V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

OUTCOME BASED EDUCATION WITH CHOICE BASED CREDIT SYSTEM REGULATIONS AND SYLLABUS

(With effect from Academic Year 2023- 2024)

V.V.Vanniaperumal College for Women, Virudhunagar, established in 1962, offers 13 UG Programmes(Aided), 15 UG Programmes(SF) 15 PG Programmes and 6 Ph.D. Programmes. The curricula for all these Programmes, except Ph.D. Programmes, have been framed as per the guidelines given by the University Grants Commission (UGC) &Tamil Nadu State Council for Higher Education (TANSCHE) under Choice Based Credit System (CBCS) and the guidelines for Outcome Based Education (OBE).

The Departments of Commerce, English, History, Mathematics, Biochemistry and Tamil upgraded as Research Centres offer Ph.D. Programmes as per the norms and regulations of Madurai Kamaraj University, Madurai and do not come under the purview of CBCS.

A. CHOICE BASED CREDIT SYSTEM (CBCS)

The CBCS provides an opportunity for the students to choose Courses from the prescribed Courses. The CBCS is followed as per the guidelines formulated by the UGC. The performance of students is evaluated based on the uniform grading system. Computation of the Cumulative Grade Point Average (CGPA) is made to ensure uniformity in evaluation system.

List of Programmes in which CBCS/Elective Course System is implemented

---

UG PROGRAMMES

Arts & Humanities	:	History (E.M. & T.M.), English, Tamil
Physical & Life Sciences	:	Mathematics, Zoology, Chemistry, Physics, Biochemistry, Home Science - Nutrition and Dietetics, Costume Design and Fashion, Microbiology, Biotechnology, Computer Science, Information Technology, Data Science, Computer Applications and Computer Applications - Graphic Design
Commerce & Management	:	Commerce, Commerce (Computer Applications), Commerce (Professional Accounting), Business Administration

PG PROGRAMMES

Arts & Humanities	:	History, English, Tamil
Physical & Life Sciences	:	Mathematics, Physics, Chemistry, Zoology, Biochemistry, Home Science - Nutrition and Dietetics, Biotechnology, Computer Science, Computer Science (Data Science) and Computer Applications (MCA) *
Commerce & Management	:	Commerce, Business Administration (MBA) *

* AICTE approved Programmes

OUTLINE OF CHOICE BASED CREDIT SYSTEM – UG

1. Core Courses
2. Elective Courses
   - Generic Elective Courses
   - Discipline Specific Elective Courses (DSEC)
   - Non Major Elective Courses (NMEC)
3. Skill Enhancement Courses (SEC)
4. Environmental Studies (EVS)
5. Value Education
6. Self Study Courses (Online)
7. Extra Credit Courses (Self Study Courses) (Optional)

List of Non Major Elective Courses (NME)

(2023-2024 onwards)

UG PROGRAMMES

Name of the Course	Course Code	Semester	Department
Introduction to Tourism	23UHIN11	I	History(EM)
Indian Constitution	23UHIN21	II	History(EM)
சுற்றுலா ஓர் அறிமுகம்	23UHIN11	I	History (TM)
இந்திய அரசியலமைப்பு	23UHIN21	II	History(TM)
Popular Literature and Culture	23UENN11	I	English
English for Professions	23UENN21	II	
பேச்சுக்கலைத்திறன்	23UTAN11	I	Tamil
பயன்முறைத் தமிழ்	23UTAN21	II	
Practical Banking Basic Accounting Principles	23UCON11 23UCON22	I II	Commerce (Aided)
Financial Literacy-I	23UCON12	I	Commerce (SF)

Financial Literacy -II	23UCON21	II	
Self-Employment and Startup Business	23UCCN11	I	Commerce CA (SF)
Fundamentals of Marketing	23UCCN21	II	
Women Protection Laws	23UCPN11	I	Commerce (Professional Accounting)
Basic Labour Laws	23UCPN21	II	
Basics of Event Management	23UBAN11	I	Business Administration
Business Management	23UBAN21	II	
Quantitative Aptitude I	23UMTN11	I	Mathematics
Quantitative Aptitude II	23UMTN21	II	
Physics for Everyday life -I	23UPHN11	I	Physics
Physics for Everyday life -II	23UPHN21	II	
Food Chemistry	23UCHN11	I	Chemistry
Drugs and Natural Products	23UCHN21	II	
Ornamental fish farming and Management	23UZYN11	I	Zoology
Biocomposting for Entrepreneurship	23UZYN21	II	
Foundations of Baking and Confectionery	23UHSN11	I	Home Science – Nutrition and Dietetics
Basic Nutrition and Dietetics	23UHSN21	II	
Nutrition and Health	23UBCN11	I	Biochemistry
Life Style Diseases	23UBCN21	II	
Social and Preventive Medicine	23UMBN11	I	Microbiology
Nutrition & Health Hygiene	23UMBN21	II	
Herbal Medicine	23UBON11	I	Biotechnology
Organic farming and Health Management	23UBON21	II	
Basics of Fashion	23UCFN11	I	Costume Design And Fashion
Interior Designing	23UCFN21	II	
Office Automation	23UCSN11	I	Computer Science
Introduction to Internet and HTML 5	23UCSN21	II	
Office Automation	23UITN11	I	Information Technology
Introduction to HTML	23UITN21	II	
Introduction to HTML	23UCAN11	I	Computer Applications
Fundamentals of Computers	23UCAN21	II	
Introduction to HTML	23UGDN11	I	Computer Applications - Graphic Design
Fundamentals of Computers	23UGDN21	II	
Organic Farming	23UBYN11	I	Botany
Nursery and Landscaping	23UBYN12		
Mushroom Cultivation	23UBYN21	II	
Medicinal Botany	23UBYN22		
Cadet Corps for Career Development I	23UNCN11	I	National Cadet Corps
Cadet Corps for Career Development II	23UNCN21	II	

B. OUTCOME BASED EDUCATION (OBE) FRAMEWORK

The core philosophy of Outcome Based Education rests in employing a student - centric learning approach to measure the performance of students based on a set of pre- determined outcomes. The significant advantage of OBE is that it enables a revamp of the curriculum based on the learning outcomes, upgrade of academic resources, quality enhancement in research and integration of technology in the teaching –learning process. It also helps in bringing clarity among

students as to what is expected of them after completion of the Programme in general and the Course in particular. The OBE directs the teachers to channelize their teaching methodologies and evaluation strategies to attain the PEOs and fulfill the Vision and Mission of the Institution.

Vision of the Institution

The founding vision of the Institution is to impart Quality Education to the rural womenfolk and to empower them with knowledge and leadership quality.

Mission of the Institution

The mission of the Institution is to impart liberal education committed to quality and excellence. Its quest is to mould learners into globally competent individuals instilling in them life-oriented skills, personal integrity, leadership qualities and service mindedness.

B.1 Programme Educational Objectives, Programme Outcomes and Programme Specific Outcomes

It is imperative for the institution to set the Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Course Outcomes (COs), consistent with its Vision and Mission statements. The PEOs and the POs should be driven by the mission of the institution and should provide distinctive paths to achieve the stated goals. The PEOs for each Programme have to fulfill the Vision and Mission of the Department offering the Programme.

Vision of the Department of Computer Applications

To enrich the students to be technologically skilled, ethical responsibilities, technical and professional values and face the challenges of the ever changing world.

Mission of the Department of Computer Applications

- To impart the fundamental principles of computer science, and continue to develop their technical competencies.
- To train students for careers as socially responsible IT professionals, entrepreneurs and researchers
- To empower the student in rural communities with effective communication skills and high ethical values.

Programme Educational Objectives (PEOs)

PEOs are broad statements that describe the career and professional achievements that the Programme is preparing the graduates to achieve within the first few years after graduation. PEOs are framed for each Programme and should be consistent with the mission of the Institution.

Programme Educational Objectives (PEOs) of B.C.A. – Graphic Design Programme

The students will be able to

PEO1: employ standard design process in creating effective design solutions to meet the project objectives, client and user requirements and other constraints.

PEO2: adopt creative and innovative practices to solve real-life complex problems.

PEO3: Uphold the standards of the socially committed Computer professionals with efficient programming skills catering to the needs of society.

Key Components of Mission Statement	**Programme Educational Objectives**		
	PEO1	**PEO2**	**PEO3**
continues development of technical competency	√	√	
train students for careers as IT professionals	√	√	
empower the student in rural communities	√		√

B.1.2 Programme Outcomes (POs)

POs shall be based on Graduate Attributes (GAs) of the Programme. The GAs are the attributes expected of a graduate from a Programme in terms of knowledge, skills, attitude and values. The Graduate Attributes include Disciplinary Knowledge, Communication Skills, Critical Thinking, Problem Solving, Analytical Reasoning, Research Related Skills, Co-operation/Team Work, Scientific Reasoning, Reflective Thinking, Information/Digital Literacy, Multicultural Competence, Moral and Ethical Awareness/Reasoning, Leadership Qualities and Lifelong Learning.

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

1 apply effectively the acquired knowledge and skill in the field of Arts, Physical Science, Life Science, Computer Science, Commerce and Management for higher studies and employment. (*Disciplinary Knowledge*)

2 articulate innovative thoughts and ideas proficiently in both in spoken and written forms. (*Communication Skills)*

3 identify, formulate and solve problems in real life situations scientifically / systematically by adapting updated skills in using modern tools and techniques. (*Scientific Reasoning and Problem Solving)*

4 critically analyse, synthesize and evaluate data, theories and ideas to provide valid suggestions through assignments, case studies, Internship and projects for the fullfillment of

the local, national and global developmental needs. (*Critical Thinking and Analytical Reasoning)*

5 use ICT in a variety of self-directed lifelong learning activities to face career challenges in the changing environment. (*Digital Literacy, Self - directed and Lifelong Learning)*

6 self-manage and function efficiently as a member or a leader in diverse teams in a multicultural society for nation building. (*Co-operation/Team Work and Multicultural Competence)*

7 uphold the imbibed ethical and moral values in personal, professional and social life for sustainable environment. (*Moral and Ethical Awareness)*

B.1.3 Programme Specific Outcomes (PSOs)

Based on the Programme Outcomes, Programme Specific Outcomes are framed for each UG Programme**.** Programme Specific Outcomes denote what the students would be able to do at the time of graduation. They are Programme specific. It is mandatory that each PO should be mapped to the respective PSO.

On completion of B.C.A. Graphic Design Programme, the students will be able to

PO1 - *Disciplinary Knowledge*

PSO 1.a: Apply the acquired knowledge of Computer Science and other Disciplines in pursuit of higher studies and career.

PSO1.b: Conceptualize and develop design solutions using principles of design **to** create visual communications that meet the needs of the project.

PO2 – *Communication Skills*

PSO2: Communicate clearly in visual, verbal, and written forms using techniques appropriate for the intended audience.

PO3 – *Scientific Reasoning and Problem Solving*

PSO3.a: Apply theoretical foundations of computer applications with emphasis on strong practical training that enable them to solve real world problems related to sustainable environment

PSO3.b: Analyse required information and eliminate extraneous information towards solving contextual problems.

PO4 – *Critical Thinking and Analytical Reasoning*

PSO 4.a: Analyse complex computing problems through design of experiments and interpretation of data to arrive at valid findings through research activities.

PSO 4.b: Critically evaluate the software systems and find the optimum solution for the betterment of society.

PO5 – *Digital Literacy, Self - Directed and Lifelong Learning*

PSO5: Utilize modern computing tools, skills and techniques to confront the challenges in finding software solutions.

PO6 –*Co-operation/Team Work and Multi-Cultural Competence*

PSO6 Participate as a team member to make collaborative decisions toward shared objectives

with civility, interpersonal skills, and professionalism.

PO7 –*Moral and Ethical Awareness*

PSO 7: Complete all work in a professional and ethical manner, in accordance with all applicable legislation and regulations.

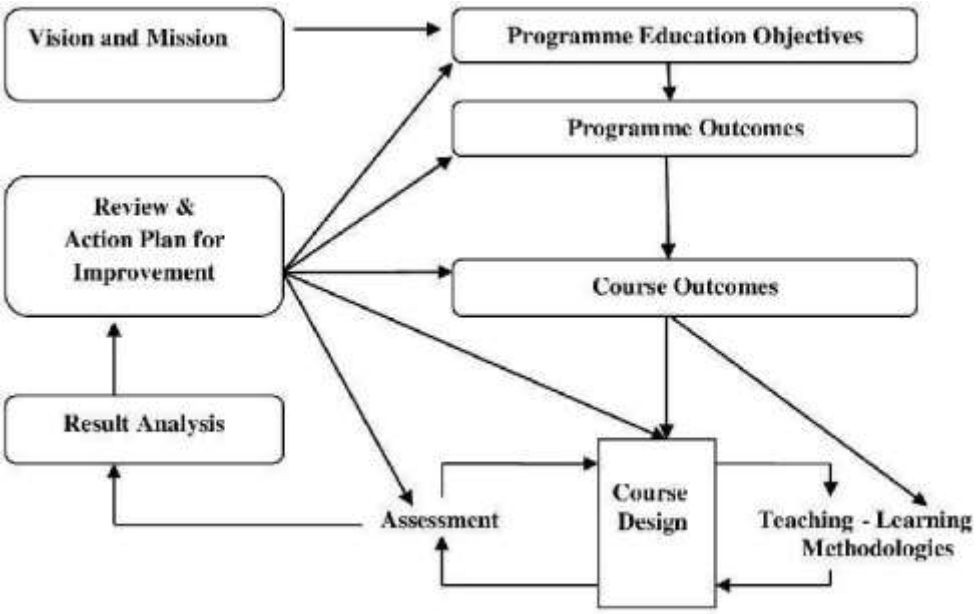
PO-PEO Mapping Matrix

Attainment of PEOs can be measured by a PO-PEO matrix. PEOs should evolve through constant feedback from alumnae, students, industry, management, *etc*. It is mandatory that each PEO should be mapped to at least one of the POs.

PEOs / POs/PSOs	PEO1	PEO2	PEO3
PO1/PSO1.a	-	✓	✓
PO1/PSO1.b	✓	✓	✓
PO2/PSO2.a	✓	✓	-
PO2/PSO2.b	✓	✓	-
PO3/PSO3	-	✓	✓
PO4/PSO4.a	-	✓	✓
PO4/PSO4.b	✓	✓	-
PO5/PSO5	✓	✓	-
PO6/PSO6	-	✓	✓
PO7/PSO7	-	-	✓

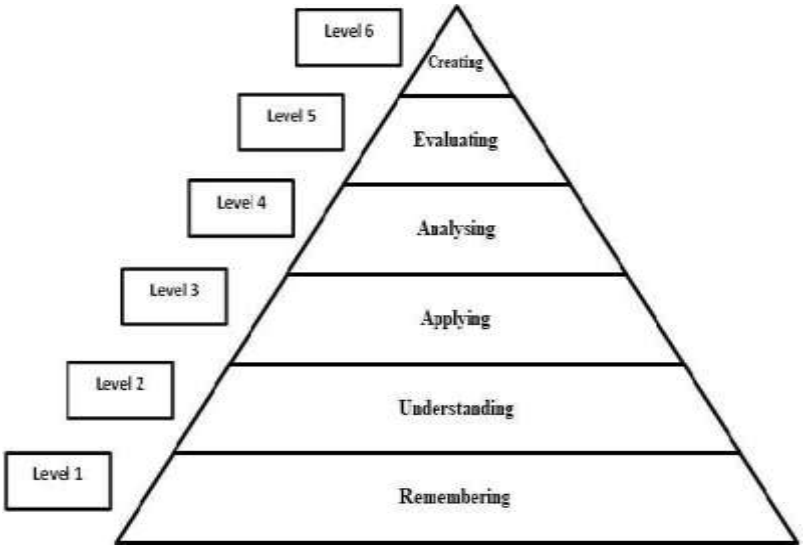
B.1.4 Course Outcomes (COs)

Course Outcomes are narrow statements restricted to the Course contents given in five units. Course Outcomes describe what students would be capable of, after learning the contents of the Course. They reflect the level of knowledge gained, skills acquired and attributes developed by the students after learning of Course contents. COs are measurable, attainable and manageable in number. COs contribute to attain POs in such a way that each CO addresses at least one of the POs and also each PO is reasonably addressed by adequate number of COs.



It is important to determine the methods of assessment. A comprehensive assessment strategy may be outlined using the revised Bloom's Taxonomy levels.

BLOOM'S TAXONOMY



CO – PO Mapping of Courses

After framing the CO statements, the COs framed for each Course is mapped with POs based on the relationship that exists between them. The COs which are not related to any of the POs is indicated with (-), signifying Nil. Measurement Mapping is based on Four Points Scale [High (H), Medium (M), Low (L) and Nil (-)]. For calculating weighted percentage of contribution of each Course in the attainment of the respective POs, the weights assigned for H, M and L are 3, 2and 1respectively.

CO-PO/PSO Mapping Table (Course Articulation Matrix)

PO/PSOs / COs	PO1/ PSO1	PO2/ PSO2	PO3/ PSO3	PO4/ PSO4	PO5/ PSO5	PO6/ PSO6	PO7/ PSO7
CO1							
CO2							
CO3							
CO4							
CO5							

ELIGIBILITY FOR ADMISSION

The Candidate should have passed the Higher Secondary Examination conducted by the Board of Higher Secondary Education, Tamil Nadu or any other examination accepted by Academic Council with Mathematics as one of the subjects in Higher Secondary Course.

DURATION OF THE PROGRAMME

The candidates shall undergo the prescribed Programme of study for a period of three academic years (six semesters).

MEDIUM OF INSTRUCTION

English

COURSES OFFERED

Part I	:	Tamil/Hindi Course
Part II	:	English
Part III	:	Core Courses
		Elective Courses • Generic Elective Courses • Discipline Specific Elective Courses
		Self Study Course - online
Part IV	:	Skill Enhancement Courses (SEC)
		Elective Course (NMEC)
		Environmental Studies Value Education
		Field Project/Internship
		Self Study Course - online
Part V	:	National Service Scheme/ Physical Education/ Youth Red Cross Society/ Red Ribbon Club/ Science Forum/ Eco Club/ Library and Information Science/ Consumer Club/ Health and Fitness Club/ National Cadet Corps/ Rotaract Club

B.2 EVALUATION SCHEME

B.2.1.PART II

Components	Internal Assessment Marks	Summative Examination Marks	Total Marks
Theory	15	60	100
Practical	5	15	
Assignment	5	-	

Three Periodic Tests - Average of the best two will be considered

B.2.2.Part I & PART III - Core Courses, Elective Courses (Generic, DSEC)

Components	Internal Assessment Marks	External Examination Marks	Total Marks
Theory	25	75	**100**

INTERNAL ASSESSMENT

Distribution of Marks

Theory

Mode of Evaluation			Marks
Periodic Test		:	15
Assignment	K3 Level	:	5
Quiz	K1 Level	:	5
Total		:	25

Three Periodic Tests - Average of the best two will be considered

Two Assignments - Better of the two will be considered

Three Quiz Tests - Best of the three will be considered

Practical

Mode of Evaluation		Marks
Practical Test*	:	30
Record & Performance	:	10
Total	**:**	**40**

*Average of the two Practical Tests will be considered

Question Pattern for Internal Tests **Duration: 2 Hours**

Section	Q.No.	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Total Marks
A	1 - 4	Multiple Choice	4	4	1	4
B	5 -6	Internal Choice - Either … or Type	3	3	7	21
C	8 -9	Internal Choice - Either… or Type	2	2	10	20
					Total	**45***

*The total marks obtained in the Periodic Test will be calculated for 15 marks

SUMMATIVE EXAMINATION

Question Pattern **Duration: 3 Hours**

Section	Q. No.	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Total Marks
A	1 -10	Multiple Choice	10	10	1	10
B	11 - 15	Internal Choice – Either …or Type	5	5	7	35
C	16 - 18	Internal Choice – Either… or Type	3	3	10	30
					Total	**75**

PROJECT

Assessment by Internal Examiner Only

Internal Assessment

Distribution of Marks

Mode of Evaluation	:	Marks
Project work and Report	:	60
Presentation and Viva –Voce	:	40
Total	:	100

B.2.3 PART IV - Skill Enhancement Courses, Non Major Elective Courses and Foundation Course

B.2.3.1 FOUNDATATION COURSE

INTERNAL ASSESSMENT
Distribution of Marks
Theory

Mode of Evaluation			**Marks**
Periodic Test		:	15
Assignment	K2 Level	:	5
Quiz	K1 Level	:	5
Total		**:**	**25**

Three Periodic Tests - Average of the best two will be considered

Two Assignments - Better of the two will be considered

Three Quiz Tests - Best of the three will be considered

Question Pattern for Periodic Tests **Duration: 1 Hour**

Section	**Q.No.**	**Types of Question**	**No. of Questions**	**No. of Questions to be answered**	**Marks for each Question**	**Total Marks**
A	1 - 3	Internal Choice - Either …or Type	3	3	5	15
B	4	Internal Choice – Either …or Type	1	1	10	10
	Total					**25***

*The total marks obtained in the Periodic Test will be calculated for 15 marks

SUMMATIVE EXAMINATION

Mode of Evaluation		**Marks**
Summative Examination	:	50
Online Quiz (Multiple Choice Questions - K2 Level)	:	25
Total	**:**	**75**

Question Pattern **Duration: 2 Hours**

Section	Q.No.	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Total Marks
A	1 - 5	Internal Choice - Either … or Type	5	5	6	30
B	6 - 7	Internal Choice – Either… or Type	2	2	10	20
	Total					**50**

B.2.3.2 Skill Enhancement Course - Entrepreneurial skills

INTERNAL ASSESSMENT ONLY
Distribution of Marks

Mode of Evaluation		Marks
Periodic Test	:	15
Assignment	:	5
Quiz	:	5
Model Examinations	:	60
Online Quiz(Multiple Choice Questions - K2 Level)	:	15
Total	**:**	**100**

Question Pattern for Periodic Tests **Duration: 1 Hour**

Section	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Total Marks
A Q. No.(1- 3)	Internal Choice – Either Or Type	3	3	5	15
B Q. No.(4)	Internal Choice – Either Or Type	1	1	10	10
Total					**25***

*The total marks obtained in the Periodic Test will be calculated for 15 marks

Two Periodic Tests - Better of the two will be considered

Two Assignments - Better of the two will be considered

Two Quiz Tests - Better of the two will be considered

Question Pattern for Model Examination **Duration: 2 Hours**

Section	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Total Marks
A Q. No.(1-5)	Internal Choice – Either Or Type	5	5	6	30
B Q. No.(6- 8)	Internal Choice – Either Or Type	3	3	10	30
Total					**60**

B.2.3.3 Skill Enhancement Courses/ Non Major Elective Courses

INTERNAL ASSESSMENT

Distribution of Marks

Theory

Mode of Evaluation			Marks
Periodic Test		:	15
Assignment	K3 Level	:	5
Quiz	K2 Level	:	5
Total		**:**	**25**

Three Periodic Tests - Average of the best two will be considered

Two Assignments - Better of the two will be considered

Three Quiz Tests - Best of the three will be considered

Question Pattern for Periodic Tests **Duration: 1 Hour**

Section	Q.No.	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Total Marks
A	1 - 3	Internal Choice - Either …or Type	3	3	5	15
B	4	Internal Choice – Either …or Type	1	1	10	10
	Total					**25***

*The total marks obtained in the Periodic Test will be calculated for 15 marks

SUMMATIVE EXAMINATION

Mode of Evaluation		Marks
Summative Examination	:	50
Online Quiz (Multiple Choice Questions - K2 Level)	:	25
Total	**:**	**75**

Question Pattern **Duration: 2 Hours**

Section	Q.No.	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Total Marks
A	1 - 5	Internal Choice - Either … or Type	5	5	6	30
B	6 - 7	Internal Choice – Either… or Type	2	2	10	20
	Total					**50**

B.2.4 PART IV- ENVIRONMENTAL STUDIES / VALUE EDUCATION

INTERNAL ASSESSMENT ONLY

Evaluation Pattern

Mode of Evaluation		Marks
Periodic Test	:	15
Assignment - K3 Level	:	10
Online Quiz (Multiple Choice Questions - K2 Level)	:	25
Poster Presentation - K3 Level		10
Report - K3 Level		10
Model Examination	:	30
Total	**:**	**100**

Three Assignment - Best of the three will be considered

Question Pattern for Periodic Tests **Duration: 1 Hour**

Section	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Total Marks
A Q. No.(1- 3)	Internal Choice – Either Or Type	3	3	6	18
B Q. No.(4)	Internal Choice – Either Or Type	1	1	12	12
Total					**30***

Two Periodic tests - Better of the two will be considered

The total marks obtained in the Periodic test will be calculated for 15 marks

Question Pattern for Model Examination **Duration: 2 ½ Hours**

Section	Q.No.	Types of Question	No. of Questions	No. of Questions to be answered	Marks for each Question	Total Marks
A	1 - 5	Internal Choice - Either … or Type	5	5	6	30
B	6 - 8	Internal Choice – Either… or Type	3	3	10	30
	Total					**60***

*The total marks obtained in the Model Examination will be calculated for 30 marks

B.2.5 PART IV- Internship/ Industrial Training

Internship / Industrial Training is mandatory for all the Students

- **Internship:** Students have to involve in a designated activity, working in an organization under the guidance of an identified mentor for a period of 15 days.
- **Industrial Training:** Student has to undertake in-plant training in industries individually or in group for a period of 15 days.
- Internship / Industrial Training must be done during the fourth semester holidays
- **Internal Assessment only.**

Mode of Evaluation		Marks
Onsite Learning/Survey	:	50
Report	:	25
Viva-Voce	:	25
Total		**100**

B.2.6 SELF STUDY COURSE

B.2.6 .1 PART III - Discipline Specific Quiz – Online

- Assessment by Internal Examiner only
- Question Bank is prepared by the Faculty Members of the Departments for all the Core and Elective Courses offered in all the Semesters.
- No. of Questions to be taken 700.
- Multiple Choice Question pattern is followed.
- Online Test will be conducted in VI Semester for 100 Marks.
- Model Examination is conducted after two periodic tests.

Distribution of Marks

Mode of Evaluation		Marks
Periodic Test	:	25
Model Examination	:	75
Total	**:**	**100**

Two Periodic Tests - Better of the two will be considered

B.2.6 .2 PART IV - Practice for Competitive Examinations – Online

Assessment by Internal Examiner only

- Question Bank prepared by the Faculty Members of the respective Departments will be followed.
- Multiple Choice Question pattern is followed.
- Online Test will be conducted in V Semester for 100 Marks.
- Model Examination is conducted after two periodic tests.

Subject wise Allotment of Marks

Subject		Marks
Tamil	:	10
English	:	10
History	:	10
Mathematics	:	10
Current affairs	:	10
Commerce, Law & Economics	:	10
Physical Sciences	:	10
Life Sciences	:	15
Computer Science	:	5
Food and Nutrition	:	5
Sports and Games	:	5
Total	**:**	**100**

Distribution of Marks

Mode of Evaluation		Marks
Periodic Test	:	25
Model Examination	:	75
Total	**:**	**100**

Two Periodic Tests - Better of the two will be considered

B.2.7. Part V – Extension Activities

INTERNAL ASSESSMENT ONLY

Distribution of Marks

Mode of Evaluation		**Marks**
Attendance	:	5
Performance	:	10
Report/Assignment/Project/Camp/Practical	:	10
Total	**:**	**25***

*The marks obtained will be calculated for 100 marks

B.2.8 EXTRA CREDIT COURSES (OPTIONAL)

2.8.1 Extra Credit Course offered by the Department.

Assessment by Internal Examiner Only (To be conducted along with the III Periodic Test)

Distribution of Marks

Mode of Evaluation		**Marks**
Quiz (Multiple Choice Questions)	:	25
Model Examination	:	75
Total	**:**	**100**

Question Pattern for Model Examination

Section	**Types of Question**	**No. of Questions**	**No. of Questions to be answered**	**Marks for each Question**	**Total Marks**
A Q.No.(1-5)	Internal Choice-Either or Type	5	5	7	35
B Q.No.(6-9)	Internal Choice-Either or Type	4	4	10	40
				Total	**75**

2.8.2 Extra credit Course offered by MOOC (Massive Open Online Course)

- The Courses shall be completed within the first V Semesters of the Programme.
- The allotment of credits is as follows **(Maximum of 10 credits)**

4weeks Course - 1 credit

8 weeks Course - 2 credits

12 weeks Course - 3 credits

ELIGIBILITY FOR THE DEGREE

- The candidate will not be eligible for the Degree without completing the prescribed Courses of study, lab work, etc., and a minimum Pass marks in all the Courses.
- No Pass minimum for Internal Assessment for all the Courses.

- Pass minimum for External Examination is 27 marks out of 75 marks for Core Courses, Elective Courses (Generic Elective, DSEC Courses)
- Pass minimum for External Examination is 18 marks out of 50 marks for Skill Enhancement Courses and Non Major Elective Courses (NMEC).
- The aggregate minimum pass percentage is 40.
- Pass minimum for External Practical Examination is 21 marks out of 60 marks.

- Attendance

a) The students who have attended the classes for 76 days (85%) and above are permitted to appear for the Summative Examinations without any condition.

b) The students who have only 60-75 days (66% - 84%) of attendance are permitted to appear for the Summative Examinations after paying the required fine amount and fulfilling other conditions according to the respective cases.

c) The students who have attended the classes for 59 days and less – upto 45 days (50% - 65%) can appear for the Summative Examinations only after getting special permission from the Principal.

d) The students who have attended the classes for 44 days or less (<50%) cannot appear for the Summative Examinations and have to repeat the whole semester.

- For Part V in UG Programmes, the students require 75 % of attendance to get a credit.
- For Certificate, Diploma, Advanced Diploma and Post Graduate Diploma Programmes, the students require 75% of attendance to appear for the Theory/Practical Examinations.

B.3 ASSESSMENT MANAGEMENT PLAN

An Assessment Management Plan that details the assessment strategy both at the Programme and the Course levels is prepared. The continuous assessment is implemented using an assessment rubric to interpret and grade students.

B.3.1 Assessment Process for CO Attainment

Assessment is one or more processes carried out by the institution that identify, collect and prepare data to evaluate the achievement of Course Outcomes and Programme Outcomes. Course Outcome is evaluated based on the performance of students in the Continuous Internal Assessments and in End Semester Examination of a Course. Target levels of attainment shall be fixed by the Course teacher and Heads of the respective departments.

Direct Assessment (Rubric based) - Conventional assessment tools such as Term Test, Assignment, Quiz and End Semester Summative Examination are used.

Indirect Assessment – Done through Course Exit Survey.

CO Assessment Rubrics

For the evaluation and assessment of COs and POs, rubrics are used. Internal assessment contributes 40% and End Semester assessment contributes 60% to the total attainment of a CO for the theory Courses. For the practical Courses, internal assessment contributes 50% and Semester assessment contributes 50% to the total attainment of a CO. Once the Course Outcome is measured, the PO can be measured using a CO-PO matrix.

CO Attainment

Direct CO Attainment

Course Outcomes of all Courses are assessed and the CO – wise marks obtained by all the students are recorded for all the assessment tools. The respective CO attainment level is evaluated based on set attainment rubrics.

Target Setting for Assessment Method

For setting up the target of internal assessment tools, 55% of the maximum mark is fixed as target. For setting up the target of End Semester Examination, the average mark of the class shall be set as target.

Formula for Attainment for each CO

Attainment = Percentage of students who have scored more than the target marks

$$\text{Percentage of Attainment} = \frac{\text{Number of Students who scored more than the Target}}{\text{Total Number of Students}} \times 100$$

Attainment Levels of COs

Assessment Methods	**Attainment Levels**	
Internal Assessment	Level 1	50% of students scoring more than set target marks in Internal Assessment tools
	Level 2	55% of students scoring more than set target marks in Internal Assessment tools
	Level 3	60% of students scoring more than set target marks in internal Assessment tools
End Semester Summative Examination	Level 1	50% of students scoring more than average marks in End Semester Summative Examination
	Level 2	55% of students scoring more than average marks in End Semester Summative Examination
	Level 3	60% of students scoring more than average marks in End Semester Summative Examination

Indirect CO Attainment

At the end of each Course, an exit survey is conducted to collect the opinion of the students on attainment of Course Outcomes. A questionnaire is designed to reflect the views of the students about the Course Outcomes.

Overall CO Attainment= 75% of Direct CO Attainment + 25 % of Indirect CO Attainment

In each course, the level of attainment of each CO is compared with the predefined targets. If the target is not reached, the Course teacher takes necessary steps for the improvement to reach the target.

For continuous improvement, if the target is reached, the Course teacher can set the target as a value greater than the CO attainment of the previous year.

B.3.2 Assessment Process for Overall PO Attainment

With the help of CO - PO mapping, the PO attainment is calculated. PO assessment is done by giving 75% weightage to direct assessment and 25% weightage to indirect assessment. Direct assessment is based on CO attainment, where 75% weightage is given to attainment through End Semester Examination and 25% weightage is given to attainment through Internal assessments. Indirect assessment is done through Graduate Exit Survey and participation of students in Co-curricular/ Extra-curricular activities.

PO Assessment Tools

Mode of Assessment	Assessment Tool	Description
Direct Attainment (Weightage -75%)	CO Assessment	This is computed from the calculated CO Attainment value for each Course
Indirect Attainment (Weightage - 25%)	Graduate Exit Survey 10%	At the end of the Programme, Graduate Exit Survey is collected from the graduates and it gives the opinion of the graduates on attainment of Programme Outcomes
	Co-curricular/ Extra-curricular activities 15%	For participation in Co-curricular/Extra-curricular activities during the period of their study.

Programme Articulation Matrix (PAM)

Course Code	Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
Average Direct PO Attainment								
Direct PO Attainment in percentage								

Indirect Attainment of POs for all Courses

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
Graduate Exit Survey							
Indirect PO Attainment							

Attainments of POs for all Courses

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
Direct Attainment (Weightage - 75%)							
Indirect Attainment (Weightage - 25%)							
Overall PO Attainment							

Overall PO Attainment= 75% of Direct PO Attainment +
25% of Indirect PO Attainment (Graduate Exit Survey & Participation in Co- curricular and Extra curricular Activities)

Expected Level of Attainment for each of the Programme Outcomes

POs	Level of Attainment
Attainment Value ≥70%	Excellent
60% ≤ Attainment Value < 70%	Very Good
50% ≤ Attainment Value < 60%	Good
40% ≤ Attainment Value < 50%	Satisfactory
Attainment Value <40%	Not Satisfactory

Level of PO Attainment

Graduation Batch	Overall PO Attainment (in percentage)	Whether Expected Level of PO is Achieved? (Yes/No)

B.3.3 Assessment Process for PEOs

The curriculum is designed so that all the Courses contribute to the achievement of PEOs. The attainment of PEOs is measured after 5 years of completion of the Programme only through indirect methods.

Target for PEO Attainment

Assessment Criteria	Target (UG)	Target (PG)
Record of Employment	15% of the class strength	30% of the class strength
Progression to Higher Education	50% of the class strength	5% of the class strength
Record of Entrepreneurship	2% of the class strength	5% of the class strength

Attainment of PEOs

Assessment Criteria & Tool	Weightage
Record of Employment	10
Progression to Higher Education	20
Record of Entrepreneurship	10
Feedback from Alumnae	30
Feedback from Parents	10
Feedback from Employers	20
Total Attainment	**100**

$$\text{Percentage of PEO Attainment from Employment} = \frac{\text{Number of Students who have got Employment}}{\text{Target}} \times 100$$

$$\text{Percentage of PEO Attainment from Higher Education} = \frac{\text{Number of Students who pursue Higher Education}}{\text{Target}} \times 100$$

$$\text{Percentage of PEO Attainment from Entrepreneurship} = \frac{\text{Number of Students who have become Entrepreneurs}}{\text{Target}} \times 100$$

Expected Level of Attainment for each of the Programme Educational Objectives

POs	Level of Attainment
Attainment Value ≥70%	Excellent
60% ≤ Attainment Value < 70%	Very Good
50% ≤ Attainment Value < 60%	Good
40% ≤ Attainment Value < 50%	Satisfactory
Attainment Value <40%	Not Satisfactory

Level of PEO Attainment

Graduation Batch	Overall PEO Attainment (in percentage)	Whether Expected Level of PEO is Achieved? (Yes/No)

C. PROCESS OF REDEFINING THE PROGRMME EDUCATIONALOBJECTIVES

The College has always been involving the key stakeholders in collecting information and suggestions with regard to curriculum development and curriculum revision. Based on the information collected the objectives of the Programme are defined, refined and are inscribed in the form of PEOs. The level of attainment of PEOs defined earlier will be analyzed and will identify the need for redefining PEOs. Based on identified changes in terms of curriculum, regulations and PEOs, the administrative system like Board of Studies, Academic Council and Governing Body may recommend appropriate actions. As per the Outcome Based Education Framework implemented from the Academic Year 2020 - 2021, the following are the Programme Structure, the Programme Contents and the Course Contents of B.C.A. – Graphic Design Programme.

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

BACHELOR OF COMPUTER APPLICATIONS – Graphic Design (UG) (3027)

Outcome Based Education with Choice Based Credit System

Programme Structure - Allotment of Hours and Credits

For those who join in the Academic Year 2023-2024

Components	Semester						Total Number of Hours (Credits)
	I	II	III	IV	V	VI	
Part I : Tamil /Hindi	6 (3)	6 (3)	6 (3)	6 (3)	-	-	24 (12)
Part II : English	6 (3)	6(3)	6 (3)	6 (3)	-	-	24 (12)
Part III : Core Courses, Elective Courses & Self Study Course							
Core Course	5 (5)	5 (5)	5 (5)	5 (5)	6 (6)	6 (5)	32 (31)
Core Course	-	-	-	-	6 (6)	6(5)	12 (11)
Core Course	-	-	-	-	-	-	-
Core Course Practical	5(3)	5 (3)	5(3)	4 (3)	5 (3)	6 (3)	30(18)
Core Course Project	-	-	-	-	1 (1)	-	1 (3)
Elective Course (DSEC)	-	-	-	-	5(4)	5 (4)	10 (8)
Elective Course (DSEC Practical)	-	-	-	-	5(3)	5(3)	10(6)
Elective Course I (Allied)	4 (4)	4 (4)	4 (4)	4 (4)	-	-	16(16)
Elective Course I Practical I(Allied)	-	-	-	-	-	-	-
Elective Course II(Allied)	-	-			-	-	-
Elective Course II Practical II(Allied)	-	-			-	-	-
Self Study Course	-	-	-	-	-	0 (1)	0 (1)
Part IV : Skill Enhancement Courses, Elective Courses, Environmental Studies, Value Education, , Self Study Course &Internship/ Industrial Training							
SEC	2 (2)	-	1 (1)	2 (2)	-	-	5(5)
SEC	-	2 (2)	2 (2)	2 (2)	-	2 (2)	8 (8)
Elective Course(NME)	2 (2)	2 (2)	-	-	-	-	4 (4)
Value Education	-	-	-	-	2 (2)	-	2 (2)
Environmental Studies	-	-	1 (0)	1 (2)	-	-	2 (2)
Self Study Course	-	-	-	-	0 (1)	-	0 (1)
Internship/ Industrial Training	-	-	-	-	0 (1)	-	0 (1)
Part V : Extension Activities	-	-	-		-	0 (1)	0 (1)
Total	**30 (22)**	**30 (22)**	**30(21)**	**30 (24)**	**30 (27)**	**30(24)**	**180 (140)**
Extra Credit Course (Self Study	-	-	-	-	0(2)	-	0(2)

DSEC: Discipline Specific Elective Course SEC: Skill Enhancement Course

NMEC: Non Major Elective Course

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

BACHELOR OF COMPUTER APPLICATIONS – GRAPHIC DESIGN
Programme Code – 3027
PROGRAMME CONTENT
SEMESTER I

S.No.	**Components**		**Title of the Course**	**Course Code**	**Hours per week**	**Credits**	**Exam. Hours**	**Marks**		
								Int.	**Ext.**	**Total**
1	**Part I**		Tamil / Hindi	23UTAG11/ 23UHDG11	6	3	3	25	75	100
2	**Part II**		English	23UENG11	6	3	3	25	75	100
3	**Part III**	Core Course -1	Python Programming	23UGDC11	5	5	3	25	75	100
4		Core Course -2 Practical I	Python Programming Practical	23UGDC11P	5	3	3	40	60	100
5		Elective Course	Discrete Mathematics - I	23UGDA11	4	4	3	25	75	100
6	**Part IV**	NME -1	Introduction to HTML	23UGDN11	2	2	3	25	75	100
7		SEC -1 Foundation Course	Graphic Design Practical	23UGDF11P	2	2	3	40	60	100
				Total	**30**	**22**				**700**

BACHELOR OF COMPUTER APPLICATIONS – GRAPHIC DESIGN - SEMESTER II

S.No.	Components		Title of the Course	Course Code	Hours per week	Credits	Exam. Hours	Marks		
								Int.	Ext.	Total
1	**Part I**		Tamil / Hindi	23UTAG21/ 23UHDG21	6	3	3	25	75	100
2	**Part II**		English	23UENG21	6	3	3	25	75	100
3	**Part III**	Core Course - 3	Programming in C++	23UGDC21	5	5	3	25	75	100
4		Core Course -4 Practical II	Programming in C++ Practical	23UGDC21P	5	3	3	40	60	100
5		Elective Course	Resource Management Techniques	23UGDA21	4	4	3	25	75	100
6	**Part IV**	NME - 2	Fundamentals of Computers	23UGDN21	2	2	3	25	75	100
7		SEC - 2	2D Animation Practical	23UGDS21P	2	2	3	40	60	100
				Total	**30**	**22**				**700**

BACHELOR OF COMPUTER APPLICATIONS – Graphic Design
Programme Code – 3027
PROGRAMME CONTENT
SEMESTER III

S.No.	Components		Title of the Course	Course Code	Hours per week	Credits	Exam. Hours	Marks		
								Int.	Ext.	Total
1	**Part I**		Tamil / Hindi	23UTAG31/ 23UHDG31	6	3	3	25	75	100
2	**Part II**		English	23UENG31	6	3	3	25	75	100
3	**Part III**	Core Course - 5	Data Structures and Algorithms	23UGDC31	5	5	3	25	75	100
4		Core Course - 6 Practical -3	Data Structures and Algorithms using C++ Practical	23UGDC31P	5	3	3	40	60	100
5		Elective Course - 3	Numerical Methods	23UGDA31	4	4	3	25	75	100
6	**Part IV**	Skill Enhancement Course - 3	Numerical Aptitude	23UGDS31	1	1	2	100	-	100
7		Skill Enhancement Course - 4	Computer Graphics Practical	23UGDS31P	2	2	2	40	60	100
8			Environmental Studies	23UGES41	1	-	-	-	-	-
				Total	**30**	**21**				**700**

BACHELOR OF COMPUTER APPLICATIONS – Graphic Design

SEMESTER IV

S.No.	Components		Title of the Course	Course Code	Hours per week	Credits	Exam. Hours	Marks		
								Int.	Ext.	Total
1	**Part I**		Tamil/ Hindi	23UTAG41/ 23UHDG41	6	3	3	25	75	100
2	**Part II**		English	23UENG41	6	3	3	25	75	100
3	**Part III**	Core Course – 7	Programming in Java	23UGDC41	5	5	3	25	75	100
4		Core Course – 8 Practical - 4	Programming in Java Practical	23UGDC41P	4	3	3	40	60	100
5		Elective Course - 4	Multimedia Technology	23UGDA41	4	4	3	25	75	100
6	**Part IV**	Skill Enhancement Course - 5	Software Project Management	23UGDS41	2	2	2	25	75	100
7		Skill Enhancement Course - 6	Multimedia Practical	23UGDS41P	2	2	2	40	60	100
8			Environmental Studies	23UGES41	1	2	2	100	-	100
				Total	**30**	**24**				**800**

BACHELOR OF COMPUTER APPLICATIONS – Graphic Design

SEMESTER V

S. No.	Components		Title of the Course	Course Code	Hours per week	Credits	Exam. Hours	Marks		
								Int.	Ext.	Total
1	Part III	Core Course - 9	Operating Systems	23UGDC51	6	6	3	25	75	100
2		Core Course - 10	ASP. Net Programming	23UGDC52	6	6	3	25	75	100
3		Core Course - 11 Practical - 5	ASP. Net Programming Practical	23UGDC51P	5	3	3	40	60	100
4		Core Course - 12 Project	Project	23UGDC53PR	1	1	-	100	-	100
5		Elective Course DSEC - 1	Introduction to 3D Modelling	23UGDE51	5	4	3	25	75	100
			Game Programming	23UGDE52						
6		Elective Course DSEC -2 Practical	3D Modelling Practical	23UGDE53P	5	3	3	40	60	100
			Game Programming Practical	23UGDE54P						
7	Part IV		Value Education	23UGVE51	2	2	2	100	-	100
8		Self Study Course	Practice for Competitive Examinations - Online	23UGCE51	-	1	-	100	-	100
9		Internship/ Industrial Training	Internship	23UGDI51	-	1	-	100	-	100
				Total	**30**	**27**				**900**

10	Extra Credit Course (Self Study Course	Digital Character Animation	23UGDO51	-	2	3	100	-	100

BACHELOR OF COMPUTER APPLICATIONS – Graphic Design

SEMESTER VI

S. No.	Components		Title of the Course	Course Code	Hours per week	Credits	Exam. Hours	Marks		
								Int.	Ext.	Total
1	**Part III**	Core Course - 13	Computer Networks	23UGDC61	6	5	3	25	75	100
2		Core Course - 14	Data Analytics using R Programming	23UGDC62	6	5	3	25	75	100
3		Core Course – 15 Practical - 6	R Programming Practical	23UGDC61P	6	3	3	40	60	100
5		Elective Course DSEC – 3	Mobile Application Development	23UGDE61	5	4	3	25	75	100
			Web Publishing	23UGDE62						
6		Elective Course DSEC – 4 Practical	Mobile Application Development Practical	23UGDE63P	5	3	3	40	60	100
			Web Publishing Practical	23UGDE64P						
		Self Study Course	Discipline Specific Quiz - Online	23UGDQ61	-	1	-	100	-	100
7	**Part IV**	Skill Enhancement Course - 7	UI Design	23UGDS61	2	2	2	25	75	100
8	**Part V**		Extension Activities	-	-	1	-	100	-	100
				Total	**30**	**24**				**800**

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester I	**Python Programming**	Hours/Week: 5	
Core Course -1		Credits: 5	
Course Code **23UGDC11**		Internal 25	External 75

COURSE OUTCOMES

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

CO1 : outline the basics of Python, control statements, functions, strings, Python Data structures and files. [K1]

CO2 : paraphrase about Python basics, conditional, looping statements and functions. [K2]

CO3 : relate the concepts of strings, modules, List, tuples and dictionary, reading, writing and other file handling operations. [K2]

CO4 : apply Python basics, selection, looping statements, functions and Modules. [K3]

CO5 : make use of Python data structures like List, Tuple, Set, Dictionary and files concepts. [K3]

UNIT I

Basics of Python Programming: Features of Python – History of Python – The Future of Python – Literal Constants – Variables and Identifiers – Data Types – Input Operation – Coments – Reserved Words – Indentation – Operators and Expressions – Expressions in Python – Operations on Strings – Other Data Types – Type Conversion. **(15 Hours)**

UNIT II

Decision Control Statements: Introduction to Decision Control Statements – Selection/Conditional Branching statements – Basic Loop Structures/Iterative Statements – Nested Loops – The break Statement – The continue Statement – The pass Statement – The else Statement used with Loops. **(15 Hours)**

UNIT III

Functions and Modules: Introduction – Function Declaration and Definition – Function Call – Variable Scope and its Lifetime – The return Statement – More on Defining Functions –

Lambda Functions or Anonymous Functions – Documentation Strings – Good Programming Practices – Recursive Functions – Modules – Packages in Python – Standard Library modules – Globals(), Locals() and Reload() – Function Redefinition. **(15 Hours)**

UNIT IV

Python Strings Revisited: Concatenating, Appending and Multiplying Strings – Strings are Immutable – String Formatting Operator – Built-in String Methods and Functions – Slice Operation – ord() and chr() Functions – in and not in operators – Comparing Strings – Iterating String – The String Module. **File Handling:** File Path – Types of files in Python - Opening and Closing files – Reading and Writing files – File Positions – Renaming and deleting files – Directory Methods.

(15 Hours)

UNIT V

Data Structures: Lists: Creating a list – Access values in List – Updating values in Lists – Nested lists – Basic list operations – List Methods. **Tuples:** Creating Tuple – Utility of Tuples – Accessing values in a Tuple – Deleting Elements in Tuple – Basic Tuple Operations – Tuple Assignment – Tuples for Returning Multiple values – Nested Tuples – Sets – **Dictionaries:** Creating a Dictionary – Accessing values – Adding and Modifying an Item in a Dictionary – Modifying an Entry – Deleting Items – Sorting Items in a Dictionary – Looping over a Dictionary – Nested Dictionaries – Built-in Dictionary Functions and Methods – Difference between a List and a Dictionary – String Formatting with Dictionaries – List vs Tuple vs Dictionary vs Set.

(15 Hours)

TEXT BOOK:

Reema Thareja.”Python Programming using problem solving approach”, First Edition 2017, Oxford University Press.

Unit	Chapter	Section
I	3	3.1 – 3.16
II	4	4.1 – 4.8
III	5	5.1 – 5.15
IV	6, 7	6.1 – 6.10, 7.1 – 7.8
V	8	8.2.1 – 8.2.6, 8.4.1 – 8.3.9, 8.5, 8.6

REFERENCE BOOKS

1. VamsiKurama, "Python Programming: A Modern Approach", Pearson Education.
2. Mark Lutz, "Learning Python", Orielly.
3. Adam Stewarts, "Python Programming", Online.
4. Fabio Nelli, "Python Data Analytics", APress.
5. Kenneth A. Lambert, "Fundamentals of Python – First Programs", CENGAGE Publication

WEB RESOURCES

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

Course Code **23UGDC11**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	3	3	2	2	-	-	1	1	-
CO2	3	3	3	3	3	1	1	2	1	-
CO3	3	3	3	2	2	2	2	2	1	-
CO4	3	3	3	3	3	2	2	2	1	1
CO5	3	3	3	3	3	2	2	3	1	1

Mrs. J. Porkodi
Head of the Department

Mrs. R. Nancy Beaulah
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester I	**Python Programming Practical**	**Hours/Week: 5**	
Core Course – 2 Practical I		**Credits: 3**	
Course Code 23UGDC11P		**Internal 40**	**External 60**

COURSE OUTCOMES

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

CO1 : outline the basic concepts of needed for the given problem. [K2]

CO2 : write programs using selection/looping statements, functions, strings, files and Python Data Structures. [K2]

CO3 : key-in the programs and test the programs with required input and get expected outputs with neat formatting and prepare the record work. [K3]

CO4 : explain the programs implemented using Python and deduce the answers for any queries raised. [K3]

CO5 : apply the necessary modifications and justify the desired result. [K3]

List of Programs

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.
14. Program for File Handling.

Course Code 23UGDC11P	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	3	3	2	2	-	-	1	2	-
CO2	3	3	3	3	3	1	1	2	2	-
CO3	3	3	3	2	2	2	2	2	2	2
CO4	3	3	3	3	3	2	2	2	2	2
CO5	3	3	3	3	3	2	2	3	2	2

Mrs. J. Porkodi
Head of the Department

Mrs. R. Nancy Beaulah
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester I	**DISCRETE MATHEMATICS - I**	Hours/Week: 4	
Elective Course		Credits: 4	
Course Code 23UGDA11		Internal 25	External 75

Course Outcomes

On completion of the course the students will be able to

CO1 : define the basic concepts in propositional logic, relations, counting, graph theory and matrices [K1]

CO2 : understand the mathematical concepts in logic, relations, permutation and combinations, graphs and matrices.[K2]

CO3 : explain the concepts in predicates and quantifiers, partial orderings, recurrence relations, graphs and matrices. [K2]

CO4 : solve problems in discrete mathematics. [K3]

CO5 : apply the knowledge gained in discrete mathematics to other fields. [K3]

UNIT I

The Foundations: Logic and Proofs: Propositional logic – Applications of Propositional logic – Propositional equivalences – (Exclude Propositional satisfiability, Applications of satisfiability, Solving satisfiability problems, and its related problems) – Predicates and Quantifiers

(12 Hours)

UNIT II

Relations: Relations and their properties – Representing relations –Partial orderings (Theorems statement only; Exclude lexicographic order - Exclude Lattices and Topological sorting)

(12 Hours)

UNIT III

Counting: The basic of counting - The pigeonhole principle(Exclude Generalized Pigeonhole principle, Some Elegant Applications of the Pigeonhole Principle) – Permutation and Combinations – Applications of recurrence relations(Exclude Algorithms and Recurrence Relations) – Solving linear recurrence relations(Exclude Linear Non homogeneous recurrence Relations with constant coefficients). (All theorems and Results statement only) (12 Hours)

UNIT IV

Graphs: Graphs and Graphs models, (Excluding Biological networks; Tournaments; all its related examples and problems) – Graph terminology and special types of graphs(Thorems statement only, Exclude Some Applications of Special Types of Graphs, New Graphs from Old) – Representing graphs and Graph isomorphism – Connectivity–paths – connectedness in undirected graphs(Exclude How connected is a graph?, Connectedness in Directed Graphs) – paths and isomorphism – counting paths between vertices – shortest path problems. (12 Hours)

UNIT V

Matrices: Introduction – operations – inverse – Rank of a matrix, solution of simultaneous linear equations – Eigen values and Eigen Vectors. (12 Hours)

TEXT BOOKS

1. Kenneth.H.Rosen, Discrete Mathematics and its applications, Seventh Edition, McGraw Hill Publishing Company, 2012.
2. M.Venkataraman, N.Sridharan and N.Chandrasekaran, ,Discrete Mathematics, The National Publishing Company, 2009

Unit	Chapter	Section
Text Book 1		
I	1	1.1,1.2,1.3,1.4
II	9	9.1, 9.3, 9.6
III	6	6.1, 6.2, 6.3
	8	8.1, 8.2
IV	10	10.1, 10.2, 10.3, 10.4, 10.6
Text Book 2		
V	6	6.1, 6.2, 6.3, 6.4, 6.5, 6.7

REFERENCE BOOKS

1. S.Arumugam and A. ThangapandiIsaac,Modern Algebra , Scitech publications 2005.
2. S.Arumugam and S.Ramachandran, Invitation to Graph Theory, Scitech Publications,2005, Chennai.
3. Tremblay and Manohar,Discrete Mathematical Structures with applications to Computer Science -, McGraw Hill,1997.

Web Resources

Web resources from NDL Library, E-content from open-source libraries

Course Code **23UGDA11**	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	3	1	-	1	-
CO2	3	1	3	3	3	1	-
CO3	3	3	3	3	2	1	-
CO4	3	1	3	3	2	3	1
CO5	3	3	3	3	3	3	1

Mrs. K.Anitha
Head of the Department

Mrs. K. Muthu Lakshmi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester I	**Graphic Design Practical**	Hours/Week: 2	
SEC- 1 Foundation Course		Credits: 2	
Course Code **23UGDF11P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1 : examine the given design problem, identify the basic tools and features in Photoshop. [K2]

CO2 : design Photoshop document implementing the required tools and elements to get a good photo effect.. [K2]

CO3 : execute the steps to produce required output. [K3]

CO4 : present output effectively and prepare the record. [K3]

CO5 : explain the necessity of tools used, deduce the changes to be incorporated over the developed application using the acquired knowledge. [K3]

Create the following programs

1. Use of basic Photoshop tools and techniques
2. Changing the background
3. Filters in Photoshop
4. Create rainbow, rain effects
5. Create 3D Photo cube
6. Animate the flame of a candle
7. Product advertisement
8. Cube creation
9. CD Logo creation
10. Glowing Effect
11. Animation

12. Image within text
13. Photo effect
14. Glossy text effect
15. Hair coloring effect

Course Code 23UGDF11P	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	2	3	1	-	-	-	-	-	-	-
CO2	3	2	2	2	2	-	-	-	1	1
CO3	-	3	-	2	3	-	1	2	-	1
CO4	3	3	1	2	-	1	1	2	-	-
CO5	2	2	1	-	-	-	-	3	-	-

Mrs. J. Porkodi
Head of the Department

Mrs. J. Porkodi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester II	**Programming in C++**	Hours/Week: 5	
Core Course - 3		Credits: 5	
Course Code **23UGDC21**		Internal 25	External 75

COURSE OUTCOMES

On successful completion of the course, the learns should be able to

CO1: outline the procedural and object oriented paradigm with concepts of classes, token, data types, functions, control statement, overloading and objects. [K1]

CO2: Describe about classes and object, expressions and controls structures, functions, friend functions, constructor and destructor, operator overloading and inheritance. [K2]

CO3: paraphrase about pointer, pointer class, this pointer, polymorphism, virtual functions and files stream classes.[K2]

CO4: apply the concepts of object-oriented programming, types of inheritance, pointer concepts and operator overloading [K3]

CO5: Illustrating about the pointers, managing console I/O operators, manipulating strings and strings function and they attributes.[K3]

UNIT I

Principles of Object-Oriented Programming: Basic Concepts of Object Oriented Programming - Benefits of OOP. **Beginning with C++:** What is C++ - Applications of C++ - A Simple C++ Program –More C++ statements - Structure of a C++ program. **Tokens, Data types:** Introduction – Tokens – Keywords – Identifiers and Constants – Basic Data Types – User-Defined Data Types – Storage Classes - Derived Data Types – Symbolic Constants.

(12 Hours)

UNIT II

Expressions and Control Structures: Type Compatibility – Declaration of Variables – Dynamic Initialization of Variables – Reference Variables – Operators in C++ - Scope Resolution Operator – Type Cast Operator – Expressions and their Types - Control Structures. **Functions in C++:** Introduction – The main function – Function Prototyping – Call by Reference - Return by Reference - Inline Functions – Default Arguments- Function Overloading - Math Library Functions. **Classes and Objects:** Specifying a Class – Defining Member Functions– C++ Program with Class - Making an Outside Function Inline – Nesting of Member Functions – Private Member Functions – Arrays with in a Class – Memory Allocation for Objects- Arrays of Objects– Friendly Functions.

(15 Hours)

UNIT III

Constructors and Destructors: Introduction – Constructors - Parameterized Constructors – Constructors with Default Arguments – Copy Constructor – Dynamic Constructors - Destructors. **Operator Overloading:** Introduction - Defining Operator Overloading - Overloading unary operators - Overloading Binary Operators – Overloading Binary Operators using Friends – Rules for Overloading Operators.

(18 Hours)

UNIT IV

Inheritance: Extending Classes: Introduction - Defining derived classes – Single Inheritance – Making a Private Member Inheritable – Multilevel Inheritance – Multiple Inheritance - Hierarchical Inheritance – Hybrid Inheritance – Virtual Base Classes. **Pointers, Virtual Functions and Polymorphism:** Pointers – Pointer to Objects – this Pointer – Polymorphism –Virtual Functions. (15 Hours)

UNIT V

Managing Console I/O Operations: Introduction – C++ Streams - C++ Stream Classes – Unformatted I/O operation – Formatted Console I/O Operations - Managing Output with Manipulators. **Manipulating Strings:** Introduction – Creating (string) Objects – Manipulating String Objects – Relational Operations – String Characteristics – Accessing Characters in Strings – Comparing and Swapping. (15 Hours)

TEXT BOOK

E.Balagurusamy,*(*2018).*Object-Oriented Programming with C++*,7th Edition, India: McGraw Hill Education Private Ltd.

UNIT	CHAPTER	SECTION
I	1	1.5, 1.6
	2	2.1 to 2.4, 2.6
	3	3.1 to 3.9
II	3	3.10 to 3.15, 3.19, 3.20, 3.25
	4	4.1 to 4.7, 4.10, 4.12
	5	5.3 to 5.10,5.13, 5.15
III	6	6.1 to 6.3, 6.5, 6.7, 6.8 6.11
	7	7.1 to7.5,7.8
IV	8	8.1 to 8.9
	9	9.2 to 9.5, 9.7
V	10	10.1 to 10.6
	15	15.1 to 15.7

REFERENCE BOOKS

1. K.R.Venugopal, RajkumarBuyya, *(*2017). *Mastering C++,2nd Edition,* India: McGraw Hill Education Private Limited

2.Pohl,I, *(*2004). *Object Oriented Programming using C+*, Second Edition, New Delhi: Pearson Education.

1. Budd,*T., (*2008). *An Introduction to OOP*, Third Edition, New Delhi: Pearson Education.

Course Code 23UGDC21	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	3	3	3	1	2	-	-	1	
CO2	2	3	2	3	2	2	1	-	-	
CO3	3	3	2	3	1	1	-	1	-	
CO4	2	3	2	3	1	1	2	2	1	
CO5	2	2	2	1	1	1	2	3	2	

J.Porkodi
Head of the Department

V.G. Jyothi Mani
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester II	**Programming in C++ Practical**	Hours/Week: 5	
Core Course 4		Credits: 3	
Course Code **23UGDC21P**		Internal 40	External 60

COURSE OUTCOMES

On successful completion of the course, the learns should be able to

CO1 : Outline the basic concepts of object oriented, classes, functions and objects.[K2]

CO2 : write the program output for the function with pointer, modes of files and string attributes.[K2]

CO3 : explain the programming concepts in type casting, inheritance, operator overloading and polymorphism.[K3]

CO4 : Present output effectively and prepare the record with the neat output.[K3]

CO5 : Apply the programming concepts in type casting, inheritance, operator overloading and polymorphism.[K3]

Write a C++ program

1. To demonstrate returning objects from classes
2. To demonstrate passing objects as function arguments
3. To swap two numbers without using intermediate variable
4. To check if a number is prime or not, using objects
5. To find larger of two numbers using inline function
6. To calculate simple interest using function using rate of interest as default argumen
7. To perform Area of different shape calculation using Function overloading(Minimum three functions)
8. To perform String manipulation (three different types) using function overloading

9. To find minimum of two numbers between two class objects using friend function
10. To perform Bank Transaction using Constructor and destructor.
11. To overload unary minus operator to change sign of given 3elements
12. To overload Binary plus operator to add two complex numbers.
13. To create telephone directory using single inheritance
14. To prepare a student's mark sheet using multiple inheritance
15. To prepare pay slip of an employee using hierarchical inheritance
16. To create bank account using multilevel inheritance
17. To prepare EB bill for a customer using hybrid inheritance
18. To format the output using system defined manipulators
19. To sort array of generic data.
20. To perform transform the matrix.
21. To find the biggest number using nesting member function.
22. To find the mean value using friend function.

Course Code 23UGDC21P	PO1	PO2		PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2.a	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	3	3	3	1	2	-	-	1	
CO2	2	3	2	3	2	2	1	-	-	
CO3	3	3	2	3	1	1	-	1	-	
CO4	2	3	2	3	1	1	2	2	1	
CO5	2	2	2	1	1	1	2	3	2	

J.Porkodi
Head of the Department

V.G. Jyothi Mani
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

B.C.A - GRAPHIC DESIGN

(for those who join in 2023-2024)

Semester II	**Resource Management Techniques**	Hours/Week:4	
Elective Course		Credits: 4	
Course Code **23UGDA21**		Internal 25	External 75

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: define the basic concepts of operations research, linear programming problem, assignment problem and transportation problem.[K1]

CO2: discuss models, phases, characteristics of operations research, and mathematical formulation in linear programming problem, dual, assignment problem and transportation problem.[K2]

CO3: explain various methods of linear programming problem, assignment problem and transportation problem. [K2]

CO4: solve the problems in linear programming problem, assignment problem and transportation problem. [K3]

CO5: apply the algorithms for problems in linear programming problem, assignment problem and transportation problem. [K3]

UNIT I

Development of OR –Definition of OR – Modeling in OR – General methods for solving OR models – Main Characteristics and phases of OR study – Tools Techniques and methods– Scientific methods in OR – Scope of OR . (12 Hours)

UNIT II

Linear programming problems-Mathematical formulation of L.P.P- Slack and surplus variables–Graphical solution of L.P.P, Standard form of L.P.P., Matrix form of L.P.P–Simplex Method(Without Computational Procedure) (12 Hours)

UNIT III

Artificial variables techniques, Two phase method, Duality in linear programming (Conversion only) Dual Simplex method (Theorems without proof) (12 Hours)

UNIT IV

Mathematical formulation of assignment problem – Methods for solving the assignment problem (12Hours)

UNIT V

Mathematical formulation of transportation problem – Optimal solution of T.P –Methods for obtaining initial feasible solution–degeneracy in T.P– Unbalanced T.P (12 Hours)

TEXT BOOK

Sharma, S.D.(1997).*Operations Research*, KedarNathRamnath& co. (12Hours)

UnitI: Chapter1:Sections1.1 to1.11
UnitII:Chapter1:Sections1.1to1.6,Chapter3:3.1to3.4
UnitIII:Chapter3:Sections3.5to3.8,Chapter5:Sections5.1to5.8
Chapter6:Sections6.1to6.3
UnitIV:Chapter9:Sections9.1to9.7
UnitV:Chapter10:Sections10.1to10.12

REFERENCE BOOKS

1. P.K. Gupta, Man Mohan, Kantiswarup, *Operations Research*, Sultan Chand Publications.
2. ShankaraIyer,P.(2008).*Operations Research*, TataMcGrawHill.
3. Sharma, S.C.(2006). Introductory *Operation Research*, Discovery Publishing House.

Course Code **23UGDA21**	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	3	1	1	1	2
CO2	3	1	3	3	3	1	2
CO3	3	3	3	3	2	1	1
CO4	3	1	3	3	2	3	1
CO5	3	3	3	3	3	3	1

Mrs. K.Anitha
Head of the Department

Mrs. K. Muthu Lakshmi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Re-accredited with 'A' Grade (3rd Cycle) by NAAC
VIRUDHUNAGAR - 626 001

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester II	**2D Animation Practical**	Hours/Week: 2	
SEC - 2		Credits: 2	
Course Code **23UGDS21P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1: demonstrate the various effects of text in flash. [K2]

CO2: apply effect to various objects and give effects. [K2]

CO3: make use of basic tools of action scripts, develop applications in Flash. [K3]

CO4: write programs for designing CD, Filmstrip. [K3]

CO5: select the required tools to create animated graphics with sound effects. [K3]

Create the following programs

A) Text Effects

1. Typewriting
2. Marquee
3. Zooming
4. Rotating text
5. Jumbling text
6. Handwriting
7. Reflective text
8. Knock out effect

B) Animation

9. Bouncing a ball
10. Shape tweening
11. Rotating & scaling of object
12. Sizing the object

13. Rangoli
14. Pencil drawing
15. Blinking star
16. Moving a vehicle

C) Action Scripts

17. Arithmetic operation
18. Odd/Even number check.
19. Random colors
20. Rotating an image inside custom shape.

Course Code **23UGDS21P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	2	3	1	-	-	-	-	-	-	-
CO2	3	2	2	2	2	-	-	-	1	1
CO3	-	3	-	2	3	-	1	2	-	1
CO4	3	3	1	2	-	1	1	2	-	-
CO5	2	2	1	-	-	-	-	3	-	-

Mrs. J. Porkodi
Head of the Department

Mrs. B.Sakthi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester III	**Data Structures and Algorithms**	Hours/Week: 5	
Core Course– 5		Credits: 5	
Course Code **23UGDC31**		Internal 25	External 75

COURSE OUTCOMES

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

CO1 : gain the knowledge on concepts of pointers, arrays and graphs.[K1]

CO2 : understand the concepts of stack , queue, linked list and trees. [K2]

CO3 : ability to develop applications of stack , queue and trees. [K2]

CO4 : describe sorting and searching techniques. [K3]

CO5 : analyze various linear & non- linear data structures and its operations. [K3]

UNIT I

Introduction and overview: Introduction – Basic Terminology; Elementary Data Organization- Data Structures – Data Structure Operations – Algorithms: Complexity, Time-Space Trade-off. **Preliminaries:** Introduction – Mathematical Notation and Functions-Algorithmic Notation – Control Structures – Complexity of Algorithms – Other Asymptotic notations for Complexity of Algorithms Ω, Θ, o– Sub algorithms-Variables and Data types

(15 Hours)

UNIT II

Arrays, records and pointers: Introduction – Linear Arrays- Representation of Linear Arrays in Memory – Traversing Linear Arrays-Inserting andDeleting– Multidimensional Arrays, Pointers; Pointer Arrays, Records; Record Structures. **Linked List:** Introduction – Linked List

–Representation of Linked Lists in memory – Traversing a Linked List - Searching a Linked List – Memory allocation; Garbage Collection – Insertion into Linked List – Deletion from Linked List –Header Linked List – Two ways Lists. (15 Hours)

UNIT III

Stacks, Queues, Recursion: Introduction – Stacks – Array Representation of Stacks – Linked Representation of Stacks – Arithmetic Expressions; Polish Notation – Quick Sort, an Application of Stacks- Recursion – Towers of Hanoi – Implementation of Recursive Procedure by stacks – Queues – Linked Representation of Queues – Deques. (15 Hours)

UNIT IV

Trees: Introduction – Binary Trees – Representing Binary trees in Memory – Traversing Binary Trees- Traversal Algorithms using stacks. **Graphs and their applications:** Introduction – Graph theory terminology – Sequential Representation of Graphs; Adjacency Matrix; Path Matrix – Warshall's Algorithm; Shortest paths – Linked representation of a Graph – Operations on Graphs – Traversing a Graph. (15 Hours)

UNIT V

Sorting and searching: Introduction – Sorting – Insertion Sort – Selection Sort – Merging – Merge Sort. (15 Hours)

TEXT BOOKS

Seymour Lipschutz, *(*2009).*Data Structures*, Fifteenth reprint, Tata McGraw-Hill Publications.

UNIT	CHAPTERS	SECTIONS
I	1,2	1.1 - 1.5, 2.1 - 2.8
II	4, 5	4.1 - 4.5, 4.9- 4.11 , 5.1 – 5.10
III	6	6.1 – 6.12
IV	7, 8	7.1 – 7.5, 8.1 – 8.7
V	9	9.1 – 9.6

REFERENCE BOOKS

1. G.A.VijayalakshmiPai,(2008). Data Structures and Algorithm Concepts, Techniques and Applications, McGraw Hill.
2. Sartajsahni, (2000).Data Structures and Applications in c++, McGraw Hill.
3. Chitra, Rajan,(2005).Data Structures, 1stEdition,VijayNicolePublishers.

Course Code **23UGDC31**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	-	3	-	1	-	-	-	-	-
CO2	3	-	3	-	2	-	-	-	-	-
CO3	3	3	2	3	2	1	1	2	-	1
CO4	2	2	2	-	2	2	1	1	-	-
CO5	2	3	1	1	-	-	-	2	-	1

Strong (3) Medium (2) Low (1)

J.Porkodi
Head of the Department

J.Porkodi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester III	**Data Structures and Algorithms using C++ Practical**	Hours/Week: 5	
Core Course – 6 **Practical - 3**		Credits: 3	
Course Code **23UGDC31P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1 : illustrate the arrays for solving real life problems. [K2]

CO2 : demonstrate programs using stack, queue, linked list for data manipulation using array and linked list concept. [K2]

CO3 : show the skill of working with sorting and searching techniques. [K3]

CO4 : apply the usage of stack and queue by developing a program with neat output. [K3]

CO5 : identify constructive techniques for building binary tree and binary search tree with modification. [K3]

LIST OF PROGRAMS

1. Write a program to implement the List ADT using arrays and linked lists.
2. Write a program to implement the following using a singly linked list.
   a. Stack ADT
   b. Queue ADT
3. Write a program that reads an infix expression, converts the expression to postfix form and then evaluates the postfix expression (use stack ADT)
4. Write a program to implement priority queue ADT.
5. Write a program to perform the following operations:
   a. Insert an element into a binary search tree.
   b. Delete an element from a binary search tree.

c. Search for a key element in a binary search tree.

6. Write a program for the implementation of BFS and DFS for a given graph.
7. Write a program for implementing the following searching methods:
    a. Linear search
    b. Binary search.
8. Write a program for implementing the following sorting methods:
    a. Bubble sort
    b. Selection sort
    c. Insertion sort

Course Code **23UGDC31P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	2	2	2	2	-	-	1	2	-
CO2	2	2	3	3	3	1	1	2	2	-
CO3	3	2	3	2	2	2	2	2	2	-
CO4	3	3	2	3	3	2	2	2	2	2
CO5	3	3	3	3	2	2	1	2	1	2

Strong (3) Medium (2) Low (1)

J.Porkodi
Head of the Department

J.Porkodi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN

(for those who join in 2023-2024)

Semester III	**NUMERICAL METHODS**	Hours/Week: 4	
Elective Course		Credits: 4	
Course Code **23UGDA31**		Internal 25	External 75

COURSE OUTCOMES

On completion of the course the students will be able to

CO1: recall the fundamental concepts of algebraic, transcendental and simultaneous equations. [K1]

CO2: derive the solutions of equations by various iterative methods. [K2]

CO3: find the missing data by using interpolation and inverse interpolation methods. [K2]

CO4: perform numerical differentiation and integration to find the derivatives and integral value numerically. [K3]

CO5: apply Taylor series method, Picard's method, Euler's and Runge-kutta methods to obtain the solution of the initial value problems. [K3]

UNIT I

Algebraic and Transcendental Equations:

Introduction - Errors in numerical computation - Iteration method - Bisection method - Regula - Falsi method - Newton-Raphson method - Horner's method. (12 hours)

UNIT II

Simultaneous Equations:

Introduction - Simultaneous equations - Back substitution - Gauss Elimination method - Gauss-Jordan Elimination method - Calculation of Inverse of a matrix - Crout's method - Iterative methods - Gauss-Jacobi Iteration method - Gauss Seidal Iteration method - Newton Raphson's method for simultaneous equations. (12 hours)

UNIT III

Interpolation

Introduction - Newton's interpolation Formula - Central difference Interpolation Formulae- Gauss Forward Interpolation Formula, Gauss Backward Interpolation Formula, Lagrange's Interpolation Formula - Divided Differences - Newton's Divided Difference Formula- Inverse Interpolation. (12 hours)

UNIT IV

Numerical Differentiation and Integration:

Introduction - Derivatives using Newton's forward difference Formula - Derivatives using Newton's backward difference Formula - Numerical Integration - Newton-cotes quadrature - Trapezoidal Rule-Simpson's one third rule - Simpson's 3/8th rule. (12 hours)

UNIT V

Numerical Solution of Ordinary Differential Equations:

Introduction - Taylor series method - Picard's method - Euler's method - Runge-kutta method of second, third, fourth order - Predictor & corrector methods - Milne's method.

(12 hours)

TEXT BOOK:

Arumugam. S, A.Thangapandi lssac.A, Somasundaram.A, *Numerical Methods*, Second Edition, SCITECH publications. Reprint, December 2013.

REFERENCE BOOK:

Mathews J.H. Numerical Method for Maths, Science and Engineering: PHI, New Delhi, 2001.

WEB RESOURCES

https://27x37.files.wordpress.com/2011/05/mcgraw-hill-numerical-methods-using-matlab.pdf

Course Code 23UGDA31	PO1	PO2	PO3	PO4	PO5	PO 6	PO7
CO1	3	2	1	3	1	1	-
CO2	3	2	1	3	2	1	-
CO3	3	1	1	3	2	1	-
CO4	3	2	1	3	2	1	-
CO5	2	2	1	3	2	1	-

Strong(3) Medium(2) Low(1)

Dr.M.C. Maheswari
Head of the Department

Dr.M.Uma Maheswari
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN

(for those who join in 2023-2024)

Semester III	**Numerical Aptitude**	Hours/Week: 1
SEC - 3		Credits: 1
Course Code **23UGDS31**		Internal 100

COURSE OUTCOMES

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

CO1 observe the real life situations and relate it with aptitude problems. [K1]

CO2 Under the concept of numbers, ages, ratio, time and work, simple interest. [K1]

CO3 express the practical problem using the fundamentals of mathematics. [K2]

CO4 gain the knowledge\ in aptitude and enhance their knowledge for successful career. [K2]

CO5 estimate the numerical aptitude problems and get optimum solution for the betterment of humanity. [K3]

UNIT I:

Problems on Numbers (3 Hours)

UNIT II:

Problems on Ages (3 Hours)

UNIT III:

Problems on Profit & Loss (3 Hours)

UNIT IV:

Problems on Time and Work (3 Hours)

UNIT V:

Problems on Time and Work (3 Hours)

TEXT BOOKS:

Agarwal, R.S. (2008). Quantitative Aptitude, S.Chand Publishers.

Unit	Chapter	Section
I	7	7 Solved Examples, 7.A(Upto 20 Problems)
II	8,8A	8 Solved Examples, 8A (Upto 20 Problems)
III	11,11A	11 Solved Examples,11A(Upto 20 Problems)
IV	12	Solved Examples
V	12 A	12A (1-20 Problems only)

REFERENCE BOOKS:

Tyagi, R.K. Quantitative Aptitude for competitive Examinations, 2018-19 Edition. Er. Deepak Agarwal, Quantitative Aptitude, Disha Publisher.

Course Code **23UGDS31**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	3	1	3	3	3	3	1	2	-
CO2	3	3	1	3	3	2	2	1	2	-
CO3	3	3	-	3	3	2	2	1	2	-
CO4	3	3	-	3	3	1	1	1	2	-
CO5	3	3	-	3	3	2	2	1	2	-

Strong (3) Medium (2) Low (1)

Mrs.J.Porkodi
Head of the Department

Mrs.J.Porkodi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester III	**Computer Graphics Practical**	Hours/Week: 2	
SEC – 4 Practical		Credits: 2	
Course Code **23UGDS31P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1 : outline the basic concepts needed for the given problem. [K2]

CO2 : write programs using selection/looping statements and inbuilt functions. [K2]

CO3 : key-in the data and analyze the data with required input and get expectedoutputs with neat formatting and prepare the record work. [K3]

CO4 : explain the programs implemented using C graphics and deduce the answers for any queries raised. [K3]

CO5 : apply the necessary modifications and justify the desired result. [K3]

List of Programs

1. To draw basic graphics construction like line, circle, arc, ellipse and rectangle.
2. To draw a simple house.
3. To draw a fan.
4. To draw animation using increasing circles filled with different colors and patterns.
5. To make a car move horizontally from left to right.
6. To implement a bouncing ball.
7. To print your name in Hindi script on console output in C.
8. To implement a digital clock.
9. To implement Translation, Rotation, and Scaling transformations.

10. To draw a line using the DDA algorithm.
11. To draw a line using Bresenham algorithm,
12. To draw a circle using the Midpoint algorithm

Course Code **23UGDS31P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	2	3	1	-	-	-	-	1	-	-
CO2	3	2	2	2	2	-	-	1	1	1
CO3	-	3	-	2	-	-	1	1	-	-
CO4	2	1	1	2	1	1	2	1	-	-
CO5	3	2	1	-	-	-	-	3	-	-

Strong (3) Medium (2) Low (1)

Mrs.J.Porkodi
Head of the Department

Mrs.R. Nagajyothi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester IV	**Programming in Java**	Hours/Week: 5	
Core Course - 7		Credits: 5	
Course Code **23UGDC41**		Internal 25	External 75

COURSE OUTCOMES

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

CO1 gain knowledge on the concept of object oriented programming and fundamentals. [K1]

CO2 understand the behaviour of a program involving the basic programming constructs. Identify the introductory concepts of classes, methods, inheritances, interfaces, packages, multithreading, exceptions, applet & graphics programming. [K2]

CO3 ability to analyze various controls in AWT, Event Handling and swing with effectively. [K2]

CO4 illustrate the use of Java in a variety of applications. [K3]

CO5 apply OOP concepts in problem solving. [K3]

UNIT I

Java Evolution: Java History – Java Features - How Java differs from C and C++ - Java and Internet – Java and World Wide Web – Web Browsers – Hardware and Software Requirements – Java Supports Systems – Java Environment. Overview of Java Language: Introduction – Simple Java Program – More of Java – An Application with two classes – Java Program Structure – Java Tokens – Java Statements –Installing and Configuring Java- Implementing a Java Program –Java Virtual Machine- Command Line Arguments. Constants, Variables and Data Types: Introduction – Constants – Variables – Data Types – Declaration of Variables - Giving Values to Variables – Scope of Variables – Symbolic Constants – Type Casting – Getting Values of Variables – Standard Default values.

Operators and Expressions: Introduction – Arithmetic Operators - Relational Operators – Logical Operators – Assignment Operators - Increment and Decrement Operators – Conditional Operators – Bitwise Operators – Special Operators – Arithmetic Expressions – Evaluation of Expressions– Type Conversions in Expressions – Operators precedence and Associatively – Mathematical Functions. (15 Hours)

UNIT II

Decision Making and Branching: Introduction – Decision making with If Statement – Simple If – The If... Else Statement – Nesting of If … Else Statements – The Else If Ladder – The Switch Statement – The? : Operator. Decision Making And Looping: Introduction – While Statement – Do Statement – For statement – Jumps in Loops – Return statement – Labeled Loops. Classes, Objects And Methods: Introduction – Defining a Class – Fields Declaration– Methods Declaration – Creating Objects – Accessing Class Members – Constructors – Method Overloading – Static Members – Nesting of methods – Inheritance: Extending A Class – Overriding Methods – Final Variables and Methods – Final Classes – Finalizer Methods– Abstract methods and classes – Methods with Varargs – Visibility Control. (15 Hours)

UNIT III

Arrays, Strings and Vectors: Introduction – One Dimensional arrays – Creating an array – Two-Dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated types – Annotations. Interfaces: Multiple Inheritance: Introduction – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables. Packages: Putting classes Together: Introduction – Java API Packages – Using System Packages – Naming Conventions – Creating Packages – Accessing a Package – Using a Package – Adding a Class to a Package – Hiding Classes – Static Import. (15 Hours)

UNIT IV

Multithreaded Programming: Introduction – Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization – Implementing the Runnable Interface – Inter-Thread Communication. Managing Errors and Exceptions: Introduction- Types of errors- Exceptions- Syntax of Exception Handling Code – Multiple Catch Statement – Using Finally Statement – Throwing Our Own Exceptions – Improved Exception Handling in Java SE 7 - Using Exceptions for Debugging. (15Hours)

UNIT V

Applet Programming: Introduction – How Applets differ from Applications – Preparing to write Applets – Building Applet code – Applet Life Cycle – Creating an executable Applet – designing a web page – Applet Tag – Adding Applet to a HTML file – Running the Applet – More about Applet tag – passing parameters to Applets – Aligning the display –More about HTML Tags – Displaying Numerical Values – Getting Input from the User – Event Handling. Graphics Programming using AWT: Introduction – The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Charts. (15 Hours)

TEXT BOOK:

Balagurusamy, E. (2019). Programming with Java, McGraw Hill Education (India) Private Limited, Chennai, 6thEdition.

Unit	**Chapters**
I	2, 3.1-3.11, 4, 5
II	6,7,8
III	9,10,11
IV	12,13
V	14, 15.1-15.9

REFERENCE BOOK:

1. Chitra, A. (2002). Internet and Java Programming, New Delhi: Indian Society for Technical Education – Learning Materials Centre.
2. Patrick Naughton, (2002). Herbert Schildt, Java2 – The Complete Reference, 5th Edition. New Delhi: Tata McGraw Hill.

Course Code **23UGDC41**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	3	1	2	2	2	-	-	-	-
CO2	3	3	3	2	2	1	-	-	-	-
CO3	2	2	2	3	2	1	1	3	-	-
CO4	2	3	1	2	3	2	1	2	-	-
CO5	2	-	1	1	1	2	-	2	-	-

Strong (3) Medium (2) Low (1)

Mrs.J.Porkodi

Head of the Department

V.G.Jyothimani

Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester IV	**Programming in Java Practical**	Hours/Week: 5	
Core Course - 8 Practical – 4		Credits: 3	
Course Code **23UGDC41P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1 : understand the perspectives of Java to solve problems. [K2]

CO2 : learn the basics knowledge to develop programs implementing classes, methods, inheritances, interfaces, packages, multithreading, exception, applet & graphics programming and swing. [K2]

CO3 : ability to build and modify the codes to produce required output. [K3]

CO4 : present output effectively and prepare the record. [K3]

CO5 : design the necessity test for programs with modifications and justify the results. [K3]

LIST OF PROGRAMS

1. To demonstrate methods Declaration and creating objects from classes.
2. To demonstrate returning objects from classes.
3. To perform palindrome checking using objects.
4. To check if a number is prime or not, using objects.
5. To find the largest values of two numbers using nesting of member function.
6. To find the sum of the digit of a given number using constructor overloading.
7. To perform Area calculation using parametric/ default constructor.
8. To prepare a student's mark sheet using single inheritance.
9. To create bank account using multilevel inheritance.
10. To perform matrix Multiplication using array.
11. To sort the student names using string arrays.

12. To perform manipulation of strings (Minimum three function).
13. To prepare pay slip of an employee using interface.
14. To create telephone directory using package.
15. To prepare EB bill for a customer using package.
16. To implement Multi Thread concept to prepare Multiplication table.
17. To perform Built-in-Exception (Minimum three Exception).
18. To create bank transaction using User-Defined-Exception.
19. To prepare Applet for drawing a human face.
20. To draw polygons

Course Code **23UGDC41P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	3	2	-	-	-	-	-	-	-
CO2	3	3	1	3	2	-	-	-	1	-
CO3	2	2	1	3	2	1	1	3	-	-
CO4	1	1	1	2	2	1	1	2	-	-
CO5	3	2	1	-	-	-	-	2	-	1

Strong (3) Medium (2) Low (1)

Mrs.J.Porkodi
Head of the Department

V.G.Jyothimani
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester IV	**Multimedia Technology**	Hours/Week: 4	
Elective Course - 4		Credits: 4	
Course Code **23UGDA41**		Internal 25	External 75

COURSE OUTCOMES

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

CO1: Explain about multimedia, Communication and information model, uses of Multimedia and Interactive technologies. [K1]

CO2: describe the concept of Lossy & Lossless compression and Implication of Digital text. [K2]

CO3: demonstrate the working model for images and explain the concept of 2D Graphics [K2]

CO4: categorize Implications of Audio-Visual Media and discover MPEG Video Compression. [K3]

CO5: compare and analyze the phases of Digital Media.[K3]

UNIT I

Introduction to Multimedia: What is multimedia-Communication and Information Transfer Model-Human Computer Communication-Components of multimedia. Uses of multimedia::Application purposes-Application examples-Electronic Performance support systems. Interaction Technologies and devices: Human computer Interface-Input Technologies-Output Technologies-Combined output device-Storage technologies-Communication and Network Technologies. (12 Hours)

UNIT II

Compression Technologies for Multimedia: The need for data compression-Compression Basics – Lossless compression-Lossy compression Techniques. Text: Implication of digital Text-Visual Representation of characters-Formatting Aspect Text-Hypertext and Hypermedia-Uses and Applications. (12 Hours)

UNIT III

Digital Images: Uses of Images and Graphics-Image Representation-Image AcquisitionPicture Display – Working with Images. Computer Graphics and Image Editing: Uses of computer graphics-Representations of Computer Graphics-2D Graphics Transformations-Working with Graphics-Basic Image editing steps. (12 Hours)

UNIT IV

Digital Audio: Implications-Producing digital audio-Psychoacoustics-Processing sound - Representation of Audio files. Audio-Visual Media:Video and Animation: Implications of Audio-Visual Media The world of TV-Digital Video-MPEG Standards-MPEG Video compression-Creating digital video-Animation-File formats. (12 Hours)

UNIT V

Designing Multimedia: Development phases and development teams-Analysis phase - Design phase-Development phase-Implementation phase-Evaluation and Testing Phase expert analysis. (12 Hours)

TEXTBOOK:

Ashok Banerji, Ananada Mohan Ghosh , Multimedia Technologies, Tata Mcgraw Hill Education Private Limited,2012.

REFERENCE BOOKS

1. David Hellman, Multimedia Technology and Applications Galgotia Publications Ltd, New Delhi 2014.
2. John F.Koegal Buford ,Multimedia Systems, Dorling Kindersley Pvt Ltd,South Asia,2007.

3. Judith Jeffcoate, Multimedia in Practice Technology and Applications, Dorling Kindersley Pvt Ltd,South Asia,2007.
4. Tay Vaughan , Multimedia :Making it work, Tata McGraw Hill Publishing Company Limited, Seventh edition, 2008.

Course Code **23UGDA41**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	2	1	2	-	-	-	-	-	1
CO2	3	1	-	2	1	-	-	-	-	-
CO3	1	-	1	3	2	1	1	-	-	-
CO4	2	-	1	2	-	1	1	2	-	-
CO5	-	2	1	-	-	-	-	-	1	-

Strong (3) Medium (2) Low (1)

Mrs.J.Porkodi
Head of the Department

V.Queen Jemila
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester IV	**Software Project Management**	Hours/Week: 2	
SEC - 6		Credits: 2	
Course Code **23UGDS41**		Internal 25	External 75

COURSE OUTCOMES

On successful completion of the course, the learners should be able to

CO1 : know the principles and concepts of project management. [K1]

CO2 : learn to train software project managers. [K1]

CO3 : understand the software project management methodologies. [K2]

CO4 : discuss on creating comprehensive project plans. [K2]

CO5 : apply the concept and mitigate risks associated with software development process. [K3]

UNIT I

Introduction to Software Project Management: Introduction – Why is Software Project Management Important? – What is a Project? - Software Projects versus Other Types of Project – Contract Management and Technical Project Management – Activities Covered by Software Project Management – Plan, Methods and Methodologies – Some Ways of Categorizing Software Projects – Stakeholders – Setting Objectives – The Business Case – Project Success and Failure – What is Management? – Management Control – Traditional versus Modern Project Management Practices. (6 Hours)

UNIT II

Project Evaluation and Programme Management: Introduction – A Business Case – Project Portfolio Management – Evaluation of Individual Projects – Cost – Benefit Evaluation

Techniques – Risk Evaluation – Programme Management – Managing the Allocation of Resources within Programmes – Strategic Programme Management – Creating a Programme – Aids to Programme Management – Some reservations about Programme Management – Benefits Management. (6 Hours)

UNIT III

An Overview of Project Planning: Introduction to Step Wise Project Planning – Select Project– Identify Project Scope and Objectives – Identify Project Infrastructure – Analyse Project Characteristics – Identify Project Products and Activities – Estimate Effort for Each Activity – Identify Activity Risks – Allocate Resources – Review/ Publicize Plan - Execute Plan/ Lower Levels of Planning. (6 Hours)

UNIT IV

Selection of an Appropriate Project Approach: Introduction – Build or Buy? – Choosing Methodologies and Technologies – Software Processes and Process Models – Choice of Process Models - Structure versus Speed of Delivery – The Waterfall Model – The Spiral Model – Software Prototyping – Other Ways of Categorizing Prototypes – Incremental Delivery – Atern/ Dynamic Systems Development Method – Rapid Application Development – Agile Methods – Extreme Programming (XP) – Scrum – Managing Iterative Processes – selecting the Most Appropriate Process Model. (6 Hours)

UNIT V

Risk Management: Introduction – Risk – Categories of Risk – A Framework for Dealing with Risk – Risk Identification – Risk Assessment – Risk Planning – Risk Management – Evaluating Risks to the Schedule – Applying the PERT Technique – Monte Carlo Simulation – Critical Chain Concepts. (6 Hours)

TEXT BOOK

Bob Hughes, Mike Cotterell, Rajib Mall, Software Project Management, Tata McGraw Hill 2014, 5th Edition.

REFERENCE BOOKS

1. Robert T. Futrell, Donald F. Shafer, Linda I. Safer, “Quality Software Project Management”, Pearson Education Asia 2002.
2. Pankaj Jalote, “Software Project Management in Practice”, Addison Wesley 2002.

Course Code **23UGDS41**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	2	2	2	-	-	3	3	3	1	-
CO2	2	2	1	-	-	3	3	3	-	-
CO3	3	-	2	1	1	2	2	3	3	-
CO4	2	2	3	2	2	3	3	2	-	-
CO5	3	3	1	-	-	1	1	3	1	1

Strong (3) Medium (2) Low (1)

Mrs. J. Porkodi
Head of the Department

Mrs. S. Aarthi Prasaana
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN
(for those who join in 2023-2024)

Semester IV	**Multimedia Practical**	Hours/Week: 2	
SEC - 7		Credits: 2	
Course Code **23UGDS41P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1 : identify the basic tools and features in MATLAB. [K2]

CO2 : write programs using MATLAB for drawing pixel, line, circle, text, filling and clipping images. [K2]

CO3 : execute the steps to produce the required output. [K3]

CO4 : present output effectively and produce the record. [K3]

CO5 : analyse the program with various inputs and justify the result. [K3]

LIST OF PROGRAMS

1. Create 2-D and 3-D plots
2. Plot the basic signals (Impulse, Step function and Ramp function)
3. Basic Operations on Matrices
4. Generate Fourier series of a Square Wave
5. Draw a Circle and a Rectangle
6. Drawing a 3D Sphere
7. Change the color image to gray
8. Sharpen image using Gradient Mask
9. Inversing an Image
10. Enlarging an Image
11. Generating fractal curves
12. Arithmetic Encoding

13.JPEG Image Compression

14.Digitizing a Sinusoidal Wave

15.Combine images to make a movie

Course Code **23UGDS42P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	2	1	2	-	2	-	2	-	-
CO2	1	3	2	2	-	-	-	2	-	-
CO3	-	2	-	1	2	1	1	1	-	-
CO4	3	-	1	2	-	1	2	2	-	1
CO5	2	2	1	-	-	-	2	2	2	-

Strong (3) Medium (2) Low (1)

Mrs.J. Porkodi

Head of the Department

S. Aarthi Prasanna

Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN

(for those who join in 2023-2024)

Semester V	**Operating Systems**	Hours/Week: 6	
Core Course - 9		Credits: 6	
Course Code **23UGDC51**		Internal 25	External 75

COURSE OUTCOMES

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

CO1 : describe the concepts of process, deadlocks, memory management, virtual memory, file system and I/O systems, examine computer system structures . [K1]

CO2 : outline the process and memory management policies, explain file system, disk and I/O systems. [K2]

CO3 : identify memory, disk and swap space management and I/O systems, solve the problems to achieve process synchronization. [K2]

CO4 : explain how the file systems are implemented, classify CPU scheduling and Disk scheduling, examine deadlocks. [K3]

CO5 : measure process scheduling, summarize paging and segmentations, assess page replacement algorithms and disk scheduling algorithms. [K3]

UNIT I

Introduction: What is an operating system? – Mainframe systems–Desktop systems Operating System Structures: System components – Operating system services. Processes: Process Concept – Process Scheduling – Operations on processes – Cooperating processes. (18 Hours)

UNIT II

CPU Scheduling: Basic concepts – Scheduling criteria – Scheduling algorithms: First Come First Served Scheduling – Shortest Job First Scheduling – Priority Scheduling – Round Robin Scheduling. Process Synchronization: Background – The Critical-Section problem—Semaphores. (18 Hours)

UNIT III

Deadlocks: System model – Deadlock Characterization – Methods for handling Deadlocks - Deadlock prevention– Deadlock avoidance, Deadlock detection – Recovery from deadlock. Memory Management: Background – Swapping – Contiguous memory Allocation– Paging (Basic method, Protection)–Segmentation. (18 Hours)

UNIT IV

Virtual Memory: Background – Demand paging- Page replacement. File-System Interface: Directory structure: single Level Directory – Two Level Directory – Tree Structured Directories. File-System Implementation: Directory implementation – Allocation methods (Contiguous, Linked and Indexed Allocation methods). (18 Hours)

UNIT V

Computer System Structures: Computer System operation- I/O Structure – Storage Structure. Mass-Storage Structure: Disk structure – Disk scheduling, Disk management, Swap space management. (18 Hours)

TEXT BOOKS

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, (2007). Operating System Concepts, Windows XP Update, 6thEdition. Wiley India (P.)Ltd.

REFERENCE BOOKS

1. William Stallings, Operating System: Internals and Design Principles, Seventh Edition, Prentice-Hall of India, 2012.

Unit	Chapters	Sections
I	1, 3, 4	1.1 - 1.3, 3.1 - 3.2, 4.1 - 4.4
II	6, 7	6.1, 6.2, 6.3.1 - 6.3.4 , 7.1, 7.2, 7.4
III	8,9	8.1 - 8.7, 9.1 - 9.3,9.4.1,9.4.3,9.5
IV	10, 11, 12	10.1,10.2,10.4, 11.3.1-11.3.3, 12.3, 12.4.1-12.4.3
V	2, 14	2.1-2.3, 14.1-14.4

Course Code **23UGDC51**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	3	2	-	-	-	-	-	-	-
CO2	-	2	2	2	2	-	-	-	-	-
CO3	2	2	2	3	3	1	1	2	-	-
CO4	2	-	1	2	3	1	1	2	-	-
CO5	-	2	1	-	-	-	-	3	-	-

Strong (3) Medium (2) Low (1)

Mrs. J. Porkodi
Head of the Department

Mrs. V.G. Jyothi Mani
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN

(for those who join in 2023-2024)

Semester V	**ASP.Net Programming**	Hours/Week: 6	
Core Course - 10		Credits: 6	
Course Code **23UGDC52**		Internal 25	External 75

COURSE OUTCOMES

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

CO1 : outline .NET Framework fundamentals, ASP.NET Web forms, Validation and Rich controls, Files and ADO.NET. [K1]

CO2 : paraphrase about the basic concepts of .NET Framework, ASP.NET and Web form controls. [K2]

CO3 : relate about ASP. Net Validation and Rich controls, files, ADO. NET and database connectivity. [K2]

CO4 : apply the concepts of .NET Languages, ASP.NET and Web form controls. [K3]

CO5 : make use of ASP. Net Validation and Rich controls, files and ADO. NET to develop web applications. [K3]

UNIT I

Overview of .NET framework: The .NET Framework – The .NET Programming Framework – VB. NET, C# and the .NET Languages – The Common Language Runtime – The .NET Class Library – ASP.NET – Visual Studio .NET. Learning the .NET Languages: The .NET Languages – Data Types – Declaring Variables – Scope and Accessibility – Variable Operations – Object-Based Manipulation – Conditional Structures – Loop Structures – Functions and Subroutines. (18 Hours)

UNIT II

Web Form Fundamentals: A Simple Page Applet – Improving the Currency Converter – A Deeper Look at HTML Control Classes – The Page Class – Assessing HTML Server Controls. Web Controls: Stepping Up to Web Controls – Web Control Classes. (18 Hours**)**

UNIT III

Validation and Rich Controls: Validation and Rich Controls – Validation – A Simple Validation Example – Understanding Regular Expressions – A Validated Customer Form – Other Rich Controls. Files, Streams and Email: Files and Web Applications – File System Information – Reading and Writing with Streams – Allowing File Uploads – Sending Mail. (18 Hours)

UNIT IV

ADO.NET Data Access: About the ADO.NET Examples – SQL Basics – The SQL Select Statement – The SQL Update Statement – The SQL Insert Statement – The SQL Delete Statement – Accessing Data the Easy Way – Creating a Connection – Defining a Select Command – Using a Command with a DataReader – Updating Data – Accessing Disconnected Data – Selecting Multiple Tables – Modifying Disconnected Data – Updating Disconnected Data. (18 Hours)

UNIT V

The DataList, DataGrid and Repeater: Introducing Templates – Using Templates with the DataList – Data Binding with Multiple Templates – Comparing the Template Controls – Preparing List for Selection and Editing – Editing Items – Paging with the DataGrid – Sorting with the DataGrid. (18 Hours)

TEXT BOOKS

1.Mathew, Mac Donald, The Complete Reference ASP.NET, Tata McGraw-Hill,2015.

2.SvetlinNakov, VeselinKolev& Co, Fundamentals of Computer Programming with C#, Faber publication, 2019.

REFERENCE BOOKS

1.Herbert Schildt, The Complete Reference C#.NET, TataMcGraw-Hill,2017.

2.Kogent Learning Solutions, C# 2012 Programming Covers .NET 4.5 Black Book, Dreamtechpres,2013.

3.Anne Boehm, Joel Murach, Murach's C# 2015, Mike Murach& Associates Inc.2016.

4.DenielleOtey, Michael Otey, ADO.NET: The Complete reference, McGrawHill,2008.

5.Matthew MacDonald, Beginning ASP.NET 4 in C# 2010,APRESS, 2010.

WEB RESOURCES

1. https://www.geeksforgeeks.org/introduction-to-net-framework/
2. https://www.javatpoint.com/net-framework

Course Code **23UGDC52**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	3	3	1	2	2	2	-	1	-	-
CO2	3	3	2	2	2	2	2	2	-	-
CO3	3	3	3	3	2	2	3	3	1	1
CO4	3	3	2	2	3	3	2	1	1	1
CO5	3	3	1	3	3	3	3	1	1	1

Strong (3) Medium (2) Low (1)

Mrs. J. Porkodi
Head of the Department

Mrs. R. Nancy Beaulah
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN

(Belonging to Virudhunagar Hindu Nadars)

An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai

Reaccredited with 'A++' Grade (4th Cycle) by NAAC

VIRUDHUNAGAR

Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN

(for those who join in 2023-2024)

Semester V	**ASP.Net Programming Practical**	Hours/Week: 5	
Core Course – 11 Practical - 5		Credits: 3	
Course Code **23UGDC51P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1 : outline the basic concepts of needed for the given problem. [K2]

CO2 : write programs using ASP. Net Web forms, rich controls and ADO .Net [K2]

CO3 : key-in the programs and test the programs with required input and get expected outputs with neat formatting and prepare the record work. [K3]

CO4 : explain the programs implemented and deduce the answers for any queries raised. [K3]

CO5 : apply the necessary modifications and justify the desired result. [K3]

List of Programs

1. Create an exposure of Web applications and tools
2. Implement the Html Controls
3. Implement the Server Controls
4. Web application using Web controls
5. Web application using List controls
6. Web Page design using Rich control. Validate user input using Validation controls. Working with File concepts
7. Web application using Data Controls
8. Data binding with Web controls
9. Data binding with Data Controls

10. Database application to perform insert, update and delete operations
11. Database application using Data Controls to perform insert, delete, edit, paging and sorting operation
12. Implement the Xml classes
13. Implement Authentication – Authorization
14. Ticket reservation using ASP.NET controls
15. Online examination using ASP.NET controls

Course Code **23UGDC51P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	3	1	2	2	2	-	1	-	-
CO2	3	3	2	2	2	2	2	2	1	1
CO3	3	3	3	3	3	2	3	3	1	1
CO4	3	3	2	3	3	3	2	1	1	1
CO5	3	3	1	3	3	3	3	1	1	1

Strong (3) Medium (2) Low (1)

Mrs. J. Porkodi
Head of the Department

Mrs. R. Nancy Beaulah
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN

(for those who join in 2023-2024)

Semester V	**PROJECT**	Hours/Week: 1
Core Course 12 Project		Credits: 1
Course Code **23UGDC53PR**		Internal 100

COURSE OUTCOMES

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

CO1 : explore on planning, analysis and design of a project. [K2]

CO2 : identify methodologies and professional way of documentation and communication. [K2]

CO3 : determine the key stages in development of the project. [K3]

CO4 : execute the project using test data. [K3]

CO5 : analyse the developed project with the needs of the Industry. [K3]

Students are expected to select a project in the field of Graphic Design of Computer Applications. Projects can be done individually or in a group of two students. Minimum pages for project report should be 20 pages. Two typed copies of the report on the completed project will be submitted to the Controller of Examination through the Head of the department in the month of November during V semester. Evaluation will be done internally.

Project work & Report - 60 marks

Presentation & Viva-voce - 40 marks

Course Code **23UGDC53PR**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	3	2	2	2	2	-	-	1	2
CO2	3	2	3	2	-	2	-	2	2	2
CO3	2	-	-	2	-	-	-	2	2	2
CO4	3	2	1	2	2	-	-	-	-	2
CO5	2	3	1	-	-	-	3	1	2	2

Strong (3) Medium (2) Low (1)

Mrs. J. Porkodi
Head of the Department

Mrs. J. Porkodi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN

(for those who join in 2023-2024)

Semester V	**Introduction to 3D Modelling**	Hours/Week: 5	
Elective Course DSEC - 1		Credits: 4	
Course Code **23UGDE51**		Internal 25	External 75

COURSE OUTCOMES

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

CO1 : recall the concepts of Digital imaging, modelling, Texturing, animation, rendering, basics & editing in Blender Interface, animation basics, armatures and game engine basics. [K1]

CO2 : elaborate about basic graphics, Texturing, animations, visual effects and editing in Blender. [K2]

CO3 : paraphrase about Rendering and present a 3D model with Blender basics, real-time animation & Armatures. [K2]

CO4 : apply the Graphics concepts, animation and Rendering. [K3]

CO5 : design a model with digital imaging, object rendering, 3D modelling, lighting & cameras, shape editing and object physics. [K3]

UNIT I

Understanding Digital Imaging and Video: - Understanding Digital Imaging - Pixels - Raster Graphics vs. Vector Graphics - Anti-Aliasing - Basic Graphic-File Formats - Channels - Color Depth or Bit Depth - Color Calibration - Understanding Digital Video - Resolution, Device Aspect Ratio, and Pixel Aspect Ratio - Interlaced and Progressive Scanning - Compression - Frame Rate and Timecode - Digital Image Capture. **Understanding Modeling and Texturing:** Modeling - Polygons - NURBS - Subdivision Surfaces - Modeling Workflows - Texturing - UVs - Shaders - Texture Maps - Texturing Workflows. **(15 Hours)**

UNIT II

Rigging and Animation: Rigging - Parenting - Pivot Positions - Skeleton System - Forward and Inverse Kinematics - Deformers - Constraints - Scripting - Expressions -The Basic Rigging Workflow - Animation - Keyframe - Graph Editor - Timeline- Dope Sheet - Workspace - Tracking Marks and Ghosting - FK and IK- Video Reference - The Basic Animation Workflow - Animation Techniques. **Understanding Visual Effects, Lighting, and Rendering:** Creating Visual Effects - Particles- Hair and Fur - Fluids - Rigid Bodies -Soft Bodies - The Basic VFX Workflow - Lighting - Light Types - Light Attributes - Lighting Techniques - The Basic Lighting Workflow - Rendering - Basic Rendering Methods - Global Illumination - Advanced Shader Functions - The Basic Rendering Workflow. **(15 Hours)**

UNIT III

The Blender Interface: The Blender Screen - Window Types - The User Preferences Window - Open, Saving and Appending Files - Packing Data - Importing Objects (from other file formats) - **Working with Viewports (windows)** - Moving Around in 3D Space - Window and Button Control - Creating Viewports - **Creating and Editing Objects** - Working with Basic Meshes - Using Main Modifiers to Manipulate Meshes - Edit Mode- Mesh Editing - The Tool Shelf - Proportional Editing - Joining/Separating Meshes, Boolean Operations - **Materials and Textures** - Basic Material Settings - Halo Settings - Basic Texture Settings - Using Images and Movies as Textures - Displacement Mapping - **Setting Up a World** - Using Color, Stars and Mist - Creating a 3D Cloud Background - Using an Image in the Background - **Lighting and Cameras** - Camera Settings and Options - Lighting Types and Settings - Indirect Lighting - **Render Settings** - Basic Setup Options - Rendering a JPEG Image - Creating an MPEG Movie File. **(15 Hours)**

UNIT IV

Ray-Tracing (mirror, transparency, shadows) - Lighting and Shadows - Reflection (mirror) and Refraction (transparency) - **Animation Basics** - Basic Key-framing and Auto Key-framing - Working with the Graph Editor and Dope Sheet - Animating Materials, Lamps and World Settings (and more) - **Adding 3D Text** - Blender 3D Text Settings - Converting to a Mesh - **NURBS and Meta Shape Basics** - Using NURBS to create lofted shapes - Liquid and droplet effects using Meta Shapes - **Modifiers** - Generate Modifiers - Deform Modifiers - Simulate Modifiers - **Particle Systems and Interactions** - Particle Settings - Using the Explode Modifier - Particle Interaction With Objects and Forces - Using Particles and Vertex

Groups for Hair and Grass - **Child-Parent Relationships** - Using Child-Parented Objects - Adjusting Object Origins (center points). **(15 Hours)**

UNIT V

Working With Constraints - Constraint Basics - Tracking To An Object - Following Paths and Curves - **Armatures (bones and skeletons)** - Using Armatures to Deform Meshes - Creating Bone Vertex Groups - Using Inverse Kinematics (IK) and Constraints - **Mesh Shape Keys (vertex editing)** - Creating Mesh Shape Keys - Animating Shape Keys - **Object Physics** - Using Soft Bodies - Creating Cloth Effects - Creating Fluid Effects - Creating Volume Smoke - **Working With Nodes** - General Node Information - Using Nodes for Depth-Of-Field - Camera Effects - **Creating Springs, Screws, Gears and other Add-On Shapes** - Create Screws and Gears - Using Mesh Editing to Create Revolved Shapes - Blender Add-On Meshes - **Game Engine Basics (real-time animation)** - Setting Up The Physics Engine - Using Game Physics in Animation - Using Logic Blocks. **(15 Hours)**

TEXT BOOK

1. James Chronister, (2011). *Blender Basics Classroom Tutorial Book,* Tata McGraw Hill book Company.
2. Andy Beane, (2012). *3D Animation Essentials*, John Wiley & Sons.

Unit	Chapter	
I	3,5	3D Animation Essentials
II	6,7	3D Animation Essentials
III	1-7	Blender Basics Classroom Tutorial Book
IV	8-14	Blender Basics Classroom Tutorial Book
V	15-21	Blender Basics Classroom Tutorial Book

REFERENCE BOOKS

1. Ami Chopine, (2012). *3D Art Essentials,* CRC Press.
2. Lance Flavell, (2010). *Beginning Blender Open Source 3D Modeling, Animation, and Game Design,* Apress springer Publications.

3. Oliver Villar (2017), *Learning Blender A Hands-On Guide to Creating 3D Animated Character*s, Pearson Education.

Course Code **23UGDE51**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	3	2	1	-	2	1	1	-	-
CO2	2	2	2	2	2	3	1	2	-	-
CO3	3	2	2	2	2	3	2	3	1	-
CO4	3	2	1	1	2	3	2	3	1	-
CO5	3	3	1	1	-	3	2	3	1	1

Strong (3) Medium (2) Low (1)

J.Porkodi
Head of the Department

R. Nancy Beaulah
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN

(for those who join in 2023-2024)

Semester V	**GAME PROGRAMMING**	Hours/Week: 5	
Elective Course DSEC - 1		Credits: 4	
Course Code **23UGDE52**		Internal 25	External 75

COURSE OUTCOMES

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

CO1 : gain knowledge on the basis of Python, its control structure. [K1]

CO2 : learn the processes, mechanics and issues in Game Design. [K2]

CO3 : make creativity and individuality in problem solving and in performing tasks.[K2]

CO4 : illustrate game making fundamentals with Pygame. [K3]

CO5 : develop games in Python using sprites and drawing primitives. [K3]

UNIT I

Writing Your First Program - Uses of Python - Installing and Starting Python -Writing Your First Interactive Game - Introducing String Variables. Working with Data - Exploring Types of Data - Working with Numbers - Organizing Your Data with Lists - Looping Through Lists - Writing a Real Program. **(15 Hours)**

UNIT II

Taking Control - Making Decisions with if - Looping for a while - Putting Functions into Play - Passing Data In and Out of Functions - Building a Main Loop. **(15 Hours)**

UNIT III

Building a Game Foundation - Solid Game-Making Fundamentals - Introducing pygame - Initializing Your Game with the IDEA Framework - Managing Your Main Loop with ALTER - Controlling Your Colors in pygame - Making Things Move - You've Got Game!

(15 Hours)

UNIT IV

Drawing and Events - Introducing Graphics - Building More Complex Programs - Drawing Commands - Saving and Loading Images - Using Text - Responding to Basic Events - Making a Line-Drawing Program Creating the Painting Program. Audio and Basic Sprites - Using Sprites and Audio for Games Incorporating Audio - Building a Sprite - Making Sprite Variations - Managing Collisions - Getting to Games. **(15 Hours)**

UNIT V

Making Animated Sprites - Building More Interesting Sprites - Checking for Boundaries - Animating a Sprite with Multiple Frames - Rotating Sprites - Combining Motion with Animation - Building an Eight - Direction Animation - Making Better Motion. **(15 Hours)**

TEXT BOOK

Andy Harris, Game Programming, The Line, The Express Line to Learning, Wiley India, 2007.

REFERENCE BOOKS

1. Alejandro Rodas de Paz and Joseph Howse , Python Game Programming By Example, Packt Publishing.
2. Christos Manola and Dimitrios Xanthidis, HandBook of Computer Programming with Python, CRC Press.

Course Code **23UGDE52**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	3	2	1	-	2	1	1	-	-
CO2	2	2	2	2	2	3	1	2	-	-
CO3	3	2	2	2	2	3	1	3	1	-
CO4	3	2	1	1	2	3	2	3	2	-
CO5	3	3	1	1	-	3	2	3	1	1

Strong (3) Medium (2) Low (1)

Mrs. J. Porkodi
Head of the Department

Mrs. J. Porkodi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A - GRAPHIC DESIGN

(for those who join in 2023-2024)

Semester V	**3D MODELLING PRACTICAL**	Hours/Week: 5	
Elective Course DSEC – 2 Practical		Credits: 3	
Course Code **23UGDE53P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1 : outline the tools and associated properties in Blender to create 2D, 3D Models and animation. [K2]

CO2 : write steps to design the model or animation frames to create and animate 3D models.[K2]

CO3 : design the required model with the help of identified tools and properties. [K3]

CO4 : explain the designed model and answer to the queries raised. [K3]

CO5 : apply the necessary modifications & redesign the model and justify the desired result. [K3]

List of Programs

1. Convert 2D image into 3D image
2. Create a 3D character
3. Design Football
4. Design Table Lamp Model
5. Design Switch Board Model
6. Design Chair Model
7. Design 3D Car Model

8. Bend objects
9. Make 3D Text
10. Create stylized Text Transition
11. Make Text to object Transition effect
12. Create Wavy or Curvy Text
13. Create Logo Animation
14. Create 2D Animation
15. Paper Roll Animation

Course Code **23UGDE53P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	3	2	1	1	2	1	1	-	-
CO2	2	2	2	2	2	3	1	2	-	1
CO3	3	2	1	2	2	3	2	3	1	1
CO4	3	2	1	1	2	3	2	3	1	1
CO5	3	3	1	-	1	3	2	3	1	1

Strong (3) Medium (2) Low (1)

Mrs. J. Porkodi **Mrs. R. Nancy Beaulah**

Head of the Department **Course Designer**

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. - GRAPHICS DESIGN

(for those who join in 2023-2024)

Semester V	**Game Programming Practical**	Hours/Week: 5	
Elective Course DSEC – 2 Practical		Credits: 3	
Course Code **23UGDE54P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1: enable students to develop games individually and in teams. [K2]

CO2: write the programs to draw different shapes and an image using pygame. [K2]

CO3: key in the programs, test the programs with required input and get expected outputs with neat formatting and prepare the record work. [K3]

CO4: develop creativity and individuality in problem solving and in performing tasks. [K3]

CO5: make the students continue their studies in the areas of virtual reality and computer graphics. [K3]

List of Programs

1. Drawing objects and shapes in pygame.
2. Drawing different shapes and fill with different colors
3. Displaying and moving an image in pygame.
4. Using Screen function draw an object in different x and y coordinate values
5. Creating an input text box in pygame.
6. Bouncing balls in pygame.
7. Adding Custom events in pygame.
8. Create buttons in a game using pygame.

9. Creating sprites in pygame.
10. Displaying snowfall using pygame.
11. Create a Snake game.
12. Adding sound effects to the game in pygame.
13. Create the Famous Snake Game in Pygame
14. Create Sudoku Games
15. Build a Retro Racing Game

Course Code **23UGDE54P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	3	2	-	-	-	-	-	-	-
CO2	3	3	2	2	2	-	-	-	-	1
CO3	2	2	1	3	2	1	1	3	-	-
CO4	2	-	1	2	-	1	1	2	2	-
CO5	-	2	1	-	-	-	-	2	2	-

Mrs. J. Porkodi
Head of the Department

Mrs. J. Porkodi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. Graphics Design

(for those who join in 2023-2024)

Semester V	**INTERNSHIP**	Hours/Week: -
Internship/ Industrial Training		Credit: 1
Course Code **23UGDI51**		Internal: 100 Marks

COURSE OUTCOMES

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

CO1: observe, analyze, and understand organizational processes, systems, and cultures, and identify areas for further improvement. [K2]

CO2: formulate theoretical concepts learned in the classroom to Industry based problems. [K3]

CO3: demonstrate professional skills, including team communication and work, and time management, and adhere to organizational norms and etiquette. [K3]

CO4: develop industry ready graduates and lifelong learning. [K3]

CO5: analyse problem-solving and critical thinking skills by identifying and addressing organizational challenges and problems. [K4]

Guidelines/ Regulations:

- Each student must go for Internship training in a reputed Industry / Company / Organization/ Educational Institution.
- Students should produce the completion certificate after the completion of Internship period.
- A report of 10-15 pages must be submitted by each student after the completion of the Internship period.
- Internal Viva-voce examination will be conducted.
- Students with diverse disabilities must complete a 10 day internship programme at their preferred places.

Course Code 23UGDI51	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	3	2	3	3	2	3
CO2	3	3	3	3	3	2	3
CO3	3	2	3	2	2	2	3
CO4	3	3	3	2	3	2	3
CO5	3	3	3	2	2	2	3

Strong (3) Medium (2) Low (1)

Mrs.J.Porkodi
Head of the Department

Mrs.V.Queen Jemila

Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. Graphics Design

(for those who join in 2023-2024)

Semester V	**DIGITAL CHARACTER ANIMATION**	Hours/Week: -	
Extra Credit Course		Credits: 2	
Course Code **23UGDO51**		Internal 100	External -

COURSE OUTCOMES

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

CO1 : define the basics of character design and animation, modelling and rigging characters.

CO2 : summarize design styles, surface types, forward kinematics and animating dialogue.

CO3 : outline about segmenting characters, modelling morph, language of movement and animating facial expressions.

CO4 : understand motion, animation interfaces and animating dialogue.

CO5 : design a character, model and animation.

UNIT I

Basics of Character Design: Approaching Design as an Artist - Design Styles - Designing a Character – Segmenting Characters - Finalizing Your Design.

UNIT II

Modeling Characters: Surface Types - Working with Patches - Subdivision Surfaces - Creating Characters – Tutorial: Modeling a simple body, realistic human body and hand – Facial modelling.

UNIT III

Rigging Characters: Hierarchies and Character Animation – Forward Kinematics - Facial Rigging - Modeling Morph Targets for Animation - Mesh Deformation - Refining Rigs.

UNIT IV

Basics of Animation: Understanding Motion - Gravity and Other Forces - Animation Interfaces - The Language of Movement - Secondary Action.

UNIT V

Facial and Dialogue Animation: Animating the Face – Creating Facial Expressions - Animating Facial Expressions - Animating the Head and Eyes - Animating Dialogue - Animating the Character - Finishing the Animation.

TEXT BOOK

George Maestri, "Digital Character Animation 3", New Riders Publications, 2006.

REFERENCE BOOK

Randy Bishop, Sweeney Boo, Meybis Ruiz Cruz, Luis Gadea, "Fundamentals of Character, 3dtotal Publishing, 2020.

Mrs. J.Porkodi
Head of the Department

Mrs. R.Nagajyothi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. - GRAPHICS DESIGN

(for those who join in 2023-2024)

Semester VI	**Computer Networks**	Hours/Week: 6	
Core Course- 13		Credits: 5	
Course Code **23UGDC61**		Internal 25	External 75

COURSE OUTCOMES

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

CO1 : know the concept of Data communication and Computer networks. [K1]

CO2 : understand the concept of Wireless communication and Error detection and correction.[K2]

CO3 : compare the characteristics of Routing and Congestion control algorithms. [K2]

CO4 : illustrate the connection management in Transport Layer. [K3]

CO5 : implement routing algorithms in solving real world problems.[K3]

UNIT I

Introduction: Network Hardware - Network software - reference models. Physical Layer: guided transmission media - wireless transmission - communication satellites – The Public Switched Telephone Network: switching – the mobile telephone system. (18 Hours)

UNIT II

The Data Link Layer: Data link layer design issues - error detection and correction - elementary data link protocols - sliding window protocols – The Medium Access Control Sub layer: the channel allocation problem - Multiple access protocols: ALOHA, Carrier Sense Multiple Access protocols. (18 Hours)

UNIT III

The Network Layer: Network layer design issues - routing algorithms: shortest path algorithm - flooding - distance vector routing - link state routing - hierarchical routing - broadcast routing - multicast routing - Congestion Control Algorithms: approaches to congestion control – Traffic aware routing – admission control – traffic throttling – load shedding – The Network layer in the Internet: IP version 4 Protocol - IP Address – IP version 6 - Internet control protocols. (18 Hours)

UNIT IV

The Transport Layer: Transport layer service: services provided to upper layers - transport service primitives - Elements of transport protocols: addressing - connection establishment - connection release - error control and flow control – The Internet Transport Protocols: UDP : Introduction to UDP - Internet Transport Protocols: TCP : Introduction to TCP - the TCP protocol - TCP segment header - TCP connection establishment - connection release - TCP sliding window. (18 Hours)

UNIT V

The Application Layer: DNS: The DNS Name space – Domain resource records – Name servers - Electronic Mail: Architecture and services – The user agent – Message formats – Message Transfer – Final Delivery. (18 Hours)

TEXT BOOK

Andrew S.Tanenbaum& David J.Wetherall, Computer Networks, 5th Edition 2011. Prentice Hall.

REFERENCE BOOKS

1. B. A. Forouzan, “Data Communications and Networking”, Tata McGraw Hill, 4th Edition, 2017.
2. F. Halsall, “Data Communications, Computer Networks and Open Systems”, Pearson Education, 2008
3. D. Bertsekas and R. Gallagher, “Data Networks”, 2nd Edition, PHI, 2008..
4. Lamarca, “Communication Networks”, Tata McGraw- Hill, 2002

WEB RESOURCES

1. https://en.wikipedia.org/wiki/Computer_network
2. https://citationsy.com/styles/computer-networks

Course Code **23UGDC61**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	3	1	2	2	2	-	1	-	-
CO2	3	3	1	1	2	2	2	2	-	-
CO3	3	3	2	3	2	2	3	3	1	1
CO4	3	3	2	2	3	2	2	1	1	1
CO5	3	3	1	1	3	2	3	1	-	-

Strong (3) Medium (2) Low (1)

Mrs. J. Porkodi
Head of the Department

Mrs. V.Queen Jemila
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. - GRAPHICS DESIGN

(for those who join in 2023-2024)

Semester VI	**Data Analytics Using R Programming**	Hours/Week: 6	
Core Course - 14		Credits: 5	
Course Code **23UGDC62**		Internal 25	External 75

COURSE OUTCOMES

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

CO1 : understand the R Data Structures Vector, Character String, Matrices, List, Data Frames and Classes.[K1]

CO2 : understanding the basic programming constructs in R Programming.[K2]

CO3 : apply R Programming data structures Vector, Lists, Matrices and Data Frames.[K2]

CO4 : develop R Programming with input/output files. [K3]

CO5 : interpret data visualization represented by using R. [K3]

UNIT I

Getting Started: How to Run R - A First R Session - Introduction to Functions - Preview of Some Important R Data Structures - **Vectors** : Scalars, Vectors, Arrays, and Matrices – Declarations – Recycling - Common Vector Operations - Using all() and any() - Vectorized Operations - NA and NULL Values – Filtering - A Vectorized if-then-else: The ifelse() Function - Testing Vector Equality - Vector Element Names - More on c().

(18 Hours)

UNIT II

Matrices and Arrays: Creating Matrices - General Matrix Operations - Applying Functions to Matrix Rows and Columns - Adding and Deleting Matrix Rows and Columns

- More on the Vector/Matrix Distinction - Avoiding Unintended Dimension Reduction - Naming Matrix Rows and Columns - Higher-Dimensional Arrays – **Lists:** Creating Lists - General List Operations - Accessing List Components and Values - Applying Functions to Lists - Recursive Lists - **Data Frames:** Creating Data Frames - Other Matrix-Like Operations - Merging Data Frames - Applying Functions to Data Frames. (18 Hours)

UNIT III

Factors and Tables: Factors and Levels - Common Functions Used with Factors - Working with Tables - Other Factor- and Table-Related Functions - **R Programming Structures:** Control Statements - Arithmetic and Boolean Operators and Values - Default Values for Arguments - Return Values - Functions Are Objects - Environment and Scope Issues - No Pointers in R – Recursion. (18 Hours)

UNIT IV

Doing Math and Simulations in R: Math Functions - Functions for Statistical Distributions – Sorting - Set Operations - **Object-Oriented Programming:** S3 Classes - S3 Generic Functions - Writing S3 Classes - Using Inheritance - S4 Classes - Writing S4 Classes - Implementing a Generic Function on an S4 Class - S3 Versus S4 – **Input / Output:** Accessing the Keyboard and Monitor - Reading and Writing Files - Reading a Data Frame or Matrix from a File - Reading Text Files - Introduction to Connections - Writing to a File - Getting File and Directory Information. (18 Hours)

UNIT V

String Manipulation: An Overview of String-Manipulation Functions – Regular Expressions - Use of String Utilities in the edtdbg Debugging Tool - **Graphics:** Creating Graphs - Customizing Graphs - Saving Graphs to Files - Creating Three-Dimensional Plots. (18 Hours)

TEXT BOOKS

1. Norman Matloff, “The Art of R Programming - A Tour of Statistical Software Design”, William Pollock, 2011.

REFERENCES BOOKS

1. Garrett Grolemund, Hadley Wickham, "Hands-On Programming with R: Write Your Own Functions and Simulations", 1st Edition, 2014
2. Venables ,W.N.,and Ripley, "S programming", Springer, 2000.
3. Roger D. Peng,"R Programming for Data Science", 2015.

Course Code 23UGDC62	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	3	2	3	3	2	2	1	-	-
CO2	3	3	-	1	1	-	-	-	2	-
CO3	2	3	2	3	3	2	2	2	-	1
CO4	3	2	-	2	2	2	2	-	1	-
CO5	2	1	2	3	3	3	3	1	1	-

Strong (3) Medium (2) Low (1)

Mrs. J.Porkodi — **Head of the Department**

Dr.N. Santhi — **Course Designer**

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. - GRAPHICS DESIGN

(for those who join in 2023-2024)

Semester VI	**R Programming Practical**	Hours/Week: 6	
Core Course – 15 Practical - 6		Credits: 3	
Course Code **23UGDC61P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1: make use of R Programming data structures – arrays, matrices, lists, tuples, and dictionaries. [K2]

CO2: write programs using R built-in functions, data frame, importing / exporting data from/to various files and visualize them with plots. [K2]

CO3: key in the programs, execute the programs with required input and get expected outputs with neat formatting and prepare the record work. [K3]

CO4: explain the given program written using python features and answer questions related to that program. [K3]

CO5: rewrite program to incorporate modification and justify the desired result. [K3]

Write the following programs in R

1. Array Manipulation.
2. Matrix Manipulation.
3. Vector Manipulation.
4. List Manipulation.
5. Read and retrieve data from the dataset into Data Frame based on conditions.
6. Data Frame manipulations.
7. Factors Operations.

8. Tables Operations.
9. Import Data from files and Manipulate.
10. Import a dataset and subset dataset based on variable filter conditions.
11. Data Visualization.
12. Statistical Analysis with R.

Course Code **23UGDC61P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	3	2	3	2	2	2	1	-	-
CO2	3	3	-	1	1	-	-	-	2	-
CO3	3	2	2	3	3	2	2	2	-	1
CO4	2	2	-	2	2	2	2	-	1	-
CO5	1	1	2	3	3	3	3	1	1	-

Strong (3) Medium (2) Low (1)

Mrs. J.Porkodi
Head of the Department

Dr.N. Santhi
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. - GRAPHICS DESIGN

(for those who join in 2023-2024)

Semester VI	**Mobile Application Development**	Hours/Week: 5	
Elective Course DSEC - 3		Credits: 4	
Course Code **23UGDE61**		Internal 25	External 75

COURSE OUTCOMES

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

CO1 : define the concepts of Android programming basics, Activities, Fragments, Intents, UI, Views, inserting pictures, menus and data persistence. [K1]

CO2 : Summarize about Android basics, Activities, Fragments, Intents, UI, Views, apps with pictures, menus and data storage in memory card, Databases. [K2]

CO3 : outline the needed views to design the UI and use Activities, Fragments, intents, picture insertion, menu, Data storage in Android Apps. [K2]

CO4 : Identify the elements needed for the UI designing such as views, menu, images and combine the concepts such as activities, fragment, intent and data persistence. [K3]

CO5 : develop simple Android Apps using Android basics, Activities, Fragments, Intents, UI, Views, pictures, menus and data persistence.[K3]

UNIT I

Getting Started with Android Programming: What is Android - Obtaining the Required Tools **– Activities, Fragments and Intents:** Understanding Activities - Linking Activities using Intents – Fragments – Calling Built-in Applications using Intents - Displaying Notifications. (15 Hours)

UNIT II

Getting to know the Android User Interface: Understanding the Components of a screen - Adopting to Display Orientation - Managing Changes to Screen Orientation – Utilizing the Action Bar – Creating the User Interface Programmatically - Listing for UI Notifications. (15 Hours)

UNIT III

Designing your screen interface using Views: Using Basic Views – Using Picker Views – Using List Views to display Long Lists – Understanding Specialized Fragments. (15 Hours)

UNIT IV

Displaying Picture and Menus with Views: Using Image Views to display pictures - Using Menu with Views - Some Additional Views. (15 Hours)

UNIT V

Data Persistence: Saving and Loading User Preferences - Persisting Data to Files - Creating and using Databases. (15 Hours)

TEXT BOOK

1. WeiMeng Lee (2012), "Beginning Android Application Development", Wrox Publications (John Wiley, New York)

REFERENCE BOOKS

1. Ed Burnette, "Hello Android: Introducing Google's Mobile Development Platform", 3rd edition, 2010, The Pragmatic Publishers.
2. Reto Meier, "Professional Android 4 Application Development", 2012, Wrox Publications (John Wiley, New York).

WEB RESOURCES

1. https://www.tutorialspoint.com/mobile_development_tutorials.htm
2. https://www.tutorialspoint.com › Android › Android – Home

Unit	Chapter
I	1,2
II	3
III	4
IV	5
V	6

Course Code **23UGDE61**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	2	2	2	-	-	-	-	-	-	-
CO2	2	2	2	2	2	-	-	-	-	-
CO3	2	2	2	2	2	1	1	2	1	-
CO4	3	2	1	3	2	1	1	2	1	-
CO5	3	3	1	-	-	-	-	3	1	1

Strong (3) Medium (2) Low (1)

Mrs. J.Porkodi
Head of the Department

Mrs. S. Aarthi Prasanna
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. - GRAPHICS DESIGN

(for those who join in 2023-2024)

Semester V	**WEB PUBLISHING**	Hours/Week: 5	
Elective Course (DSEC) - 3		Credits: 4	
Course Code **23UGDE62**		Internal 25	External 75

COURSE OUTCOMES

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

CO1: gain knowledge on the fundamentals of HTML tags. [K1]

CO2: understand the concepts of web page creation using HTML. [K2]

CO3: make use of HTML to design simple web pages. [K2]

CO4: choose real time applications and create web pages. [K3]

CO5: analyze how the web works and the steps of creating a website using HTML. [K3]

Unit I

Introduction to HTML: Information Files Creation – Web Server – Web Client / Browser – Hyper Text Markup Language (HTML) – Commonly used HTML commands: The structure of an HTML Program – Titles and Footers – Text Formatting – Emphasizing Material in a Web Page – Text Styles – Other Text Effects. Lists: Types of Lists – Unordered Lists, Ordered Lists, Definition Lists. (15 Hours)

Unit II

Adding Graphics to HTML Documents: Using the border attribute – Width and Height attribute – Align attribute – Alt attribute. Tables: Introduction, Width and Border attribute, Cellpadding attribute, Cellspacing attribute, Backgroud-color property, Colspan and Rowspan attributes. (15 Hours)

Unit III

Linking Documents: Links, Images as Hyperlinks. Frames: Introduction to Frames. Javascript: Introduction to Javascript – Javascript in Web pages – Javascipt – Writing Javascipt into HTML – Basic Programming Techniques – Data Types and Literal – Type Casting – Creating Variables – Incorporating Variables in a script – The Javascript Array – Operatorsand Expressions in Javascript. (15 Hours)

Unit IV

Javascript Programming Constructs – Conditional Checking – Super Controlled – Endless loops – Functions in Javascript – User Defined functions – Placing text in a browser – Dialog Boxes. The Javascript Document Object Model: Introduction – The Javascript assisted style sheets DOM – Understanding objects in HTML – Browser Objects – The Web page HTMLObject Hierarchy – Handling Web Pages events using Javascript. (15 Hours)

Unit V

Forms used by a web site – The form object – Other Built-in objects in Javascript – User defined objects – Cookies – Setting a Cookie. Dynamic HTML: Cascading Style Sheets – Class Using the <SPAN> … </SPAN> tag – External Style Sheets – Using the <DIV> … </DIV>tag. (15 Hours)

TEXTBOOK

1. Web Enabled Commercial Application Development using HTML, Javascript, DHTML and PHP, Ivan Bayross, BPB Publications, 4th Revised Edition

REFERENCE BOOKS

1. Web Technology, A Developer's Perspective, N.P. Gopalan, J. Akilandeswari, PHI Learning Private Limited, Seventh Printing, 2013.
2. Web Technologies, A Computer Science Perspective, Jeffrey C Jackson, Pearson Prentice Hall, Twenty First Impression, 2015.

Course Code **23UGDE62**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	2	2	2	-	-	-	-	-	-	-
CO2	2	2	2	2	2		-	-	-	-
CO3	3	2	1	2	2	1	1	3	1	-
CO4	3	2	1	3	3	1	1	2	1	-
CO5	3	3	1	-	-	-	-	2	1	1

Strong (3) Medium (2) Low (1)

Mrs. J.Porkodi
Head of the Department

Dr. B. Subashini
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. - GRAPHICS DESIGN

(for those who join in 2023-2024)

Semester VI	**Mobile Application Development Practical**	Hours/Week: 5	
Elective Course DSEC – 4 Practical		Credits: 3	
Course Code **23UGDE63P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1 : identify the packages, classes and methods needed for the problem. [K2]

CO2 : make use of views, menu, and images to design UI and write programs using activities, fragment, and intent and data persistence. [K2]

CO3 : key-in the programs and test the programs with required input and get expected outputs with neat formatting and prepare the record work. [K3]

CO4 : construct the UI design, activities in App and deduce the answers for any queries raised. [K3]

CO5 : reconstruct the program to adapt the necessary modifications and justify the desired result. [K3]

1. Create an App for String Manipulation using Radio Button view.
2. Create an App to list text suggestions using Auto Complete Text View.
3. Create an App to display progress value of seek bar.
4. Create an App to display star rating using Rating Bar.
5. Design an App for Image Gallery using Button View.
6. Design an App for Image Transition Effect.

7. Create an App to fill a shape using Gradient color.
8. Create an App for NCR calculation.
9. Create an App for Fibonacci Series
10. Create an App to implement different types of animation using XML.
11. Changing Background and Text Color of a Text View.
12. Create an App to display Date Picker Dialog.
13. Create an App to display Time Picker Dialog.
14. Create an App for Menu creation.
15. Create an App to display notifications.
16. Create an App to display Alert Dialog.
17. Create Applications using SQLite database

Course Code **23UGDE63P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	2	2	-	-	-	-	-	-	-
CO2	3	2	2	2	2	-	-	-	-	1
CO3	2	2	1	3	2	1	1	2	-	1
CO4	2	-	1	2	-	1	1	2	1	-
CO5	-	2	1	-	-	-	-	3	1	-

Strong (3) Medium (2) Low (1)

Mrs. J.Porkodi — **Head of the Department**

Mrs. S. Aarthi Prasanna — **Course Designer**

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. - GRAPHICS DESIGN

(for those who join in 2023-2024)

Semester V	**WEB PUBLISHING PRACTICAL**	Hours/Week: 5	
Elective Course DSEC - 4 Practical		Credits: 3	
Course Code **23UGDE64P**		Internal 40	External 60

COURSE OUTCOMES

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

CO1: use the knowledge of HTML to create personal or business websites with current professional standards. [K2]

CO2: write programs to implement creative skills in design and create websites. [K2]

CO3: key in the programs, test the programs with required input and get expected outputs with neat formatting and prepare the record work. [K3]

CO4: explain the given program and deduce the results/answers for any queries raised. [K3]

CO5: reconstruct the program to incorporate required modification and justify the desired result. [K3]

List of Programs :

1. Develop web page using basic tags and formatting tags in HTML
2. Design webpage to set page properties and to format the text
3. Develop a webpage using images
4. Design webpage using Tables
5. Design webpage using ordered and unordered lists

6. Link a webpage to another web page using anchor tag
7. Design webpage using Frames
8. Develop webpage using Forms
9. Develop webpage to embed audio and video

10. Design an application form for admission
11. Develop webpage to advertise the company using frames
12. Develop webpage to create a template from an existing layout

Course Code **23UGDE64P**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	3	3	2	-	-	-	-	-	-	-
CO2	3	3	2	2	2	-	-	-	-	1
CO3	2	2	1	3	2	1	1	3	-	-
CO4	2	-	1	2	-	1	1	2	2	-
CO5	-	2	1	-	-	-	-	2	2	-

Strong (3) Medium (2) Low (1)

Mrs. J.Porkodi
Head of the Department

Dr. B. Subashini
Course Designer

V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai
Reaccredited with 'A++' Grade (4th Cycle) by NAAC
VIRUDHUNAGAR
Quality Education with Wisdom and Values

B.C.A. - GRAPHICS DESIGN

(for those who join in 2023-2024)

Semester VI	**UI Design**	Hours/Week: 2	
SEC -7		Credits: 2	
Course Code **23UGDS61**		Internal 25	External 75

COURSE OUTCOMES

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

CO1: gain knowledge based on UI and UX. [K1]

CO2: learn the users and their needs. [K1]

CO3: relate UI patterns and their visual elements. [K2]

CO4: illustrate Web UI elements & Principles. [K2]

CO5: use Collaborating on Design. [K3]

UNIT I

Introduction – It's not UX vs. UI, It's UX & UI – What Web UI is... And Isn't – Seeing UI in Action – Why We Build UI Instead of UX – How UI Shapes UX – The UX of Learning UX. (6 Hours)

UNIT II

Understanding your users & their needs: Personas: Your Imaginary Best Friends – User Scenarios: Simulations for Better UI – Prioritizing Top Tasks: Have Others Do It For You –Plunging Ahead with a Plan. (6 Hours)

UNIT III

Understanding Visual Hierarchy & UI Patterns: Creating Visual Organization – Selecting & Applying UI Patterns – Understanding Visual Elements of UI – Visual Principles – Style Guides. (6 Hours)

UNIT IV

Understanding Web UI Elements & Principles: The Essence of Interface – Input Controls – Navigation – Animations – Default Settings – Guided Actions – Visual Clarity & Language Clarity – MAYA Principle. (6 Hours)

UNIT V

Collaborating on Design: Why Committees don't work – Mood Boards – Design Studio Exercise - Turning ideas into reality – No designer is an island. (6 Hours)

TEXT BOOK

Web UI Design Best Practices: UI Design from Experts – Dominick Pacholczyk, UXPIN

REFERENCE BOOKS

1. Joel Marsh, UX for Beginners, OReilly, 2022
2. Jon Yablonski, Laws of UX using Psychology to Design Better Product Services, OReilly 2021
3. Jenifer Tidwell, Charles Brewer, Aynne Valencia, "Designing Interface" 3 rd Edition, O'Reilly 2020
4. Steve Schoger, Adam Wathan "Refactoring UI", 2018
5. Steve Krug, "Don't Make Me Think, Revisited: A Commonsense Approach to Web & Mobile", Third Edition, 2015
6. https://www.nngroup.com/articles/
7. https://www.interaction-design.org/literature.

Course Code **23UGDS61**	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO5	PSO6	PSO7
CO1	2	2	2	-	-	3	3	3	1	-
CO2	2	2	1	-	-	3	3	3	-	-
CO3	3	-	2	1	1	2	2	3	3	-
CO4	2	2	3	2	2	3	3	2	-	-
CO5	3	3	1	-	-	1	1	3	1	1

Strong (3) Medium (2) Low (1)

Mrs. J.Porkodi
Head of the Department

Dr. K.S. Jeyalakshmi
Course Designer