kumari, Assistant Professor, Department of English

Dr. D. Ramya, Associate Professor, Department of Commerce

Teacher's Plan Specified with COs and Knowledge level

Teachers' plan is the evidence for the successful implementation of the curriculum of the institution. The faculty prepare the lesson plan with Mapping of COs and knowledge level of curriculum and COs with POs and PSOs.

LESSON PLAN

Department	Department of Biotechnology		
Degree & Programme	II B. Sc., Biotechnology		
Course Title	BIOINFORMATICS	**Course Code**	22UBT3AC4
Faculty Name	Ms. R. NEVETHA	**Faculty Code**	F01BT008
Total hours per week	4	**Semester**	III
Student strength	34	**Course Starting Date**	14/06/2023

OBJECTIVES:

- To learn about the fundamentals of Bioinformatics
- To become familiarize with the databases for structure prediction and sequence analysis of macromolecules.
- To understand the usage of basic online bioinformatics tools and techniques
- To apply bioinformatics concepts and tools in various fields

COURSE OUTCOME:

On the successful completion of the course, students will be able to,

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Acquire knowledge about the developments and applications of Bioinformatics	K1, K2
CO2	Gain knowledge about the importance of bioinformatics, databases, tools, software of bioinformatics and different types of biological databases	K2
CO3	Understand the basics of sequence alignment, sequence analysis and protein structure prediction method	K2
CO4	Introduce the importance of drug designing and apply the bioinformatics tools in medicine for drug discovery and identification of novel drugs	K3
CO5	Analyze the different applications of bioinformatics in various fields and explore upcoming areas of interest in bioinformatics	K4

Mapping with Programme Outcomes:

COs/POs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	1	3	3	3	2	1
CO2	3	3	3	3	1	3	3	3	3	1
CO3	3	3	3	3	1	3	2	2	2	2
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	2	3	3	2	3	2

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation
"-" indicates there is no correlation "3" – Substantial (High) Correlation

TEXT BOOKS:

S.No	Authors Name	Title of the Book	Publishers Name	Year of Publication
1	Manoj. K	An Introduction to the Theory of Numbers. Introduction to Bioinformatics	Notion Press	2020
2	Noor, A.S., Khalid, R.H., Babajan, B., Ramu E	Essentials of Bioinformatics, Volume I: Understanding Bioinformatics: Genes to Proteins	MJP Publisher	2019
3	Shuba. G	Bioinformatics	Tata McGraw Hill publishing. India	2010
4	Rastogi. S.C., Mendiratta. N.R.P.	Bioinformatics methods and application	Prentice-Hall of India private limited, New Delhi.	2004
5	Pennington, S.R., Punn, M.J.	Proteomics: from protein sequence to function	Viva books Pvt. Ltd.	2002

REFERENCE BOOKS:

S.No	Authors Name	Title of the Book	Publishers Name	Year of Publication
1	Attwood T.K., Parry Smith. D.J.	Introduction to Bioinformatics.	Pearson Education	2008
2	Arthur L.	Introduction to Bioinformatics.	Oxford University Press	2019
3	Paola L.	Systemic Approaches in Bioinformatics and Computational Systems Biology:	Business Science Reference	2011

		Recent Advances		
4	David. M.	Bioinformatics: sequence and genome analysis. second edition.,	Taylor & Francis, UK	2009
5	Westhead D.R	Instant Notes in Bioinformatics-second edition	Taylor & Francis, UK	2009

Signature	R.N.	R. Ram	
Name & Designation	**Ms R. Nevetha** Asst. Professor	**Dr. R. Rameshwari** Head & Associate Professor	**Dr. V. Sinthu Janita Prakash** Dean of Science

DEAN OF SCIENCE
CAUVERY COLLEGE FOR WOMEN
(AUTONOMOUS)
ANNAMALAI NAGAR
TIRUCHIRAPPALLI - 620 018
TAMILNADU

Semester : ODD **2023-2024**

LESSON PLAN

UNIT I - Bioinformatics: Fundamentals of Bioinformatics -Introduction to concepts and terminology of Internet, Search engines, Databases and Softwares

S.No.	Topic covered	Teaching pedagogy	No. of Hours Required	Cognitive Level	COs	Activity given to the students	Proposed date of completion	Actual date of completion
1	Fundamentals of Bioinformatics	PPT	2	K1	CO1	MCQ TEST, Assignment Class Test	16/06/23 To 26/06/23	16/06/23
2	Introduction to concepts and terminology of Internet	Chalk & Talk	1	K1	CO2			17/06/23
3	Search engines	PPT	2	K2	CO3			20/06/23
4	Databases	PPT	3	K3	CO4			23/06/23
5	Softwares	PPT	2	K4	CO5			26/06/23

Remarks (if any)

R.N.D

Signature of the Faculty

R.Rama

Signature of the HOD

Semester : ODD **2023-2024**

LESSON PLAN

UNIT II - Introduction to Tools and Databases: Review of basics about structure of macromolecules - DNA, RNA and Proteins. Online resources for Bioinformatics – Biological Databases – NCBI, Genbank, Swissprot. Sequence alignment – Multiple sequence alignment – CLUSTALW – Pairwise alignment – BLAST

S.No.	Topic covered	Teaching pedagogy	No. of Hours Required	Cognitive Level	COs	Activity given to the students	Proposed date of completion	Actual date of completion
1	Review of basics about structure of macromolecules	PPT	1	K1	CO1	MCQ TEST, Assignment Class Test	28/06/23 To 14/07/23	28/06/23
2	DNA, RNA and Proteins	Chalk & Talk	3	K2	CO1			03/07/23
3	Online resources for Bioinformatics	PPT	1	K3	CO2			05/07/23
4	Biological Databases – NCBI, Genbank, Swissprot.	PPT	3	K3	CO3			10/07/23
5	Sequence alignment – Multiple sequence alignment – CLUSTALW	https://www.genome.jp/tools-bin/clustalw	1	K4	CO4			12/07/23
6	Pairwise alignment – BLAST	https://blast.ncbi.nlm.nih.gov/Blast.cgi	1	K4	CO5			14/07/23

Remarks (if any)
UNIT TEST 1 – 28.7.23

Signature of the Faculty **Signature of the HOD**

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

Semester : ODD **2023-2024**

LESSON PLAN

UNIT III - Sequence Analysis and Alignment: Bioinformatics in genomics and proteomics – gene sequencing tools traditional methods – Maxam and Gilbert's method, Sanger's sequencing – structure prediction tools – Gene and protein expression analysis – similarity search databases – FASTA. Analysis of Phylogeny – Phylogenetic tree construction, computational analysis tools (SCHRODINGER) and visualization tools (RASMOL).

S.No.	Topic covered	Teaching pedagogy	No. of Hours Required	Cognitive Level	Cos	Activity given to the students	Proposed date of completion	Actual date of completion
1	Bioinformatics in genomics and proteomics	PPT	1	K1	CO1	MCQ TEST, Assignment Class Test	15/07/23 To 09/08/23	15/07/23
2	gene sequencing tools traditional methods – Maxam and Gilbert's method	Chalk & Talk	2	K2	CO2			19/07/23
3	Sanger's sequencing	PPT	2	K2	CO2			22/07/23
4	Structure prediction tools	PPT	1	K3	CO3			24/07/23
5	Gene and protein expression analysis	PPT	1	K1	CO3			25/07/23
6	similarity search databases-FASTA	Chalk & Talk	1	K1	CO4			27/07/23
7	Analysis of Phylogeny – Phylogenetic tree construction	PPT	2	K3	CO4			29/07/23
8	Computational analysis tools (SCHRODINGER)	PPT	1	K4	CO5			08/08/23
9	Visualization tools (RASMOL)	PPT	1	K4	CO5			09/08/23

Remarks (if any)
CIA I-28/08/23

Signature of the Faculty

Signature of the HOD

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

Semester : ODD **2023-2024**

LESSON PLAN

UNIT IV - Introduction to Drug Discovery: History of drug discovery, Steps in drug design - Role of molecular docking in drug design. Introduction to Simulation softwares in biology – High throughput screening, AutoDock, ChemDraw, ADMET, PubMed and MEDLINE.

S.No.	Topic covered	Teaching pedagogy	No. of Hours Required	Cognitive Level	Cos	Activity given to the students	Proposed date of completion	Actual date of completion
1	History of drug discovery	PPT	2	K1	CO1	MCQ TEST, Assignment Class Test	12/08/23 To 11/09/23	12/08/23
2	Steps in drug design	Chalk & Talk	1	K3	CO2			14/08/23
3	Role of molecular docking in drug design	PPT	2	K3	CO2			18/08/23
4	Introduction to Simulation softwares in biology	PPT	3	K1	CO1			31/08/23
5	High throughput screening	PPT	2	K2	CO3			02/09/23
6	AutoDock	PPT	1	K4	CO5			04/09/23
7	ChemDraw	PPT	1	K4	CO4			06/09/23
8	ADMET	Chalk & Talk	1	K3	CO3			08/09/23
9	PubMed and MEDLINE	https://pubmed.ncbi.nlm.nih.gov/	1	K3	CO4			11/09/23

Remarks (if any)

R. N

Signature of the Faculty

R. R

Signature of the HOD

Semester : ODD **2023-2024**

LESSON PLAN

UNIT V - Applications of Bioinformatics in various fields: Applications of Bioinformatics in different fields – Genomics, Proteomics, Molecular medicine, Drug development, Forensic analysis, Evolutionary studies, Crop improvement and Environmental monitoring.

S.No.	Topic covered	Teaching pedagogy	No. of Hours Required	Cognitive Level	COs	Activity given to the students	Proposed date of completion	Actual date of completion
1	Applications of Bioinformatics in different fields – Genomics, Proteomics	PPT	2	K1	CO1	MCQ TEST, Assignment Class Test	15/09/23 To 29/09/23	15/09/23
2	Molecular medicine	Chalk & Talk	1	K3	CO3			19/09/23
3	Drug development	PPT	2	K4	CO2			21/09/23
4	Forensic analysis	PPT	1	K2	CO4			22/09/23
5	Evolutionary studies	PPT	2	K3	CO4			26/09/23
6	Crop improvement and Environmental monitoring	PPT	1	K4	CO5			29/09/23

Remarks (if any)
CIA II- 20/10/2023

Signature of the Faculty **Signature of the HOD**

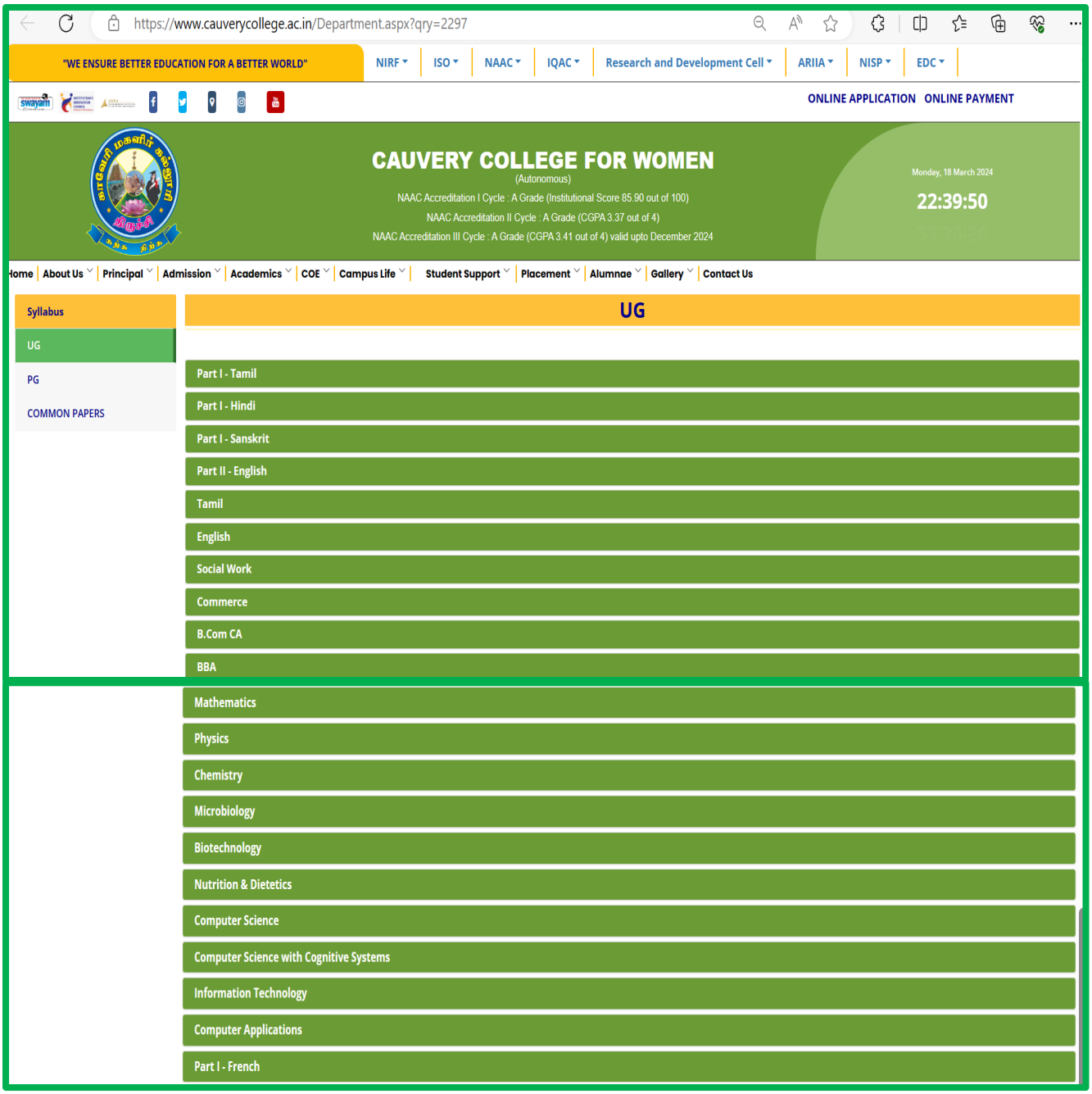
CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

Syllabus Specified with POs, PSOs and COs Publicized in College Website

The syllabus specified with POs, PSOs and COs of each course is uploaded in the Institutional website and is made available for access to the stakeholders and those in the public domain.

(Link: https://www.cauverycollege.ac.in/Department.aspx?qry=2297)

UG Syllabus Publicized in website with POs, PSOs and COs



CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

UG Syllabus Publicized with Mapping of POs, PSOs and COs in Website

Semester I	Internal Marks:25		External Marks: 75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23UCA1CC1 / 23UCS1CC1	PYTHON PROGRAMMING	CORE	5	5

Course Objectives

- To make students understand the concepts of Python programming
- To apply the OOPs concept in Python programming
- To make the students learn best practices in Python programming

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Recall the fundamental concepts of Python	K1
CO2	Demonstrate the problem-solving approach using Python statements	K2
CO3	Construct the Python programme using functions and modules	K3
CO4	Analyze the Python programming concepts to develop programs	K4
CO5	Develop a Python program to solve real time problems	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	1	1	3	3	2	3	2
CO2	3	2	3	1	1	3	2	2	3	3
CO3	3	3	3	2	2	3	3	2	3	2
CO4	3	2	3	2	2	3	3	2	3	2
CO5	3	3	3	2	2	3	3	2	2	3

"1"-Slight (Low) Correlation "2"-Moderate (Medium) Correlation

"3" –Substantial (High) Correlation "-" - Indicates there is no Correlation

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	**Basics of Python Programming:** Features of Python -History of Python- Literal Constants-Variables and Identifiers–Data Types- Input Operation- Comments– Reserved Words- Indentation- Operators and Expressions –Other Data Types- Type Conversion.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	**Decision Control Statements:** Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. **Basic Loop Structures / Iterative Statements:** while loop, for loop- Nested Loops- The break Statement- The continue Statement.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	**Functions and Modules:** Function Definition – **Function Call:** Function Parameters – **Variable Scope and Lifetime:** Local and Global Variables- Using the Global Statement-Resolution of Names. The return Statement. **More on Defining Functions:** Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments. **Python Strings**: Strings are Immutable- Built-in String Methods and Functions – Comparing Strings. **Modules:** The from…import statement- Name of Module – The dir() function – Modules and Namespace.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	**Lists:** Access values in List-Updating values in Lists- Nested lists -Basic list operations-List Methods. **Tuple:** Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples. **Dictionaries:** Creating a dictionary, Accessing values, Modifying an Entry -Deleting items – Built-in Dictionary Functions and Methods - Difference between a List and a Dictionary.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	**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 – Splitting words –File Positions.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	**Self Study for Enrichment** **(Not to be included for End Semester Examination)** Difference between lists and tuples - Defining our own modules- Renaming and deleting files.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

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

References

1. Dr. R. Nageswara Rao. (2017). Core Python Programming. 1st Edition, Dream tech Publishers.
2. VamsiKurama. (2017). Python Programming: A Modern Approach,1st Edition, Pearson Education.
3. Mark Lutz. (2013). Learning Python, Fifth Edition, Orielly.
4. Adam Stewarts. (2017). Python Programming. Online.
5. Fabio Nelli. (2015). Python Data Analytics,1st Edition, APress.
6. Kenneth A. Lambert. (2019). Fundamentals of Python – First Programs,2nd Edition, CENGAGE Publication.

Web References

1. https://www.programiz.com/python-programming
2. https://www.guru99.com/python-tutorials.html
3. https://www.w3schools.com/python/python_intro.asp
4. https://www.geeksforgeeks.org/python-programming-language/
5. https://en.wikipedia.org/wiki/Python_(programming_language)

Pedagogy

Chalk & Talk, PowerPoint Presentation, Discussion, Assignment, Demo, Quiz and Seminar

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

PG Syllabus Publicized in Website with POs, PSOs and COs

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

PG Syllabus Publicized with Mapping of POs, PSOs and COs in Website

SEMESTER I	INTERNAL MARKS: 25	EXTERNAL MARKS:75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS /WEEK	CREDITS
23PMA1CC3	ORDINARY DIFFERENTIAL EQUATIONS	CORE COURSE	6	5

Course Objectives

- **Recognize** certain basic types of second order homogeneous and non-homogeneous ODEsfor which exact solutions maybe obtained and to apply the corresponding methods of solution.
- **Qualitative Analysis** of Solutions of Initial value problems.
- **Analyze** the concepts of existence and uniqueness of solutions.

Prerequisite

UG level Calculus and Differential Equations

Course Outcomes

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Define initial value problems, linear dependence and independence, regular singular points, successive approximation of homogeneous and non-homogeneous ordinary differential equations	K1
CO2	Understand the physical phenomena modeled by ordinary differential equations and dynamical systems.	K2
CO3	Examinethe solutions of ordinary differential equations using appropriate methods and give examples.	K3
CO4	Discriminate the Qualitative properties of solutions for Initial value problems, convergence of successive approximations of ordinary differential equations.	K4
CO5	Analyse initial value problems, regular singular points, successive approximations of ordinary differential equations and use various theoretical ideas and results.	K5

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	3	3	3	3	2	3
CO2	3	2	3	3	3	2	3	3	2	3
CO3	3	2	3	3	3	3	3	3	2	3
CO4	3	2	3	3	3	3	3	3	2	3
CO5	3	2	3	3	3	3	3	2	2	3

"1" – Slight (Low) Correlation – "2" – Moderate (Medium) Correlation –
"3" – Substantial (High) Correlation – "-" indicates there is no correlation.

Syllabus

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
I	**Linear equations with constant coefficients:** Introduction- The Second order homogeneous equations-Initial value problems for second order equations-Linear dependence and independence- A formula for the Wronskian- The Non-homogeneous equation of order two.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
II	**Linear equations with constant coefficients:** The Homogeneous equation of order n –Initial value problems for n-th order equations- Equations with real constants- The non-homogeneous equation of order n - A special method for solving the non-homogeneous equation - Algebra of constant coefficient operators.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
III	**Linear equation with variable coefficients:** Introduction - Initial value problems for the homogeneous equation - Solutions of the homogeneous equation – The Wronskian and linear independence – Reduction of the order of a homogeneous equation – The non-homogeneous equation – Homogeneous equations with analytic coefficients-The Legendre equation.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
IV	**Linear equation with Regular singular points:** Introduction – The Euler equation – Second order equations with regular singular points - an example – Second order equations with regular singular points – the general case- The Exceptional cases – The Bessel equation- The Bessel equation(continued).	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
V	**Existence and uniqueness of solutions to first order equations:** Introduction - Equation with variables separated – Exact equations – The method of successive approximations – The Lipschitz condition – Convergence of the successive approximations.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5
VI	**Self-Study for Enrichment : (Not included for End Semester Examinations)** Justification of the power series method- A convergence proof- Regular singular points at infinity- Non-local existence of solutions- Approximations to, and uniqueness of, solutions.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4, K5

Text Book

EarlA. Coddington (2005), A introduction to ordinary differential equations, Prentice-Hall of India Private Ltd., New Delhi.

Chapters and Sections

UNIT- I	Chapter 2:	Sections 1 to 6
UNIT- II	Chapter 2:	Sections 7 to 12
UNIT- III	Chapter 3:	Sections 1 to 8
UNIT- IV	Chapter 4:	Sections 1 to 4 and 6 to 8
UNIT- V	Chapter 5:	Sections 1 to 6

Reference Books

1. George F Simmons (1974), Differential equations with applications and historical notes, Tata McGraw Hill, New Delhi.
2. M.D.Raisinghania (2001), Advanced Differential Equations, S.Chand& Company Ltd. New Delhi .
3. B.Rai, D.P.Choudary and H.I. Freedman (2002), A Course in Ordinary Differential Equations, Narosa Publishing House, New Delhi.

Web References

1. https://youtu.be/xZsniBazjfI?list=PLbwJuBHc3YzUIgPk82CIm-doYjZa_SeKe
2. https://youtu.be/CgNVZCog-64?list=PLbwJuBHc3YzUIgPk82CIm-doYjZa_SeKe
3. https://youtu.be/dkpeZHeU1xo
4. https://www.cs.bgu.ac.il/~leonid/ode_bio_files/Ionascu_LectNotes.pdf
5. https://www.math.iitb.ac.in/~siva/afs07.pdf
6. https://www.youtube.com/watch?v=IWm6Coa3_bQ
7. https://www.youtube.com/watch?v=1HUnrokDN0U

Pedagogy

Power Point Presentations, Group Discussions, Seminar, Quiz, Assignment.

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

Publicizing OBE Framework in Student Induction Programme (SIP)

Invitation for Student Induction Programme

The Institution conducts Student Induction Programme (SIP) for all the freshers every year. During this programme, the Deans of Academics (Arts & Sciences) and the respective Heads of the Departments orient the students about the Outcome Based Education (OBE) system and communicate the POs, PSOs and COs. Students are oriented on the Assessment methods and Revised Bloom's Taxonomy.

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

Outcome Based Student Induction Programme (SIP) Attended by Students on 19.06.2023

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

Student Induction Programme (SIP) Organized on 24.06.2023

An Online Six – Day Student Induction Program “Deeksharambh” during Pandemic

Question Bank Based on COs with Bloom's Taxonomy

The question bank circulated among the students contains COs and Knowledge level for all the courses.

Model Question Bank Based on COs with Bloom's Taxonomy Circulated Among Students

SECTION A

CHOOSE THE BEST ANSWER

UNIT – I

1. _____ refers to a single unit of values. (CO1, K1)

   a) Group items b) Data item

   c) Elementary item d) Basic item

   Answer: b) Data item

2. A(An) _____ has certain attribute or properties which may be assigned values. (CO1, K1)

   a) Field b) Record

   c) Entity d) File

   Answer: c) Entity

3. _____ is the collection of records of the entities in a given entity set. (CO1, K1)

   a) Field b) Record

   c) Entity d) File

   Answer: d) File

4. The value in a _____ filed uniquely determines the record in a file. (CO1, K1)

   a) Primary key b) Secondary key

   c) Key d) Pointer

SECTION – B

UNIT – I

1. Explain the basic data organization. (K2, CO2)
2. Outline the operations of data structure. (K2, CO2)
3. Illustrate the complexity of an algorithm. (K3, CO2)
4. Consider the linear array called NAME, which is sorted alphabetically. (K3, CO3)

ALEX	BANU	CLARA	DEVI	GUNA	SELVI

(i) Find NAME[2], NAME[5]

(ii) Suppose HEME is to be inserted into the array, how many names must be moved to new locations.

(iii) Suppose BANU is to deleted from the array, how many names must be moved to new locations?

(iv) What is the size of the array?

5. Explain the arrays as ADT. (K2, CO2)

SECTION – C

UNIT - I

1. Classify the types of data structures. (K2, CO2)
2. Sketch the abstract data type(ADT) model and explain. (K3, CO3)
3. Formulate the procedure to insert and delete an element in a linear array. (K4, CO4)
4. Identify the following. Consider the linear arrays A(5:50), B(-5:10) and C(20)(K5, CO5)

(i) Find the number of elements in each array

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

Continuous Internal Assessment Question Paper Pattern with COs and knowledge level

PG - Question Paper Pattern for CIA with COs and Knowledge level

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY – 18
CONTINUOUS INTERNAL ASSESSMENT – I, AUGUST 2023
BUSINESS FINANCE

Course: I M.Com **Max. Marks: 75**
Course Code: 23PCO1CC1 **Time: 3 Hours**
Date: 21.08.2023

SECTION – A **(10 X 2 = 20)**

Answer ALL the questions

1. Define cost of capital **(CO1, K1)**
2. What is meant by Time value of money? **(CO1, K1)**
3. Recall receivables. **(CO5, K1)**
4. What is E.O.Q? **(CO5, K1)**
5. What is working capital? **(CO5, K1)**
6. Outline the purpose of holding inventory. **(CO5, K2)**
7. What do you mean by credit policy? **(CO5, K1)**
8. What is leasing? **(CO2, K1)**
9. What is meant by financial lease? **(CO2, K1)**
10. What is inventory? **(CO5, K1)**

SECTION – B **(5 X 5 = 25)**

Answer ALL questions

11. (a) Mr. Pratab deposits Rs.5,000 at the end of every year for 5 years and the deposit earns a compound interest at 8% p.a. Identify how much money he will have at the end of 5 years. **(CO1, K3)**

(Or)

(b)A company offers 12% rate of interest on deposits. Identify the effective rate of interest if the compounding is done (i) Half yearly (ii)quarterly(iii) Monthly **(CO1, K3)**

12. (a) X Ltd issues 50,000 8% debentures of Re. 1 each at a premium of 10%. The cost of flotation are 2%. The rate of tax applicable to the company is 60%. Discover the cost of capital. **(CO1, K4)**

(Or)

(b) A firm issues debenture of Rs. 1,00,000 and realises Rs.98,000 after allowing 2 % commission to brokers. The debentures carry an interest rate of 10%. The debentures are due for maturity at the end of the 1^{0th} year. You are required to measure the effective cost of debt before and after tax. **(CO1, K5)**

13.(a) Annual cash requirements Rs. 1,20,000

Fixed cost per transaction Rs.10
Interest rate on marketable securities 12% P.a.
You are required analyse the optimum cash balance. **(CO5, K4)**

(Or)

(b) From the following information construct i) Debtor's turnover ratio and ii) Debt collection period **(CO4, K3)**

	Rs.
Total Sales	10,00,000
Cash Sales	2,50,000
Sales Return	50,000
Opening accounts receivable	1,00,000
Closing accounts receivable	1,50,000

14. (a) A firm is considering pushing up its sales by extending credit facilities to the following categories of customers:

[1]

(X) Customers with a 15% risk of non-payment, and
(Y) Customers with a 30% risk of non-payment.
The incremental sales expected in case of category (X) are Rs.60,000, while in case of category (Y), they are Rs.75,000. The variable cost is 60% of sales, while the collection cost amounts to 4% in the case of category (X) and 10% of sales in the case of category (Y). You are required to analyze and advise the firm about extending credit facilities to each of the above categories of customers. **(CO4, K4)**

(Or)

(b) Analyze and write a note ABC analysis. **(CO4. K4)**

15. (a) Analyze the essential elements of lease agreement. **(CO3, K4)**

(Or)

(b) Examine the types of leasing: **(CO3, K5)**

SECTION – C **(3 X 10 = 30)**

Answer ANY THREE Questions

16. The estimate of after-tax cost of debt and equity capital for varying levels of debt-equity mix are as follows:

Debt as a % of capital Employed	Cost of debt %	Cost of equity %
0	7.0	15.0
10	7.0	15.0
20	7.0	16.0
30	8.0	16.0
40	9.0	18.0
50	10.0	21.0
60	11.0	24.0

Compile the composite cost of capital and plan the optimal debt-equity mix. **(CO5, K3)**

17. Evaluate the determinants of working capital management. **(CO4, K5)**
18. Evaluate the pros and cons of lease financing. **(CO4, K6)**
19. BPL Ltd. wishes to arrange overdraft facilities with its bankers during the period April to June 2021 when it will be manufacturing mostly for stock. Estimate and prepare a cash budget for the above period from the following data, indicating the extent of the bank facilities the company will require at the end of each month;

Month	Credit sales (Rs)	Purchases (Rs.)	Wages (Rs.)
February 2021	1,80,000	1,24,800	12,000
March	1,92,000	1,44,000	14,000
April	1,08,000	2,43,000	11,000
May	1,74,000	2,46,000	10,000
June	1,26,000	2,68,000	15,000

1. 50% of credit sales are realised in the month following the sales and the remaining 50 % in the second month following.
2. Creditors are paid in the month following the month of purchase.
3. Lag in payment of wages 1 month.
4. Cash at bank on 1.4.2021 (estimated) Rs. 25,000. **(CO4, K6)**

30. Compile the methods and tools of business finance. **(CO1, K6)**

CRITERION II **LEARNING OUTCOMES ASSESSED BY THE INSTITUTION**

UG - Question Paper Pattern for CIA with COs and Knowledge level

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)
CONTINUOUS INTERNAL ASSESSMENT – I, FEBRUARY 2024
BUSINESS ENVIRONMENT

Class: I BBA **Maximum Marks: 75**
Code: 23UBA2AC2 **Hours: 3 Hours**
Date: 22/02/2024

SECTION- A **(20 X 1 = 20)**

Answer All the Questions:

I. Choose the Correct Answer

1. Business environment is _____ in nature (CO1, K1)
a) Slow b) Static
c) Stable d) Dynamic

2. Study of human population is called as _____ environment. (CO1, K1)
a) Political b) Social
c) Demographic d) Economic

3. Which can be a method of privatization? (CO1, K1)
a) Denationalization b) Purchasing Shares
c) Takeover d) Merger

4. Indian economy is an example of _____. (CO1, K1)
a) Capitalist economy b) Closed Economy
c) Mixed Economy d) None of these

5. _____decides on a particular course of action. (CO1, K1)
a) Legislative b) Executive
c) Judiciary d) Public

II. Fill in the Blanks:

6. _____ involves production, exchange, transfer or sale of goods and services. (CO1, K1)
7. _____is an essential element in environmental analysis. (CO1, K1)
8. In _____ there is no economic planning or a central planning authority. (CO1, K1)
9. In _____economic system, there exists both private and public sector (CO1, K1)
10. _____is responsible for settling legal disputes and judicial review. (CO1, K1)

III. True or False:

11. The factors in the external environment are controllable in nature. (CO1, K1)
12. Macro environment consist of suppliers and customers. (CO1, K1)
13. India has adopted the mixed economic system. (CO1, K1)
14. Globalization means earning profit from exports. (CO1, K1)
15. The legal environment is uniform in all countries. (CO1, K1)

IV. Answer in one sentence:

16. Define the term business environment. (CO1, K1)
17. What is meant by external environment? (CO1, K1)
18. What is mixed economy? (CO1, K1)
19. What is fiscal policy? (CO1, K1)
20. What is political environment? (CO1, K1)

SECTION- B (5 x 5 = 25)

Answer ALL the questions:

21(a) Outline the characteristics of business. (CO1, K2) (OR)
(b) Explain the internal environment of business. (CO2, K2)

22(a) Explain the objectives of business environment (CO1, K2) (OR)
(b) Expand the scope of business. (CO1, K2)

23(a) Discover the Features of the capitalism. (CO2, K2) (OR)
(b) Illustrate the features of the mixed economy. (CO2, K2)

24(a) Write a note on features of globalization. (CO2, K2) (OR)
(b) Explain the objectives of privatization. (CO2, K2)

25(a) Point out how political factors affect business environment. (CO3, K2) (OR)
(b) Explain the structure of legislature. (CO3, K2)

SECTION- C (3 x 10 = 30)

Answer any THREE questions:

26. Give a detail note on the classification of business environment. (CO2, K2)
27. Describe the factors affecting the business environment. (CO2, K2)
28. Describe the factors affecting economic environment in business. (CO2, K2)
29. Explain the nature of economic environment on business. (CO3, K2)
30. Describe the responsibilities of government towards business. (CO3, K2)