



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 2024 - 2025)

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 (TANSCHHE) 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)**(2024-2025 onwards)****UG PROGRAMMES**

Name of the Course	Course Code	Semester	Department
Introduction to Tourism	24UHIN11	I	History (E.M)
Indian Constitution	24UHIN21	II	
சுற்றுலா ஓர் அறிமுகம்	24UHIN11	I	History (T.M)
இந்திய அரசியலமைப்பு	24UHIN21	II	
Popular Literature and Culture	24UENN11	I	English
Philosophy for Literature	24UENN21	II	

அடிப்படைத் தமிழ் இலக்கணம் - I எழுத்தறிதல்/ பேச்சுக்கலைத்திறன்	24UBTN11/ 24UTAN11	I	Tamil
அடிப்படைத்தமிழ் - மொழித் திறனறிதல் / பயன்முறைத் தமிழ்	24UBTN21/ 24UTAN21	II	
Basic Hindi - I	24UBHN11	I	Hindi
Basic Hindi - II	24UBHN21	II	
Practical Banking/ Financial Literacy-I	24UCON11/ 24UCON12	I	Commerce
Basic Accounting Principles/ Financial Literacy-II	24UCON21/ 24UCON22	II	
Practical Banking / Self-Employment and Startup Business	24UCON11/ 24UCCN11	I	Commerce C.A.
Basic Accounting Principles / Fundamentals of Marketing	24UCON21/ 24UCCN21	II	
Women Protection Laws	24UCPN11	I	Commerce
Basic Labour Laws	24UCPN21	II	Professional Accounting
Basics of Event Management	24UBAN11	I	Business Administration
Managerial Skill Development	24UBAN21	II	
Quantitative Aptitude -I	24UMTN11	I	Mathematics
Quantitative Aptitude - II	24UMTN21	II	
Physics for Everyday Life	24UPHN11	I	Physics
Astrophysics	24UPHN21	II	
Food Chemistry	24UCHN11	I	Chemistry
Dairy Chemistry	24UCHN21	II	
Ornamental fish farming and Management	24UZYN11	I	Zoology
Biocomposting for Entrepreneurship	24UZYN21	II	
Foundations of Baking and Confectionery	24UHSN11	I	Home Science – Nutrition and Dietetics
Women's Health and Wellness	24UHSN21	II	
Nutrition and Health	24UBCN11	I	Biochemistry
Life Style Diseases	24UBCN21	II	
Social and Preventive Medicine	24UMBN11	I	Microbiology
Nutrition & Health Hygiene	24UMBN21	II	
Herbal Medicine	24UBON11	I	Biotechnology

Organic Farming and Health Management	24UBON21	II	
Basics of Fashion	24UCFN11	I	Costume Design And Fashion
Interior Designing	24UCFN21	II	
Office Automation	24UCSN11	I	Computer Science
Introduction to HTML	24UCSN21	II	
Office Automation	24UITN11	I	Information Technology
Basics of Internet	24UITN21	II	
Fundamentals of Information Technology	24UDSN11	I	Data Science
Computer Fundamentals	24UDSN21	II	
Office Automation	24UCAN11	I	B.C.A.
Web Designing	24UCAN21	II	
Organic Farming	24UBYN11	I	Botany
Nursery and Landscaping	24UBYN12	I	
Mushroom Cultivation	24UBYN21	II	Botany
Medicinal Botany	24UBYN22	II	
Library and Information Science - I	24ULSN11	I	Library Science
Library and Information Science - II	24ULSN21	II	
Cadet Corps for Career Development I	24UNCN11	I	National Cadet Corps
Cadet Corps for Career Development II	24UNCN21	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 channelise their teaching methodologies and evaluation strategies to attain the Programme Educational Objectives (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

To impart intensive knowledge and skills to rural students through quality education and to provide an environment where students become competent users of Mathematics in other disciplines.

Mission

To empower the students with profound knowledge in Mathematics, logical reasoning and analytical skills, to induce their passion for research and lifelong learning with a focus on moral values and social ethics.

B.1.1 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.Sc.Mathematics Programme

The students will be able to

- become successful teachers in schools, Bank officers, government officials, Statisticians and IT professionals.

- apply mathematical skills in analyzing and solving problems in real life situations.
- upgrade themselves by pursuing higher education and engaging in social work to boost their morality.

Key Components of the Mission Statement	PEO1	PEO2	PEO3
chisel the creative and critical faculties through in-depth study of English literary texts	✓	✓	-
instill a fervour for research endeavours	✓	-	-
strengthen their linguistic competency for employability	✓	✓	✓
better living	-	-	✓

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 fulfillment 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 and it is mandatory that each PO should be mapped to the respective PSO.

On completion of B.Sc. Mathematics Programme, the students will be able to

PO1–Disciplinary Knowledge

PSO1.a: apply the strong knowledge acquired in core and related areas of Mathematics and its applications to continue higher studies, research activities or for employment.

PSO 1.b: apply the concrete subject knowledge and skill obtained in mathematics and carrier oriented courses to appear for competitive examinations.

PO2–Communication Skills

PSO2: communicate efficaciously on complex mathematical concepts, theorems and models with mathematics community and with society at a large.

PO3–Scientific Reasoning and Problem Solving

PSO 3.a: implement logical reasoning and analytical skills in mathematics as foundation for advanced cases in other disciplines.

PSO3.b: formulate real life problems into mathematical model and apply mathematical techniques to find solutions to the problems.

PO4–Critical Thinking and Analytical Reasoning

PSO 4.a: consider the social, cultural, economic and environmental constraints, apply the mathematical knowledge and skills to arrive at optimal solutions.

PSO 4.b: analyse mathematical data using principles of mathematics, interpret the results and provide valid conclusions applicable to various sectors of the nation.

PO5–Digital Literacy, Self-directed and Lifelong Learning

PSO5: make use of e-resources and strive for self- directed lifelong learning in their field of interest to face career challenges.

PO6–Co-operation / Team Work and Multicultural Competence

PSO6: work effectively as a member or leader of a diverse team in multidisciplinary environment and become entrepreneur and bring multicultural richness in Mathematics.

PO7–Moral and Ethical Awareness

PSO7 practice the code of ethics of mathematics community in their career.

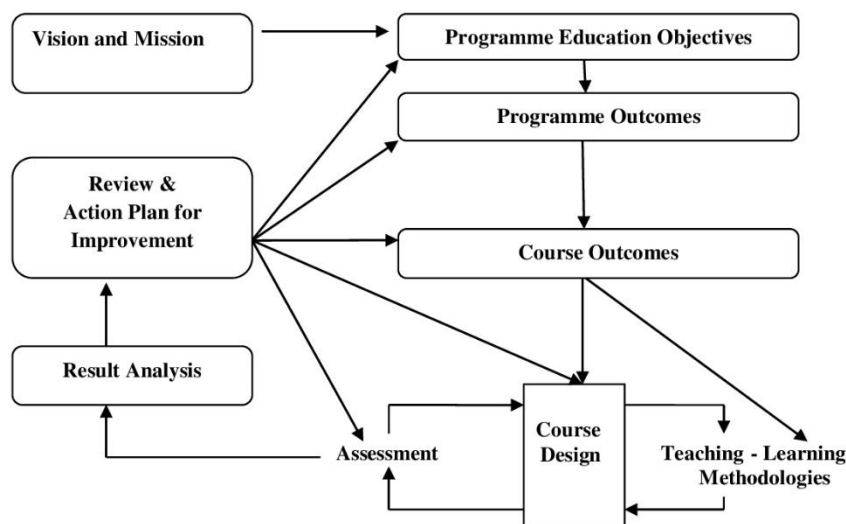
PO-PEO Mapping Matrix

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	-	-	✓

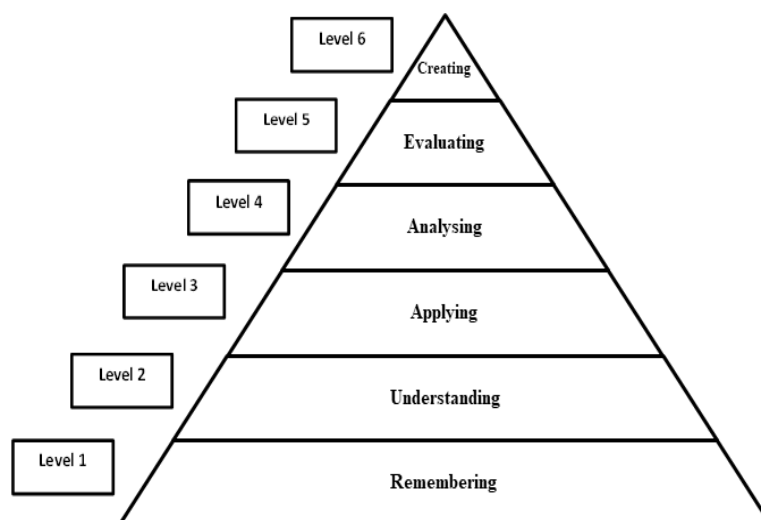
B.1.4 Course Outcomes (COs)

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, 2 and 1 respectively.

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

PO/PSOs	PO1/ PSO1	PO2/ PSO2	PO3/ PSO3	PO4/ PSO4	PO5/ PSO5	PO6/ PSO6	PO7/ PSO7
COs							
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 equivalent examination accepted by the 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 <ul style="list-style-type: none"> • 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

Question Pattern Periodic for 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 - 7	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 – Eitheror Type	5	5	7	35
C	16 - 18	Internal Choice – Eitheror 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 FOUNDATION 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	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

Two Assignments - 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

Practical

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

Two Model Tests - Average of the two 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 (Based on the Listed activities) - K3 Level	: 10
Online Quiz (Multiple Choice Questions - K2 Level)	: 25
Poster Presentation - K3 Level	10
Report on Student's Awareness creation on Environmental Protection / Ethical Values -- 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 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/ Field Project

Internship / Field Project is compulsory for II year UG Science Students

- **Internship:** A designated activity that carries one credit involving not less than 15 days of working in an organization under the guidance of an identified mentor
- **Field Project:** Students comprising of maximum 5 members in a team need to undertake project that involve conducting surveys inside/outside the college premises and collection of data from designated communities or natural places.
- Assessment by Internal Examiner 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 - Core & Elective Courses 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
	:	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.
 - 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.
 - Pass minimum for Ability Enhancement Compulsory Courses is 40 marks.
 - Pass minimum for Self Study Courses is 40 marks.
- Attendance
 - For UG, PG Programmes,
 - 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.

These rules come into effect from 2023-2024 onwards.

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 $\geq 70\%$	Excellent
$60\% \leq$ Attainment Value $< 70\%$	Very Good
$50\% \leq$ Attainment Value $< 60\%$	Good
$40\% \leq$ 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 $\geq 70\%$	Excellent
$60\% \leq$ Attainment Value $< 70\%$	Very Good
$50\% \leq$ Attainment Value $< 60\%$	Good
$40\% \leq$ 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 PROGRAMME EDUCATIONAL OBJECTIVES

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 analysed 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.Sc. Mathematics Programme.



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Quality Education with Wisdom and Values

BACHELOR OF SCIENCE MATHEMATICS (2014)

Outcome Based Education with Choice Based Credit System

Programme Structure - Allotment of Hours and Credits

For Those who join in the Academic Year 2024-2025

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	4 (4)	4 (4)	4(4)	4 (4)	6 (5)	6(5)	28 (26)
Core Course	4 (4)	4 (4)	4(4)	4(4)	6 (5)	6(5)	28 (26)
Core Course	-	-	-	-	5 (4)	6(4)	11(8)
Core Course Practical	-	-	-	-	-	-	-
Core Course Project	-	-	-	-	1 (3)	-	1 (3)
Elective Course (DSEC)	-	-	-	-	5(3)	5 (3)	10 (6)
Elective Course (DSEC)	-	-	-	-	5(3)	5(3)	10(6)
Elective Course I (Allied)	4 (3)	4 (3)	-	-	-	-	8(6)
Elective Course I Practical	2(1)	2 (1)	-	-	-	-	4(2)
Elective Course II(Allied)	-	-	6(4)	5(4)	-	-	11(8)
Elective Course II Practical	-	-	-	-	-	-	-
Self Study Course	-	-	-	-	-	0 (1)	0 (1)
Part IV : Skill Enhancement Courses, Elective Courses, Environmental Studies, Value Education, Self Study Course & Internship/ Field Project							
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/ Field Project	-	-	-	-	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 Course)	-	-	-	-	0(2)	-	0(2)

DSEC: Discipline Specific Elective Course;
NMEC : Non Major Elective Course

SEC– Skill Enhancement Course



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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	24UTAG11/ 24UHDG11	6	3	3	25	75	100
2.	Part II		English	24UENG11	6	3	3	25	75	100
3.	Part III	Core Course -1	Algebra & Trigonometry	24UMTC11	4	4	3	25	75	100
4.		Core Course -2	Differential Calculus	24UMTC12	4	4	3	25	75	100
5.		Elective Course -I	General Physics	24UPHA11	4	3	3	25	75	100
6.		Elective Course I Practical I	General Physics Practical -I	24UPHA11P	2	1	3	40	60	100
7.	Part IV	NME – 1	Quantitative Aptitude -I	24UMTN11	2	2	2	25	75	100
8.		SEC-1 Foundation Course	Bridge Mathematics	24UMTF11	2	2	2	25	75	100
Total					30	22				800



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PROGRAMME CONTENT

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	24UTAG21/ 24UHDG21	6	3	3	25	75	100
2.	Part II		English	24UENG21	6	3	3	25	75	100
3.	Part III	Core Course -3	Analytical Geometry (Two & Three Dimensions)	24UMTC21	4	4	3	25	75	100
4.		Core Course -4	Integral Calculus	24UMTC22	4	4	3	25	75	100
5.		Elective Course -I	Optics and Modern Physics	24UPHA21	4	3	3	25	75	100
6.		Elective Course I Practical II	General Physics Practical - II	24UPHA21P	2	1	3	40	60	100
7.	Part IV	NME- 2	Quantitative Aptitude - II	24UMTN21	2	2	2	25	75	100
8.		SEC – 2	Office Automation for Mathematics and DTP - Practical	24UMTS21P	2	2	2	40	60	100
Total					30	22		800		



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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	24UTAG31/ 24UHDG31	6	3	3	25	75	100
2.	Part II		English	24UENG31	6	3	3	25	75	100
3.	Part III	Core Course -5	Vector Calculus and Applications	24UMTC31	4	4	3	25	75	100
4.		Core Course -6	Differential Equations and Applications	24UMTC32	4	4	3	25	75	100
5.		Elective Course - I	Mathematical Statistics	24UMTA31	4	3	3	25	75	100
		Elective Course – I Practical	Mathematical Statistics using SPSS Practical	24UMTA31P	2	1	3	40	60	100
7.	Part IV	SEC -3	Web Designing	24UMTS31	1	1	2	100	-	100
8		SEC -4	Statistics With R Programming Practical	24UMTS32P	2	2	2	40	60	100
			Environmental Studies	24UGES41	1	-	-	-	-	-
Total					30	21				700



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PROGRAMME CONTENT

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	24UTAG41/ 24UHDG41	6	3	3	25	75	100
2.	Part II		English	24UENG41	6	3	3	25	75	100
3.	Part III	Core Course -7	Industrial Statistics	24UMTC41	4	4	3	25	75	100
4.		Core Course -8	Elements of Mathematical Analysis	24UMTC42	4	4	3	25	75	100
5.		Elective Course -I	Transformation Techniques	24UMTA41	5	4	3	25	75	100
6.	Part IV	SEC-5	Introduction to Data Science	24UMTS41	2	2	2	25	75	100
7.		SEC – 6	Computing Mathematics Practical	24UMTS42P	2	2	2	40	60	100
8.			Environmental Studies	24UGES41	1	2	2	100	-	100
Total					30	24				800



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PROGRAMME CONTENT

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	Abstract Algebra	24UMTC51	6	5	3	25	75	100
2.		Core Course -10	Real Analysis	24UMTC52	6	5	3	25	75	100
3.		Core Course-11	Mathematical Modelling	24UMTC53	5	4	3	25	75	100
4.		Core Course - 12	Project with Viva Voce	24UMTC54PR	1	3	-	100	-	100
5.		Elective Course	Programming in C Theory & Practical	24UMTE51	5	3	3	25	75	100
6.		Elective Course	Optimization Techniques	24UMTE52	5	3	3	25	75	100
7.	Part IV		Value Education	24UGVE51	2	2	2	100	-	100
8.		Self Study Course	Practice for Competitive Examinations - Online	24UGCE51	-	1	-	100	-	100
9.			Internship	24UMTI51G	-	1	-	100	-	100
Total					30	27				900
10.		Extra Credit Course	Vedic Mathematics	24UMTO51	-	2	3	100	-	100



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PROGRAMME CONTENT

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 -12	Linear Algebra	24UMTC61	6	5	3	25	75	100
2.	Core Course -13	Complex Analysis	24UMTC62	6	5	3	25	75	100
3.	Core Course-14	Mechanics	24UMTC63	6	4	3	25	75	100
4.	Elective Course	Programming in C++ Theory & Practical	24UMTE61	5	3	3	25	75	100
5.	Elective Course	Graph Theory and Applications	24UMTE62	5	3	3	40	60	100
6.	Self Study Course	Core Courses Quiz- Online	24UMTQ61	-	1	-	100	-	100
7.	Part IV SEC	Essential Reasoning and Quantitative Aptitude	24UMTS61	2	2	2	25	75	100
8.	Part V	Extension Activities		-	1	-	100	-	100
Total				30	24				800



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B.Sc. MATHEMATICS

(for those who join in 2024-2025)

Semester I	ALGEBRA & TRIGONOMETRY	Hours/Week:4	
Core Course – 1		Credits:4	
Course Code 24UMTC11		Internal 25	External 75

COURSE OUTCOMES:

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

CO1: retrieve the fundamental principles, concepts in the areas of Algebra and Trigonometry [K1].

CO2: explain the concepts in reciprocal equations, binomial, exponential and logarithmic series [K2].

CO3: illustrate the trigonometric functions, hyperbolic functions and logarithm of complex quantities [K2].

CO4: determine the relationship between circular and hyperbolic functions and the summation of trigonometric series [K3].

CO5: apply the knowledge gained in Algebra and Trigonometry to other fields [K3].

UNIT I

Reciprocal Equations-Standard form-Increasing or decreasing the roots of a given equation- Removal of terms, Approximate solutions of roots of polynomials by Horner's method – related problems. (12 hours)

UNIT II

Summation of Series: Binomial– Exponential –Logarithmic series (Theorems without proof)– Approximations - related problems (12 hours)

UNIT III

Characteristic equation – Eigen values and Eigen Vectors-Similar matrices - Cayley – Hamilton Theorem (Statement only) - Finding powers of square matrix, Inverse of a square matrix up to order 3, Diagonalization of square matrices - related problems. (12 hours)

UNIT IV

Expansions of $\sin n\theta$, $\cos n\theta$ in powers of $\sin \theta$, $\cos \theta$ - Expansion of $\tan n\theta$ in terms of $\tan \theta$, Expansions of $\cos^n \theta$, $\sin^n \theta$, $\cos^m \theta \sin^n \theta$ – Expansions of $\tan(\theta_1 + \theta_2 + \dots + \theta_n)$ - Expansions of $\sin \theta$, $\cos \theta$ and $\tan \theta$ in terms of θ - related problems. (12 hours)

UNIT V

Hyperbolic functions – Relation between circular and hyperbolic functions, Inverse hyperbolic functions, Logarithm of complex quantities - Summation of trigonometric series - related problems. (12 hours)

TEXT BOOKS

1. J. Stewart, L. Redlin, and S. Watson, Algebra and Trigonometry, Cengage Learning, 2012.
2. T.K.Manickavachagom Pillay, T.Natarajan, K.S.Ganapathy, Algebra Volume – I & II (2015) and Trigonometry, S.Viswanathan Printers & Publishers Pvt.Ltd.

REFERENCE BOOKS

1. G.B. Thomas and R.L. Finney, Calculus, 9th Ed., Pearson Education, Delhi, 2005
2. W.S. Burnstine and A.W. Panton, Theory of equations
3. David C. Lay, Linear Algebra and its Applications, 3rd Ed., Pearson Education Asia, Indian Reprint, 2007
4. C. V. Durell and A. Robson, Advanced Trigonometry, Courier Corporation, 2003
5. Calculus and Analytical Geometry, G.B. Thomas and R. L. Finny, Pearson Publication, 9th Edition, 2010.

WEBSITE & E-LEARNING SOURCE

1. <https://www.mathwarehouse.com>
2. <https://www.mathhelp.com/>
3. <https://www.mathsisfun.com/>
4. <https://nptel.ac.in>

Course Code 24UMTC11	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	2	3	2	2	1	1	-
CO2	3	3	2	2	3	2	2	1	1	-
CO3	3	3	2	2	3	2	2	1	1	-
CO4	3	3	2	2	3	2	2	1	1	-
CO5	3	3	2	2	3	2	2	1	1	-

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

Dr.M.C.Maheswari
Head of the Department

Dr.S.Kohila
Course Designer



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B.Sc. MATHEMATICS

(for those who join in 2024-2025)

Semester I	DIFFERENTIAL CALCULUS	Hours/Week:4	
Core Course-2		Credits:4	
Course Code 24UMTC12		Internal 25	External 75

COURSE OUTCOMES

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

CO1: convey the fundamental concepts in differential calculus and its applications. [K1]

CO2: explain the method to find the higher order derivative and the curvature of a given curve. [K2]

CO3: find the envelope of a given family of curves. [K2]

CO4: apply the knowledge gained in calculus to other fields. [K3]

CO5: find the evolutes, involutes and radius of curvature using polar co-ordinates. [K3]

UNIT I

Successive Differentiation: Introduction (Review of basic concepts) – The n^{th} derivative – Standard results – Fractional expressions – Trigonometrical transformation – Formation of equations involving derivatives – Leibnitz formula for the n^{th} derivative of a product (12 hours)

UNIT II

Partial Differentiation: Partial derivatives – Successive partial derivatives – Function of a function rule – Total differential coefficient – A special case – Implicit Functions. (12 hours)

UNIT III

Partial Differentiation (Continued): Homogeneous functions – Partial derivatives of a function of two variables – Maxima and Minima of functions of two variables - Lagrange's method of undetermined multipliers. (12 hours)

UNIT IV

Envelope: Method of finding the envelope – Another definition of envelope – Envelope of family of curves which are quadratic in the parameter. (12 hours)

UNIT V

Curvature: Definition of Curvature – Circle, Radius and Centre of Curvature – Evolutes and Involutives - Radius of Curvature in Polar Co-ordinates (12 hours)

TEXT BOOKS

- 1.G.B. Thomas and R.L. Finney, Calculus, Pearson Education, 2010.
2. S.Narayanan, T.K.Manickavachagom Pillay, Calculus Volume – I (2018), S.Viswanathan Printers & Publishers Pvt.Ltd.

REFERENCE BOOKS

1. H. Anton, I. Birens and S. Davis, Calculus, John Wiley and Sons, Inc., 2002.
2. M. J. Strauss, G.L. Bradley and K. J. Smith, Calculus, 3rd Ed., Dorling Kindersley (India) P. Ltd. (Pearson Education), Delhi, 2007.

WEBSITE & E-LEARNING SOURCE

1. <https://www.mathwarehouse.com/>
2. <https://www.mathhelp.com/>
3. <https://www.mathsisfun.com/>
4. <https://nptel.ac.in>

Course Code 24UMTC12	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	2	3	2	2	1	1	-
CO2	3	3	2	2	3	2	2	1	1	-
CO3	3	3	2	2	3	2	2	1	1	-
CO4	3	3	2	2	3	2	2	1	1	-
CO5	3	3	2	2	3	2	2	1	1	-

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

Dr.M.C.Maheswari

Head of the Department

Dr.P.Getchial Pon Packiavathi

Course Designer



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B.Sc. MATHEMATICS

(for those who join in 2024-2025)

Semester I	GENERAL PHYSICS	Hours/Week: 4	
Elective Course I		Credits: 3	
Course Code 24UPHA11		Internal 25	External 75

COURSE OUTCOMES

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

CO1: identify basic laws and principles of wave motion, thermodynamics, gravitation, electrostatics, electromagnetism and elastic constants. [K1]

CO2: describe experimental methods involved in SHM, ultrasonics, gravitation, liquefaction of gases and also derive the physical parameters under properties of matter. [K2]

CO3: deduce the physical parameters in heat engines, gravitation, electrostatics, electromagnetism and also explain the experimental methods behind properties of matter. [K2]

CO4: demonstrate the applications of SHM, ultrasonics, low temperature physics and solve simple problems in properties of matter. [K3]

CO5: illustrate the applications and solve problems in thermodynamics, gravitation, electrostatics and electricity & magnetism. [K3]

UNIT I

WAVES, OSCILLATIONS AND ULTRASONICS: simple harmonic motion (SHM) – composition of two SHMs at right angles (periods in the ratio 1:1) – Lissajous figures – uses – laws of transverse vibrations of strings – determination of AC frequency using sonometer (steel and brass wires) – ultrasound – production – piezoelectric method – application of ultrasonics: medical field – lithotripsy, ultrasonography – ultrasonic imaging- ultrasonics in dentistry, ophthalmology – ultrasonics in green chemistry. (12 hours)

UNIT II

PROPERTIES OF MATTER: *Elasticity:* elastic constants – bending of beam – theory of non-uniform bending – determination of Young's modulus by non-uniform bending – energy stored in a stretched wire – torsion of a wire – determination of rigidity modulus by torsional pendulum.

Viscosity: streamline and turbulent motion – critical velocity – coefficient of viscosity – Poiseuille's formula – comparison of viscosities – burette method.

Surface tension: definition – molecular theory - Droplets formation–shape, size and lifetime – COVID transmission through droplets, saliva – drop weight method – interfacial surface tension. (12 hours)

UNIT III

HEAT AND THERMODYNAMICS: Joule-Kelvin effect – Joule-Thomson porous plug experiment – theory – temperature of inversion – liquefaction of Oxygen– Linde's process of liquefaction of air-- thermodynamic system – thermodynamic equilibrium – laws of thermodynamics – heat engine – Carnot's cycle – efficiency – entropy – change of entropy in reversible and irreversible process. (12 hours)

UNIT IV**GRAVITATION:**

Gravitation - Kepler's Law of planetary motion - Newton's law of gravitation - mass & density of earth - Determination of 'G' by Boy's method - Variation of 'g' with latitude, altitude and depth.

ELECTROSTATISTICS:

Electrostatics - Coulomb's law - Gauss law - Application of Gauss law at a point outside the charged sphere - Capacitor - principle of a capacitor -capacitance of parallel plate capacitor - Energy stored in a charged capacitor - Loss of energy on sharing of charges between two capacitors. (12 hours)

UNIT V

ELECTRICITY AND MAGNETISM: potentiometer – principle – measurement of thermo emf using potentiometer –magnetic field due to a current carrying conductor – Biot-Savart's law – field along the axis of the coil carrying current – peak, average and RMS values of ac current and voltage – power factor and current values in an AC circuit. (12 hours)

ASSIGNMENT/ SEMINAR (NOT INCLUDED IN EXAM)

1. Droplets formation–shape, size and lifetime – COVID transmission through droplets, saliva

TEXT BOOKS

1. Murugesan, R., (2018) *Allied Physics*, S. Chand & Co, New Delhi.
2. Brijlal and N. Subramanyam., (1994) *Waves and Oscillations*, Vikas Publishing House, New Delhi.
3. Brijlal and N. Subramaniam., (1994) *Properties of Matter*, S.Chand & Co., New Delhi.

REFERENCE BOOKS

1. Resnick Halliday and Walker., (2018) *Fundamentals of Physics*, (11th Edition), John Willey and Sons. Asia Pvt. Ltd., Singapore.
2. Khannaan, V.R., Bedi, R.S., (1998) *Textbook of Sound*, 1st Edition. Kedharnath Publish & Co, Meerut.
3. Khare, N.S., and Srivastava, S.S., (1983) *Electricity and Magnetism*, 10th Edition., Atma Ram & Sons, New Delhi.

WEB LINKS

1. https://youtu.be/M_5KYncYNyc
2. <https://youtu.be/ljJLJgIvaHY>
3. https://youtu.be/7mGqd9HQ_AU
4. <https://youtu.be/h5jOAw57OXM>
5. <https://learningtechnologyofficial.com/category/fluid-mechanics-lab/>
6. <http://hyperphysics.phy-astr.gsu.edu/hbase/permot2.html><https://www.youtube.com/watch?v=gT8Nth9NWPM>
<https://www.youtube.com/watch?v=9mXOMzUruMQ&t=1s><https://www.youtube.com/watch?v=m4u-SuaSu1s&t=3s><https://www.biolinscientific.com/blog/what-are-surfactants-and-how-do-they-work>

Course Code 24UPHA11	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO 1	3	2	-	-	2	-	2
CO 2	3	3	2	2	-	-	2
CO 3	3	2	2	2	-	-	-
CO 4	3	3	3	2	-	-	-
CO 5	3	3	3	2	-	-	-

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

Dr.A.Azhagu Parvathi
Head of the Department

Dr.R. Hemalatha
Course Designer



V.V.VANNIAPERUMAL COLLEGE FOR WOMEN

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VIRUDHUNAGAR

Quality Education with Wisdom and Values

B.Sc. MATHEMATICS

(for those who join in 2024-2025)

Semester I	GENERAL PHYSICS PRACTICAL - I	Hours/Week: 2	
Elective Course I – Practical I		Credits: 1	
Course Code		Internal	External
24UPHA11P		40	60

COURSE OUTCOMES

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

CO1: understand the theoretical concepts in Mechanics and Properties of matter, Heat and Electricity related experiment and formulate the experimental procedure. [K2]

CO2: draw the circuit diagram /experimental set up with tabular column/model graph and write the formula to calculate the required physical parameters. [K2]

CO3: execute the technical skills in handling the equipment and observe the required measurements related to the experiment. [K3]

CO4: calculate the necessary parameters using the formula/graph and complete the record work [K3]

CO5: assess the accuracy of the results obtained and compare it with the theoretical value. [K3]

Minimum of Seven Experiments from the list:

1. Young's modulus by non-uniform bending using pin and microscope
2. Young's modulus by non-uniform bending using optic lever, scale and telescope
3. Rigidity modulus by static torsion method.
4. Rigidity modulus by torsional oscillations without mass
5. Surface tension and interfacial Surface tension – drop weight method
6. Comparison of viscosities of two liquids – burette method
7. Specific heat capacity of a liquid – half time correction
8. Verification of laws of transverse vibrations using sonometer
9. Calibration of low range voltmeter using potentiometer
10. Determination of thermo emf using potentiometer
11. Determination of 'g' using compound pendulum.

12. Calibration of ammeter using potentiometer.
 13. Determination of capacitance using Desauty's bridge.

Course Code 24UPHA11P	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO 1	3	3	2	-	2	-	2
CO 2	3	3	3	-	-	-	1
CO 3	3	3	3	2	-	3	3
CO 4	3	3	3	2	2	2	3
CO 5	3	2	2	2	2	2	3

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

Dr.A.Azhagu Parvathi
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Dr. R. Hemalatha
Course Designer



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B.Sc. MATHEMATICS

(for those who join in 2024-2025)

Semester I	QUANTITATIVE APTITUDE - I	Hours/Week: 2	
NME -1		Credits: 2	
Course Code 24UMTN11		Internal 25	External 75

COURSE OUTCOMES

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

CO1: recall the basic formulae in Mathematics. [K1]

CO2: recognize the applications of Mathematics in real life. [K1]

CO3: describe short-cut methods in solving problems. [K2]

CO4: identify solutions to various arithmetic problems using short cut methods. [K2]

CO5: apply their analytical ability and computational skills in solving the problems. [K3]

UNIT I

Simplifications - Averages (6 hours)

UNIT II

Problem on Numbers (6 hours)

UNIT III

Percentage (6 hours)

UNIT IV

Profit and Loss (6 hours)

UNIT V

Time and Work (6 hours)

TEXT BOOK

1. Aggarwal, R.S. (7th Fully Revised Edition 2014). Quantitative Aptitude, S.Chand Company Ltd

REFERENCE BOOKS

- 1.Dinesh Khattar, The Pearson Guide to Quantitative Aptitude for Competitive Examinations, Pearson Education, 3 edition, 2015.
- 2.Dr. Muzammil Quasmi & Jigyasa Sharma (2006), Logical and Analytical reasoning, Unique Publishers, M-51, Lajpat Nagar-II, New Delhi.
- 3.U.Mohan Rao(2012), Quantitative Aptitude for Competitive Examinations, Scitech Publications (India) Pvt. Ltd., Chennai.
- 4.R.Gopal, Prof.J.V.Subramanyam & M.Uma Bharathi (2008), Arithmetic and Quantitative Aptitude for Competitive Examinations.

Course Code 24UMTN11	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	3	3	1	-	-
CO2	3	2	2	3	1	-	-
CO3	3	1	3	3	1	-	-
CO4	3	2	3	3	1	-	-
CO5	3	2	3	3	2	-	-

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

Dr.M.C.Maheswari
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Mrs.J.Ashwini
Course Designer



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B.Sc. MATHEMATICS

(for those who join in 2024-2025)

Semester I	BRIDGE MATHEMATICS	Hours/Week: 2	
SEC-1 Foundation Course		Credits: 2	
Course Code 24UMTF11		Internal 25	External 75

COURSE OUTCOMES

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

CO1: recall the basic formulae in Trigonometry and Calculus [K1]

CO2: retrieve the fundamental principles and the concepts in the areas of Algebra. [K1]

CO3: explain the basic concepts in Algebra, Calculus and Trigonometry. [K2]

CO4: find various trigonometric ratios for different angles, limits, derivatives, definite and indefinite integrals of a given function. [K2]

CO5: illustrate the concepts in Calculus, Trigonometry and Algebra. [K2]

UNIT I

Binomial theorem, Sequences and Series

Introduction - Binomial theorem – Particular Cases of Binomial theorem (6 hours)

UNIT II

Binomial theorem, Sequences and Series

Finite Sequences – Finite Series – Infinite Sequences and Series

Combinatorics and Mathematical Induction

Permutations – Combinations (6 hours)

UNIT III**Trigonometry**

A recall of basic results – Sum and Difference Identities (or) Compound Angles formulas -Multiple Angle Identities and Submultiple Angle Identities - Product to Sum and Sum to Product identities – Law of Sines – Law of Cosines - Inverse Trigonometric functions.

(6 hours)

UNIT IV**Differential Calculus – Limits and Continuity**

Limits

Differential Calculus – Differentiability and Methods of Differentiation

The Concept of derivative – Differentiation rules

(6 hours)

UNIT V**Integral Calculus**

Basic Rules of Integration - Properties of Integrals

(6 hours)

TEXT BOOK

1. Tamilnadu State Board Mathematics text books of class XI

WEBSITE & E-LEARNING SOURCE:

1. <https://www.aicte-india.org/sites/default/files/final%20maths.pdf>
2. <https://egyankosh.ac.in/bitstream/123456789/13834/1/Unit-1.pdf>

Unit	Chapters & Sections
Volume I	
I	5 – 5.1 to 5.3
II	5 – 5.4 to 5.6
	4 – 4.4, 4.5
III	3 – 3.2, 3.5.1,3.5.2,3.5.3, 3.7.1,3.7.2, 3.9
Volume II	
IV	9 – 9.2
	10 – 10.2, 10.4
V	11 – 11.3,11.5

Course Code 24UMTF11	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	3	3	2	3	1	-	-
CO2	3	3	2	3	3	2	3	1	-	-
CO3	3	3	2	3	3	2	3	1	-	-
CO4	3	3	2	3	3	2	3	1	-	-
CO5	3	3	2	3	3	2	3	1	-	-

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

Dr.M.C.Maheswari
Head of the Department

Dr.P.Sooriyakala
Course Designer



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VIRUDHUNAGAR

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B.Sc. MATHEMATICS

(for those who join in 2024-2025)

Semester II	ANALYTICAL GEOMETRY (TWO & THREE DIMENSIONS)	Hours/Week:4	
Core Course-3		Credits:4	
Course Code 24UMTC21		Internal 25	External 75

COURSE OUTCOMES

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

CO1: list the different forms of equations of planes, straight lines, conics and sphere. [K1]

CO2: explain the basic concept of straight lines, planes, conics, plane and line, angle between two planes and sphere. [K2]

CO3: describe the properties of straight lines, conics, planes, plane and line and sphere. [K2]

CO4: solve problems in straight lines, conics, planes and sphere. [K3]

CO5: apply the knowledge gained in Analytical Geometry to other fields. [K3]

UNIT I

Pole, Polar - conjugate points and conjugate lines – diameters – conjugate diameters of an ellipse - semi diameters- conjugate diameters of hyperbola. (12 hours)

UNIT II

Polar coordinates: General polar equation of straight line – Polar equation of a circle given a diameter, Equation of a straight line, circle, conic – Equation of chord, tangent, normal. Equations of the asymptotes of a hyperbola. (12 hours)

UNIT III

System of Planes-Length of the perpendicular–Orthogonal projection. (12 hours)

UNIT IV

Representation of line–angle between a line and a plane – co – planar lines–shortest distance between two skew lines –length of the perpendicular–intersection of three planes.

(12 hours)

UNIT V

Equation of a sphere-general equation-section of a sphere by a plane-equation of the circle- tangent plane- angle of intersection of two spheres- condition for the orthogonality-radical plane.

(12 hours)

TEXT BOOKS

Robert J. T. Bell, Co-ordinate Geometry of Three Dimensions. William F. Osgood and William C. Graustein, Plane and Solid Analytic Geometry, Macmillan Company, New York, 2016.

REFERENCE BOOKS

1. P.Duraipandian , Analytical Geometry of 2D, Muhil publishers
2. Shanthi Narayan and Dr.P.K. Mittal ,Analytical Solid Geometry of 3D ,S.Chand & amp; Co. Pvt.Ltd.

WEBSITE & E-LEARNING SOURCE

1. <https://www.mathwarehouse.com/>
2. <https://www.mathhelp.com/>
3. <https://www.mathsisfun.com/>
4. <https://nptel.ac.in>

Course Code 24UMTC21	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	2	3	3	1	-	
CO2	3	3	3	3	3	2	3	1	1	-
CO3	3	3	3	3	3	2	2	1	1	-
CO4	3	3	2	2	3	3	2	1	1	-
CO5	3	2	2	3	2	2	3	1	1	-

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

Dr.M.C.Maheswari

Head of the Department

Mrs.G.Nagalakshmi

Course Designer



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VIRUDHUNAGAR

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B.Sc. MATHEMATICS

(for those who join in 2024-2025)

Semester II	INTEGRAL CALCULUS	Hours/Week:4	
Core Course-4		Credits:4	
Course Code 24UMTC22		Internal 25	External 75

COURSE OUTCOMES

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

CO1: convey the fundamental concepts in integral calculus and its applications. [K1]

CO2: explain the properties of various integrals, Beta and Gamma functions and their applications. [K2]

CO3: find the areas of curved surfaces and volumes of solids of revolution. [K2]

CO4: solve the problems of integration using Beta and Gamma functions. [K3]

CO5: apply integration techniques in higher mathematics. [K3]

UNIT I

Reduction formulae -Types, integration of product of powers of algebraic and trigonometric functions, integration of product of powers of algebraic and logarithmic functions - Bernoulli's formula. (12 hours)

UNIT II

Multiple Integrals - definition of double integrals -evaluation of double integrals – double integrals in polar coordinates - Change of order of integration. (12 hours)

UNIT III

Triple integrals –applications of multiple integrals - volumes of solids of revolution - areas of curved surfaces–change of variables - Jacobian. (12 hours)

UNIT IV

Beta and Gamma functions – infinite integral - definitions–recurrence formula of Gamma functions. (12 hours)

UNIT V

Properties of Beta and Gamma functions- relation between Beta and Gamma functions - Applications. (12 hours)

TEXT BOOK

1. G.B. Thomas and R.L. Finney, Calculus, Pearson Education, 2007.
2. S.Narayanan and T.K Manicavachagom Pillay, Calculus Volume II (2007), S.Viswanathan, Publishers.

REFERENCE BOOKS

1. H. Anton, I. Birens and S. Davis, Calculus, John Wiley and Sons, Inc., 2002.
2. D. Chatterjee, Integral Calculus and Differential Equations, Tata-McGraw Hill Publishing Company Ltd.
3. P.Dyke, An Introduction to Laplace Transforms and Fourier Series, Springer Undergraduate Mathematics Series, 2001 (second edition).

WEBSITE & E-LEARNING SOURCE

1. <https://www.mathwarehouse.com/>
2. <https://www.mathhelp.com>
3. <https://www.mathsisfun.com/>
4. <https://nptel.ac.in>

Course Code 24UMTC22	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	2	3	2	2	1	1	-
CO2	3	2	2	1	2	1	1	1	2	-
CO3	3	2	2	1	2	1	1	1	2	-
CO4	3	2	1	1	3	1	1	1	2	-
CO5	3	2	2	1	3	1	1	1	1	-

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

Dr.M.C.Maheswari
Head of the Department

Ms.N.Malathi
Course Designer



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VIRUDHUNAGAR

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B.Sc. MATHEMATICS

(for those who join in 2024-2025)

Semester II	OPTICS AND MODERN PHYSICS	Hours/Week: 4	
Elective Course I		Credits: 3	
Course Code 24UPHA21		Internal 25	External 75

COURSE OUTCOMES

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

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

CO1: state basic concepts of physical optics, atom models, nuclear energy, relativity and semiconductor physics. [K1]

CO2: derive physical parameters related to physical optics, nuclear energy and relativity [K2]

CO3: describe experimental methods involved in physical optics, atom models and semiconductor diodes [K2]

CO4: illustrate the applications and solve problems in optics, nuclear energy and atomic physics. [K3]

CO5: demonstrate the applications involved in semiconductor physics and solve problems in relativity. [K3]

UNIT I

OPTICS: interference – interference in thin films – colors of thin films – air wedge – determination of diameter of a thin wire by air wedge - Newton's rings – diffraction – diffraction of light vs sound – normal incidence – experimental determination of wavelength using diffraction grating (no theory) – polarization – polarization by double reflection – Brewster's law – optical activity – Laurent's Half shade polarimeter.

(12hours)

UNIT II

ATOMIC PHYSICS: atom models – Bohr atom model – mass number – atomic number – nucleons – vector atom model – various quantum numbers – Pauli's exclusion principle – electronic configuration – periodic classification of elements – Bohr magneton – Stark effect – Zeeman effect (elementary ideas only) – photo electric effect – Einstein's

photoelectric equation - Applications of photoelectric effect: solar cells, solar panels, optoelectric devices. (12 hours)

UNIT III

NUCLEAR PHYSICS: nuclear models – liquid drop model – magic numbers – shell model – nuclear energy – mass defect – binding energy – radioactivity – uses – half life – mean life - radio isotopes and uses –controlled and uncontrolled chain reaction – nuclear fission – energy released in fission – chain reaction – critical reaction – critical size- atom bomb – nuclear reactor – breeder reactor.

(12 hours)

UNIT IV

INTRODUCTION TO RELATIVITY: frame of reference – postulates of special theory of relativity – Galilean transformation equations – Lorentz transformation equations – derivation – length contraction – time dilation – twin paradox – mass-energy equivalence.

(12 hours)

UNIT V

SEMICONDUCTOR PHYSICS: p-n junction diode – forward and reverse biasing – characteristic of diode – zener diode – characteristic of zener diode – voltage regulator – full wave bridge rectifier – construction and working – advantages (no mathematical treatment) –

(12 hours)

SELF STUDY

1. Applications of photoelectric effect: solar cells, solar panels, optoelectric devices.

TEXT BOOK

1. Murugesan, R., (2017) *Allied Physics*, S. Chand & Co, New Delhi
2. Thangarajan, K., and Jayaraman, D., (2004) *Allied Physics*, Popular Book Depot, Chennai
3. Brijlal and N.Subramanyam, (2002) *Textbook of Optics* S. Chand & Co, NewDelhi
4. Murugesan,R., (2005) *Modern Physics*, S.Chand &Co, NewDelhi
5. Subramaniam, A., (2001) *Applied Electronics*, 2nd Edn., National Publishing Co.,Chennai.

REFERENCE BOOKS

1. Resnick Halliday and Walker., (2018) *Fundamentals of Physics*, 11thEdn. John Willey and Sons, Asia Pvt. Ltd., Singapore.
2. Khanna, D.R., and Gulati, H.R., (1979) *Optics*, S. Chand & Co. Ltd., New Delhi.

3. Arthur Beiser., (1997) *Concepts of Modern Physics*, Tata McGraw Hill Publication, New Delhi.
4. Thomas L. Floyd., (2017) *Digital Fundamentals*, 11th Edition, Universal Book Stall, New Delhi.
5. Metha, V.K., (2004) *Principles of electronics*, 6th Edition. S. Chand and Company, New Delhi.

PO/CO Course Code 24UPHA21	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO 1	3	2	-	-	2	-	2
CO 2	3	3	2	2	-	-	2
CO 3	3	2	2	2	-	-	-
CO 4	3	3	3	2	2	-	-
CO 5	3	3	3	2	2	-	-

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

Dr.A.Azhagu Parvathi
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Dr.G.Shanmuga Priya
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B.Sc. MATHEMATICS

(for those who join in 2024-2025)

Semester II	GENERAL PHYSICS PRACTICAL –II	Hours/Week: 2	
Elective Course I – Practical II		Credits: 1	
Course Code 24UPHA21P		Internal 40	External 60

COURSE OUTCOMES

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

CO1: understand the theoretical concepts in Magnetism, Optics, Electronics and formulate the experimental procedure [K2]

CO2: draw the circuit diagram /experimental set up with tabular column/model graph and write the formula to calculate the required physical parameters. [K2]

CO3: execute the technical skills in handling the equipment and observe the required measurements related to the experiment. [K3]

CO4: calculate the necessary parameters using the formula/graph and complete the record work [K3]

CO5: assess the results obtained and compare it with the theoretical value [K3]

Minimum of seven Experiments from the list:

1. Radius of curvature of lens by forming Newton's rings
2. Thickness of a wire using air wedge
3. Determination of AC frequency using sonometer
4. Thermal conductivity of poor conductor using Lee's disc
5. LCR – Series Resonance – Determination of L.
6. Characterization of PN Junction diode.
7. Characterization of Zener diode
8. Study of output voltages of Bridge Rectifier.
9. Determination of refractive index of prism using spectrometer.

PO/CO Course Code 24UPHA21P	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO 1	3	3	2	-	2	-	2
CO 2	3	3	3	-	-	-	1
CO 3	3	3	3	2	-	3	3
CO 4	3	3	3	2	2	2	3
CO 5	3	2	2	2	2	2	3

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

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Head of the Department

Dr.G.Shanmuga Priya
Course Designer



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B.Sc. MATHEMATICS

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Semester II	QUANTITATIVE APTITUDE - II	Hours/Week: 2	
NME - 2		Credits: 2	
Course Code 24UMTN21		Internal 25	External 75

COURSE OUTCOMES

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

CO1: retrieve the basic concepts in arithmetic problems. [K1]

CO2: understand the application of Mathematics in real life. [K1]

CO3: explain the various techniques involved in aptitude problems. [K2]

CO4: explain the shortcut methods of finding solutions to problems. [K2]

CO5: apply their analytical ability and computational skills in solving problems. [K3]

UNIT I

Problem on Ages (6 hours)

UNIT II

Ratio and Proportion (6 hours)

UNIT III

Simple Interest (6 hours)

UNIT IV

Calendar (6 hours)

UNIT V

Permutations and Combinations (6 hours)

TEXT BOOK

1. Aggarwal, R.S. (7th Fully Revised Edition 2014). *Quantitative Aptitude*, S. Chand & Company Ltd.

REFERENCE BOOKS

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Course Code 24UMTN21	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	3	3	1	-	-	-
CO2	3	2	2	3	1	-	-	-
CO3	3	1	3	3	1	-	-	-
CO4	3	2	3	3	1	-	-	-
CO5	3	2	3	3	2	-	-	-

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

Dr.M.C.Maheswari

Head of the Department

Dr.M.Uma Maheswari

Course Designer