

ANNEXURE 18B01

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

**CHOICE BASED CREDIT SYSTEM
REGULATIONS AND SYLLABUS
(with effect from Academic Year 2018 - 2019)**

V.V. Vanniaperumal College for Women, Virudhunagar, established in 1962, offers 19 UG Programmes, 14 PG Programmes, 6 M.Phil. Programmes and 3 Ph.D. Programmes. All these programmes, except Ph.D. Programmes, have been framed as per the guidelines given by UGC under Choice Based Credit System (CBCS).

The Departments of Commerce, English and History 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.

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 Students' performance will be 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 and Computer Applications. |
| Commerce & Management | : | Commerce, Commerce with Computer Applications, Commerce with Professional Accounting
Business Administration |

PG PROGRAMMES

Arts & Humanities	:	History, English, Tamil
Physical & Life Sciences	:	Mathematics, Physics, Biochemistry, Food Processing & Quality Control, Chemistry, Zoology, Computer Science, Information Technology, Computer Applications (MCA*)
Commerce & Management	:	Commerce, Business Administration (MBA*)

* AICTE approved Programmes

PRE-DOCTORAL PROGRAMMES (M.Phil.)

Arts & Humanities	:	History, English, Tamil
Physical & Life Sciences	:	Mathematics, Biochemistry
Commerce & Management	:	Commerce

OUTLINE OF CHOICE BASED CREDIT SYSTEM

1. Core Courses
2. Elective Courses
 - 2.1. Discipline Specific Elective Courses (DSEC)
 - 2.2. Dissertation / Project
3. Non Major Elective Courses (NMEC)
4. Generic Elective Courses (GEC)
5. Ability Enhancement Courses (AEC)
 - 5.1 Ability Enhancement Compulsory Courses (AECC)
 - 5.2. Skill Enhancement Courses (SEC)

List of Non Major Elective Courses (NMEC) Offered

UG PROGRAMMES

Name of the Course	Semester	Department
History of India upto A.D.1858	III	History(EM)
இந்திய வரலாறு கி.பி. 1858 வரை	III	History (TM)
Indian National Movement (A.D 1885-1947)	IV	History(EM)
இந்திய தேசிய இயக்கம் (கி.பி. 1885 – 1947)	IV	History(TM)
English for Professions I	III	English
English for Professions II	IV	
இக்காலநீதி இலக்கியம்	III	Tamil
உரைநடை இலக்கியம்	IV	
Basic Hindi - I	III	Hindi
Basic Hindi - II	IV	
Practical Banking	III	Commerce
Basic Accounting Principles	IV	
Business Management	III	Business Administration
Entrepreneurship	IV	
Quantitative Aptitude – I	III	Mathematics
Statistics and Operation Research	IV	
Physics in Everyday life	III	Physics
Fundamentals of Electronics	IV	
Industrial Chemistry	III	Chemistry
Drugs and Natural Products	IV	
Applied Zoology	III	Zoology
Animal Science	IV	
Basic Food Science	III	Home Science – Nutrition and Dietetics
Basic Nutrition and Dietetics	IV	
Women and Health	III	Biochemistry
Life style associated disorders	IV	
Medical Lab Technology	III	Microbiology
Applied Microbiology	IV	
Infectious Diseases	III	Biotechnology
Organic Farming	IV	
Basics of Fashion	III	Costume Design And Fashion
Interior Designing	IV	
Introduction to Computers and Office Automation	III	Computer Science
Introduction to Internet and HTML 5	IV	
Computer Fundamentals and E-mail	III	Information Technology
Introduction to HTML	IV	
Fundamentals of Computers	III	Computer Applications
Web Design with HTML	IV	
Horticulture – I	III	Botany
Horticulture – II	IV	
மருத்துவ தாவரவியல் - I	III	
மருத்துவ தாவரவியல் - II	IV	
Library and Information Science – I	III	Library Science
Library and Information Science - II	IV	

List of Generic Elective Courses (GEC) Offered

GENERIC ELECTIVE COURSES – 1

1. Human Rights/
2. Women Studies

GENERIC ELECTIVE COURSES – 2

1. Constitution of India/
2. Modern Economics/
3. Adolescent Psychology/
4. Disaster Management

ABILITY ENHANCEMENT COMPULSORY COURSES (AECC)

1. Environmental Studies
2. Value Education

மேல்நிலை கல்வி வரை தமிழை முதன்மை பாடமாக எடுத்து படிக்காத மாணவிகள் கீழ்க்கண்ட பாடங்களை கட்டாயம் படிக்க வேண்டும்

1. அடிப்படைத் தமிழ் -எழுத்தறிதல்
2. அடிப்படைத் தமிழ் -மொழித்திறனறிதல்

ELIGIBILITY FOR ADMISSION

Candidate should have passed the Higher Secondary Examination conducted by the Board of Higher Secondary Education, Tamilnadu or any other equivalent 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
- Part II : English
- Part-III : Core Courses
 Elective Courses: Discipline Specific Elective Courses
 Internship
 Allied Courses: 1. Physics
 2. Applied Mathematics
- Part IV : Skill Enhancement Courses (SEC)
 Non-Major Elective Courses (NMEC)
 Ability Enhancement Compulsory Courses (AECC)
 Generic Elective Courses (GEC)
- Part V : National Service Scheme, Physical Education, Youth Red Cross
 Society, Red Ribbon Club, Science Forum, Eco Club, Library and
 Information Science, Consumer Forum, Health and Fitness Club,
 National Cadet Corps

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

Internship: A designated activity that carries one credit involving more than 7 days of working in an organization under the guidance of an identified mentor.

Field Project: 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.

EVALUATION SCHEME

Components	Internal Assessment Marks	External Examination Marks	Total Marks
Theory	25	75	100
Practical	40	60	100
Project	40	60	100

PART III - Core Courses, Discipline Specific Elective Courses & Allied Courses

INTERNAL ASSESSMENT**Distribution of Marks****Theory**

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

- Three Periodic Tests - Average of the best two will be considered
 Two Assignments - Best of the two will be considered
 Three Quiz Tests - Best of the three will be considered

Practical

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

- Two Model Tests - Best one will be considered
 Performance - Attendance and Record

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

Section	Type of Question	No. of Questions	No. of Questions to be answered	Marks for each question	Total Marks
A Q. No.(1- 4)	Multiple choice	4	4	1	4
B Q. No.(5 - 7)	Either or type	3	3	7	21
C Q. No.(8-10)	Open Choice	3	2	10	20
Total					45

EXTERNAL EXAMINATION**Question Pattern****Duration: 3 Hours**

Section	Type of Question	No. of Questions	No. of Questions to be answered	Marks for each question	Total Marks
A Q. No.(1- 10)	Multiple choice (Atleast Two question from each unit)	10	10	1	10
B Q. No.(11 -15)	Either or type (one set from each unit)	5	5	7	35
C Q. No.(16-20)	Open Choice (one from each unit)	5	3	10	30
				Total	75

CORE COURSES ASSESSMENT

Online Test will be conducted for the Core Courses in V & VI Semester. Multiple Choice questions Pattern will be followed.

PART IV - Skill Enhancement Courses and Non Major Elective Courses**INTERNAL ASSESSMENT****Distribution of Marks****Theory**

Mode of Evaluation		Marks
Periodic Test	:	25
Assignment	:	10
Quiz	:	5
Total	:	40

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

Two Assignments - Best of the two will be considered

Three Quiz Tests - Best of the three will be considered

Question Pattern**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- 4)	Open Choice	4	3	5	15
B Q. No.(5- 6)	Open Choice	2	1	10	10
				Total	25

EXTERNAL EXAMINATION**Question Pattern****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- 8)	Open Choice	8	6	5	30
B Q. No.(9- 13)	Open Choice	5	3	10	30
Total					60

PART IV - Generic Elective Courses and Ability Enhancement Compulsory Courses

- Assessment by Internal Examiner only
- Model Examination is conducted after two periodic tests.
- Book and Study Material prepared by the Faculty Members of the respective departments will be prescribed.

ASSESSMENT PATTERN

Mode of Evaluation		Marks
Periodic Test	:	30
Assignment	:	10
Summative Examination Internal	:	60
Total	:	100

Two Periodic tests - Best of the two will be considered

Two Assignments - Best of the two will be considered

Question Pattern for Periodic Test**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- 4)	Open Choice	4	3	6	18
B Q. No.(5- 6)	Open Choice	2	1	12	12
Total					30

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- 8)	Open Choice	8	5	6	30
B Q. No.(9- 13)	Open Choice	5	3	10	30
Total					60

EXTRA CREDIT COURSES (Optional)
 Assessment by Internal Examiner only
Question Pattern for Internal Examination**Duration: 2 Hours**

Section	No. of Questions	No. of Questions to be answered	Marks for each question	Total Marks
A	8	6	2	12
B	6	4	7	28
C	2	1	10	10
Total				50

ELIGIBILITY FOR THE DEGREE

- i) The candidate will not be eligible for degree without completing the prescribed Courses of study and a minimum Pass marks in all the Courses.
- ii) Attendance, progress and conduct certification from the Head of the Institution will be required for the students to write the examination.
 - No Pass minimum for Internal Assessment.
 - Pass minimum for External Examination is 27 marks out of 75 marks for Core Courses, Allied Courses and Discipline Specific Elective Courses.
 - Pass minimum for External Examination is 21 marks out of 60 marks for Non Major Elective Courses and Skill Enhancement Courses.
 - The aggregate minimum pass percentage is 40.
 - Pass minimum for External Practical Examination is 21 marks out of 60 marks.

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B.Sc. MATHEMATICS (SEMESTER) PROGRAMME CODE - 2014

PROGRAMME OUTCOMES

- Encourages intellectuals to develop disciplined process of thinking, analyzing, synthesizing, evaluating, applying scientific concepts and thereby producing good citizens.
- Trains intellectuals to develop good rapport with fellow-beings through efficient oral, written and technical communication.
- Develops connection with the society to transform ideas into action.
- Makes them provide support voluntarily in spreading scientific temperament and stand for the national cause in all core issues.
- Develops an independent and self-disciplined specialized learning in tune with the changing socio-technological scenario.
- Inculcates interest in the intellectuals to pursue higher studies.

PROGRAMME SPECIFIC OUTCOMES

- Trains intellectual minds to use mathematics to solve problems in day to day life.
- Enables them to investigate and apply mathematical problems and solutions to a variety of contexts related to science.
- Prepares them for a career in which logical reasoning and critical thinking is a central feature.

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PART - I

S.No.	Sem.	Code	Title of the Course	Credits	Marks
1.	I	18UTAG11	தாள்: 1 பொதுத்தமிழ்	3	100
2.	II	18UTAG21N	தாள்: 2 பொதுத்தமிழ்	3	100
3.	III	18UTAG31	தாள்: 3 பொதுத்தமிழ்	3	100
4.	IV	18UTAG41	தாள்: 4 பொதுத்தமிழ்	3	100
TOTAL				12	400

PART I -HINDI

S.No.	Sem.	Code	Title of the Course	Credits	Marks
1.	I	18UHGD11	Prose – I & II, Ancient Stories - I, General Essays, Functional Hindi – I & Grammar	3	100
2.	II	18UHGD21	Drama, Ancient Stories - II, Letter Correspondence, Functional Hindi-II & Grammar	3	100
3.	III	18UHGD31	Ancient Poetry, Drama, Indian History, Hindi Grammar & Functional Hindi III	3	100
4.	IV	18UHGD41	Modern Poetry, Hindi Literary Essays, Letter Correspondence, Conversation & Functional Hindi IV	3	100
TOTAL				12	400

PART - II

S.No.	Sem.	Code	Title of the Course	Credits	Marks
1.	I	18UENG11A	English for Advanced Learners I	3	100
		18UENG11B	English for Career Guidance - I		
		18UENG11C	English for Communicative Competence-I		
2.	II	18UENG21A	English for Advanced Learners II	3	100
		18UENG21B	English for Career Guidance - II		
		18UENG21C	English for Communicative Competence - II		
3.	III	18UENG31A	English for Advanced Learners III	3	100
		18UENG31B	English for Career Guidance – III		
		18UENG31C	English for Communicative Competence - III		
4.	IV	18UENG41A	English for Advanced Learners IV	3	100
		18UENG41B	English for Career Guidance – IV		
		18UENG41C	English for Communicative Competence - IV		
TOTAL				12	400

PART III – CORE, DISCIPLINE SPECIFIC ELECTIVE COURSES

S.No.	Sem.	Code	Title of the Course	Credits	Marks
1	I	18UMTC11	Differential Calculus	4	100
2	I	18UMTC12	Theory of Equations	4	100
3	II	18UMTC21	Integral Calculus	4	100
4	II	18UMTC22	Analytical Geometry of Three Dimensions	4	100
5	II	18UMTC21P	Office Automation for Mathematics and DTP - Practical	2	100
6	III	18UMTC31	Statics	3	100
7	III	18UMTC32	Sequences and Series	3	100
8	IV	18UMTC41	Dynamics	3	100
9	IV	18UMTC42	Trigonometry and Vector Calculus	3	100
10	V	18UMTC51	Modern Algebra	4	100
11	V	18UMTC52	Real Analysis	4	100
12	V	18UMTC53	Numerical Methods	4	100
13	V	18UMTC54	Statistics – I	4	100
14	V	18UMTE51	Graph Theory	4	100
15	V	18UMTO51	Online Assessment	1	50
16	VI	18UMTC61	Linear Algebra	4	100
17	VI	18UMTC62	Complex Analysis	4	100
18	VI	18UMTC63	Differential Equations and Laplace Transforms	4	100
19	VI	18UMTC64	Statistics – II	4	100
20	VI	18UMTE61	Boolean Algebra and Lattices	4	100
21	VI	18UMTO61	Online Assessment	1	50
Total				72	2000

PART III – ALLIED COURSE I- MATHEMATICS

S.No.	Sem.	Code	Title of the Course	Credits	Marks
1.	I	18UPHA11	Physics –I	4	100
2.	II	18UPHA21	Physics – II	4	100
		18UPHA21P	Physics Practical - I	2	100
Total				10	300

PART III - ALLIED COURSE II- APPLIED MATHEMATICS

S.No.	Sem.	Code	Title of the Course	Credits	Marks
1.	III	18UAMA31	Operations Research	4	100
2.	IV	18UAMA41	Programming in C	4	100
	IV	18UAMA41P	C - Practical	2	100
Total				10	300

PART IV - SKILL ENHANCEMENT COURSES

S.No.	Sem.	Code	Title of the Course	Credits	Marks
1.	II	18UMTS21	Fundamentals of Accounting	2	100
2.	III	18UMTS31P	MAT LAB – Practical	2	100
3.	IV	18UMTS41	Transforms	2	100
4.	V	18UMTS51	Summation of Series	2	100
5.	V	18UMTS52	Mathematical Applications	2	100
6.	VI	18UMTS61	Mathematical Modelling	2	100
Total				12	600

PART IV – NON MAJOR ELECTIVE COURSES

S.No.	Sem.	Code	Title of the Course	Credits	Marks
1.	III	18UMTN31	Quantitative Aptitude	2	100
2.	IV	18UMTN41	Statistics and Operations Research	2	100
Total				4	200

PART IV– GENERIC ELECTIVE AND ABILITY ENHANCEMENT COMPULSORY COURSES

S.No.	Sem.	Code	Title of the Course	Credits	Marks
1.	I	18UGVE11	Value Education	2	100
2	III	18UGEH31/	Human Rights/	1	100
		18UGEW32	Women Studies		
3.	IV	18UGEC41	Constitution of India/	1	100
4		18UGEM42	Modern Economics/		
5		18UGEA43	Adolescent Psychology/		
6		18UGED44	Disaster Management		
8		18UPHI41G	Internship/Field Project		
9		PART-V	Extension Activities		
10		V	18UGES51		
Total				8	500

PART –V - EXTENSION ACTIVITIES

S.No.	Sem.	Code	Title of the Course	Credit
1	I, II, III & IV	18UVNS1 18UVNS2	National Service Scheme	1
2		18UVPE1 18UVPE2	Physical Education	
3		18UVYR1 18UVYR2	Youth Red Cross Society	
4		18UVRR1	Red Ribbon Club	
5		18UVSF1	Science Forum	
6		18UVEC1	Eco Club	
7		18UVLI1	Library and Information Science	
8		18UVCC1	Consumer Forum	
9		18UVHF1	Health and Fitness Club	
10		18UVNC1 18UVNC2	National Cadet Corps	

EXTRA CREDIT COURSE (Optional)

S.No.	Sem.	Code	Title of the Course	Credits	Total Marks
1.	V	18UMT051	Arithmetic Ability (Internal Only)	2	50

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DEPARTMENT OF MATHEMATICS PROGRAMME STRUCTURE

Semester	Course Code	Courses	Hours per week	Credits	Total Marks		
					Int.	Ext.	
I	Part I	18UTAG11	Tamil/Hindi I	6	3	25	75
	Part II	18UENG11	English I	6	3	25	75
	Part III	18UMTC11	Core Course -1 Differential Calculus	4	4	25	75
		18UMTC12	Core Course - 2 Theory of Equations	4	4	25	75
		18UMTC21P	Core Course -1 Core Practical Office Automation for Mathematics and DTP	2	-	-	-
		18UPHA11 18UPHA21P	Allied Course –I Allied Physics – I Allied Physics Practical – I	4 2	4 -	25 -	75 -
	Part IV	18UGVE11	Value Education	2	2	100	-
	TOTAL			30	20	600	

Semester	Course Code	Courses	Hours per week	Credits	Total Marks		
					Int.	Ext.	
II	Part I	18UTAG21	Tamil /Hindi II	6	3	25	75
	Part II	18UENG21	English II	6	3	25	75
	Part III	18UMTC21	Core Course - 3 Integral Calculus	4	4	25	75
		18UMTC22	Core Course - 4 Analytical Geometry of Three Dimensions	4	4	25	75
		18UMTC21P	Core Course Core Practical Office Automation for Mathematics and DTP	2	2	40	60
		18UPHA21 18UPHA21P	Allied Course -I Allied Physics – II Allied Physics Practical –I	4 2	4 2	25 40	75 60
		Part IV	18UMTS21	SEC -1 Fundamentals of Accounting	2	2	40
	TOTAL			30	24	800	

Semester	Course Code	Courses	Hours per week	Credits	Total Marks		
					Int.	Ext.	
III	Part I	18UTAG31	Tamil/ Hindi III	6	3	25	75
	Part II	18UENG31	English III	6	3	25	75
	Part III	18UMTC31	Core Course -5 Statics	3	3	25	75
		18UMTC32	Core Course -6 Sequences and Series	4	3	25	75
		18UAMA31	Allied-Course -II Operations Research	6	4	25	75
	Part IV	18UMTS31P	SEC -2 MAT LAB – Practical	2	2	40	60
		18UMTN31	NMEC-1 Quantitative Aptitude	2	2	40	60
	Part IV	18UGEH31 18UGEW32	Generic Elective -1 1.Human Rights/ 2. Women Studies	0	1	40	60
		18UGEC41/ 18UGEM42/ 18UGEA43/ 18UGED44	Generic Elective -2 Constitution of India/ Modern Economics/ Adolescent Psychology/ Disaster Management	1	-	-	-
		TOTAL			30	21	800

Semester	Course Code	Courses	Hours per week	Credits	Total Marks		
					Int	Ext	
IV	Part I	18UTAG41	Tamil /Hindi IV	6	3	25	75
	Part II	18UENG41	English IV	6	3	25	75
	Part III	18UMTC41	Core Course - 7 Dynamics	3	3	25	75
		18UMTC42	Core Course - 8 Trigonometry and Vector Calculus	4	3	25	75
		18UAMA41 18UAMA41P	Allied Course – II Programming in C C - Practical	4 2	4 2	25 40	75 60
	Part IV	18UMTS41	SEC -3 Transforms	2	2	40	60
		18UMTN41	NMEC-2 Statistics and Operations Research	2	2	40	60
		18UMTI41G	Internship/Field Project	0	1	100	-
		18UGEC41/ 18UGEM42/ 18UGEA43/ 18UGED44	Generic Elective -2 Constitution of India/ Modern Economics/ Adolescent Psychology/ Disaster Management/	1	1	100	-
			Extension Activities	-	1	-	-
	TOTAL			30	25	1000	

Semester		Course Code	Courses	Hours per week	Credits	Total Marks	
						Int.	Ext.
V	Part III	18UMTC51	Core Course – 9 Modern Algebra	5	4	25	75
		18UMTC52	Core Course - 10 Real Analysis	5	4	25	75
		18UMTC53	Core Course – 11 Numerical Methods	5	4	25	75
		18UMTC54	Core Course – 12 Statistics – I	4	4	25	75
		18UMTE51 18UMTE52	DSEC -1 1. Graph Theory 2. Automata Theory	5	4	25	75
		18UMTO51	Online Assessment	-	1	50	
	Part IV	18UMTS51	SEC -4 Summation of Series	2	2	40	60
		18UMTS52	SEC -5 Mathematical Applications	2	2	40	60
		18UGES51	Environmental Studies	2	2	100	-
				TOTAL	30	27	850

Semester		Course Code	Courses	Hours per week	Credits	Total Marks	
						Int.	Ext.
VI	Part III	18UMTC61	Core Course -13 Linear Algebra	6	4	25	75
		18UMTC62	Core Course -14 Complex Analysis	6	4	25	75
		18UMTC63	Core Course -15 Differential Equations and Laplace Transforms	6	4	25	75
		18UMTC64	Core Course – 16 Statistics – II	5	4	25	75
		18UMTE61	DSEC -2 1. Boolean Algebra and Lattices	5	4	25	75
		18UMTE62	2.Fuzzy Algebra				
	18UMTO61	Online Assessment	-	1	50		
Part IV	18UMTS61	SEC -6 Mathematical Modelling	2	2	40	60	
TOTAL				30	23	650	

- SEC - Skill Enhancement Course
NMEC - Non – Major Elective Course
DSEC - Discipline Specific Elective Course

COURSE STRUCTURE

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, Allied and DESC Courses:							
Core Course	4(4)	4(4)	3(3)	3(3)	5(4)	6(4)	25(22)
Core Course	4(4)	4(4)	4(3)	4(3)	5(4)	6(4)	27(22)
Core Course	-	-	-	-	5(4)	6(4)	11(8)
Core Course	-	-	-	-	4(4)	5(4)	9(8)
Core Practical	2(0)	2(2)	-	-	-	-	4(2)
Core Courses Assessment - Online	-	-	-	-	0(1)	0(1)	0(2)
Allied I							
Course	4(4)	4(4)	-	-	-	-	8(8)
Practical	2(0)	2(2)	-	-	-	-	4(2)
Allied II							
Course	-	-	6(4)	4(4)	-	-	10(8)
Practical	-	-	-	2(2)	-	-	2(2)
Field Project	-	-	-	0(1)	-	-	0(1)
DSEC	-	-	-	-	5(4)	5(4)	10(8)
Part IV: SEC, NMEC, AECC, GEC							
Skill Enhancement Courses (SEC)	-	2(2)	2(2)	2(2)	2(2)	2(2)	10(10)
	-	-	-	-	2(2)	-	2(2)
Non-Major Elective Courses (NMEC)	-	-	2(2)	2(2)	-	-	4(4)
Ability Enhancement Compulsory Courses (AECC)							
Value Education	2(2)	-	-	-	-	-	2(2)
Environmental Studies	-	-	-	-	2(2)	-	2(2)
Generic Elective Courses (GEC)							
Generic Elective 1	-	-	0(1)	-	-	-	0(1)
Generic Elective 2	-	-	1(0)	1(1)	-	-	2(1)
Part V – Extension Activities NSS/ Physical Education/YRC/ RRC/ Science Forum/ ECO Club/Library and Information Science/ Consumer Club/ Fitness Club, National Cadet Corps	-	-	-	0(1)	-	-	0(1)
Total	30 (20)	30 (24)	30 (21)	30 (25)	30 (27)	30 (23)	180 (140)

DSEC: Discipline Specific Elective Course

SEC: Skill Enhancement Course

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B.Sc. MATHEMATICS (SEMESTER) (2018 -19 onwards)

Semester III	STATICS	Hours/Week: 3	
Core Course-5		Credits: 3	
Course Code 18UMTC31		Internal 25	External 75

COURSE OUTCOMES

On completion of the course, students will be able to

- apply the basic principles of classical particles mechanics to the analysis of particles subjected to forces.
- apply equilibrium equations in statics.
- determine the resultant of a system of forces.
- determine the resultant of two like and unlike parallel forces.
- know about the tendency of rotation about a fixed point at parallel forces and to calculate the moments of the parallel forces.

UNIT I

Forces acting at a point

Resultant and components :Definition -Simple cases of finding the resultant
 -Parallelogram of Forces -Analytical expression for the resultant of two forces acting at a point -Triangle of Forces-Perpendicular Triangle of Forces- Converse of the Triangle of forces-The Polygon of Forces- Lami's Theorem – An extended form of the parallelogram law f forces. (9 hours)

UNIT II

Forces acting at a point

Resolution of a force- Components of a force along two given directions - Theorem on Resolved Parts- Resultant of any number of forces acting at a point: Graphical method- Resultant of any number of coplanar forces acting at a point: Analytical method- Conditions of equilibrium of any number of forces acting upon a particle.

Parallel Forces and Moments

Introduction: To find the resultant of two like parallel forces acting on a rigid body - To find the resultant of two unlike and unequal parallel forces acting on a rigid body -Resultant of a number of parallel forces acting on a rigid body. (9 hours)

UNIT III**Parallel Forces and Moments**

Condition of equilibrium of three coplanar parallel forces -Centre of two parallel forces- Moment of a force -Physical significance of moment of a force- Geometrical Representation of a moment-Sign of the moment- Unit of moment - Varignon's Theorem of Moments. (8 hours)

UNIT IV**Parallel Forces and Moments**

Generalised theorem of moments (Principle of Moments) -Moment of a force about an axis.

Equilibrium of Three Forces Acting on A Rigid Body

Rigid body subjected to any three forces -Three Coplanar Forces - Conditions of Equilibrium- Procedure to be followed in solving any statical problem. (10 hours)

UNIT V**Equilibrium of Three Forces Acting on A Rigid Body**

Two trigonometrical theorems -Some artifices -Problems on parallel forces (9 hours)

TEXT BOOK

Venkataraman M.K. (July 2013). *Statics*, Agasthiar Publications.

Unit	Chapter	Sections
I	2	1 - 10
II	2	11 - 16
	3	1 - 4
III	3	5 - 12
IV	3	13, 14
	5	1- 4
V	5	5 - 7

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B.Sc. MATHEMATICS (SEMESTER) (2018 -19 onwards)

Semester III	SEQUENCES AND SERIES	Hours/Week: 4	
Core Course-6		Credits: 3	
Course Code 18UMTC32		Internal 25	External 75

COURSE OUTCOMES

On completion of the course, students will be able to

- understand the basic concepts of sequences and types of sequences with examples.
- find the convergence and divergence of sequences using Cauchy's general principle.
- understand the basic concepts of series and types of series with examples.
- apply different tests for convergence or divergence of a series.
- calculate limit of sequence obtained by combining two or more sequences.

UNIT I

Sequences

Sequences-Bounded Sequences-Monotonic Sequences-Convergent Sequences-Divergent and Oscillating Sequences. (13 hours)

UNIT II

Sequences Continued

The Algebra of Limits-Behaviour of Monotonic Sequence (11 hours)

UNIT III

Sequences Continued

Some Theorems on Limits-Subsequences-Cauchy Sequences. (13 hours)

UNIT IV**Series of positive terms**

Infinite Series - Comparison Test

(11 hours)

UNIT V**Series of positive terms Continued**

Kummer's Test – D'Alembert's ratio Test – Raabe's Test – Gauss Test – Root Test and Condensation Test.

(12 hours)

TEXT BOOK

Arumugam.S and Thangapandi Isaac.A (2014). *Sequences and Series*, New Gamma Publishing House.

Unit	Chapter	Section
I	3	3.1 - 3.5
II	3	3.6, 3.7
III	3	3.8, 3.9, 3.11
IV	4	4.1, 4.2
V	4	4.3, 4.4



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B.Sc. MATHEMATICS (SEMESTER)

(2018 -19 onwards)

Semester III	OPERATIONS RESEARCH	Hours/Week: 6	
Allied Course -II		Credits: 4	
Course Code 18UAMA31		Internal 25	External 75

COURSE OUTCOMES

On completion of the course, students will be able to

- have an overview of special classes of linear programming problems
- turn real life problems into formation of models
- develop the skills of formulation of linear programming problems and different techniques to solve it.
- allocate scarce sources to optimise and maximize profit .
- analyse the decision making process, explain and predict how individuals behave in a specific strategic situation.

UNIT I

Linear Programming Problem -Mathematical Formulation

Introduction - Mathematical Formulation of the Problem- Illustrations on Mathematical Formulation of LPPs.

Linear Programming Problem- Graphical Solution and Extension

Introduction – Graphical Solution Method – Some Exceptional Cases. (18 hours)

UNIT II

General Linear Programming Problem

Canonical and Standard forms of LPP.

Linear Programming Problem -Simplex Method

Introduction -The Computational Procedure - Use of Artificial Variables: Big-M Method (Method of Penalties) Degeneracy in Linear Programming. (19 hours)

UNIT III Transportation Problem

Introduction-LP Formulation of The Transportation Problem- Existence of solution in TP-The Transportation Table-Loops in Transportation Tables- Solution of a Transportation Problem- Finding an Initial Basic Feasible Solution-Test for Optimality - Degeneracy in Transportation Problem -Transportation Algorithm.

Assignment Problem

Introduction -Mathematical Formulation of the Problem- Solution Methods of Assignment Problem: Hungarian Assignment Method-Special Cases in Assignment Problem. (19 hours)

UNIT IV Games and strategies

Introduction –Two- Person Zero- Sum Games -Some Basic Terms -The Maximin-Minimax Principle –Games Without Saddle Points- Mixed Strategies - Graphic solution of $2 \times n$ and $m \times 2$ Games. (17 hours)

UNIT V Games and strategies Continued

Dominance Property

Sequencing problem

Introduction -Problem of Sequencing- Basic Terms Used in Sequencing- Processing n Jobs Through TWO Machines -Processing n Jobs Through k Machines.

(17 hours)

TEXT BOOK

Kanti Swarup, Gupta P.K, Manmohan (2013). *Operations Research*, Sultan Chand and Sons.

Unit	Chapter	Section
I	2	2.1, 2.3, 2.4 (Problems from 201 to 210 only)
	3	3.1, 3.2, 3.3
II	3	3.4, 3.5 (Results without proof)
	4	4.1, 4.3, 4.4, 4.5
III	10	10.1, 10.2, 10.3, 10.5, 10.6 10.8, 10.9, 10.10, 10.12, 10.13
	11	11.1 - 11.4
IV	17	17.1 - 17.6
V	17	17.7
	12	12.1 - 12.5

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B.Sc. MATHEMATICS (SEMESTER) (2018 -19 onwards)

Semester III	MAT LAB - PRACTICAL	Hours/Week: 2	
SEC 2		Credits: 2	
Course Code 18UMTS31P		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- get a basic knowledge about MATLAB.
- familiarize with the MATLAB tools and its applications to various mathematical problems.

List of Practical Programs in MAT LAB:

1. Write a MATLAB program for evaluating the arithmetic operators addition, subtraction, multiplication, right division, left division, unary minus, unary plus and exponentiation.
2. Write a MATLAB statement to calculate the sum of the series.
3. Write a MATLAB program to use various arithmetic operations on matrices such as addition, subtraction, multiplication, right division, left division and exponentiation.
4. Write a MATLAB program for some commands related to matrices such as determinant, rank, eigen vectors and orthogonal.
5. Write a MATLAB program to determine/solve the characteristic polynomial of a matrix, polynomial differentiation and polynomial integration.
6. Write a MATLAB program for polynomial addition, subtraction, multiplication, division and root of a polynomial.
7. Write a MATLAB program for solving a set of linear algebraic equations.
8. Write a MATLAB program to find the mean, median, standard deviation, cumulative sum and cumulative product of a given statistical data.
9. Write a MATLAB program to plot a bar graph and horizontal bar graph for a given data.

10. Write a MATLAB program to obtain the differentiation of a given expression and evaluating the definite integral.

TEXT BOOKS

1. Rajkumar Bansal, Ashok Kumar Goel & Manoj Kumar Sharma,(2009). *MATLAB and its Applications in Engineering*, Dorling Kindersley (India) Pvt. Ltd.,
2. Rudra Pratap, (2010). *Getting started with MATLAB - A Quick Introduction for Scientists And Engineers*, Oxford University Press.

TEXT BOOK 1	
Chapter	Sections
2	2.5.1, 2.9
3	3.9, 3.10.1
4	4.4, 4.5, 4.6, 4.7, 4.9, 4.10, 4.11
6	6.7.4, 6.7.5
9	9.3.2.1 & 9.3.2.3
TEXT BOOK 2	
5	5.1.1 & 5.3

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B.Sc. MATHEMATICS (SEMESTER) (2018 -19 onwards)

Semester III	QUANTITATIVE APTITUDE	Hours/Week: 2	
NMEC- 1		Credits: 2	
Course Code 18UMTN31		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- understand the basic principles of mathematics for the other major students.
- enhance their analytical ability and computational skills.
- use appropriate arithmetical, and/or statistical methods.
- appear for competitive examinations with more confidence
- solve mathematical problems with in a limited timeframe

UNIT I

Numbers (6 hours)

UNIT II

Problems on Ages (6 hours)

UNIT III

Ratio and Proportion (6 hours)

UNIT IV

Calendar (6 hours)

UNIT V

Permutations and Combinations (6 hours)

TEXT BOOK

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

Unit	Chapter	Section
	Section-I Arithmetical ability	
I	1	Solved examples: 1-15 and Exercise 1 - 30
II	8	Solved examples: 1-7 and Exercise 1 - 30
III	12	Solved examples: 1-7 and Exercise 1 - 30
IV	27	Full
V	30	Full

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Semester: III	HUMAN RIGHTS (2018 -19 onwards)	Hours/Week: 0	
Generic Elective - 1		Credits : 1	
Course Code: 18UGEH31		<u>Internal</u> 100	<u>External</u> -

COURSE OUTCOMES

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

- understand the basic concepts on Human Rights and Human values.
- learn the definition and the development of Human Rights.
- understand the various theories on Human Rights.
- know the International instruments and conventions on human Rights.
- acquire idea of the evolution of Human Rights in India.
- imbibe the knowledge of Human Rights violation in India.

UNIT I

Human Rights - Definition – Development of Human Rights: The Magna Carta (1215) - The Declaration on Rights of Man and Citizen (1789) - The Bill of Rights (1791).

UNIT II

Universal Declaration of Human Rights (1948) - International Covenant on Civil and Political Rights– International Covenant on Economic, Social and Cultural Rights.

UNIT III

Human Rights in India - Constitutional Guarantees on Human Rights - The Protection of Human Rights Act (1993).

UNIT IV

National Human Rights Commission - State Human Rights Commission – Human Rights Court.

UNIT V

Human Rights Violations in India- Children – Women – Refugees – Minorities – SCs & ST – Trans-gender.

TEXT BOOK

Study Material prepared by the faculty in Department of History.

REFERENCE BOOKS

1. Basu,L.N. (2006). *Human Rights: Practice and Limitations*, Jaipur: Pointer Publishers.
2. Chauhan,S.R, & Chauhan, N.S (ed.), (2007). *International Dimension of the Human Rights*, Vol. I – III, New Delhi: Rajdhani Publishers.
3. Gupta,U.N. (2004). *Human Rights*, Vol.I – IV, New Delhi: Atlantic Publishers.
4. Natarajan,A. (2004). *Human Rights in International Perspectives*, Madurai: Munnetra Pathipagam.
5. Raja Muthirulandi, E. (2003). *Manidha Urimaigal (Tamil)*, Madurai: BPI Publishers.

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Semester: III	WOMEN STUDIES (2018 -19 onwards)	Hours/Week: 0	
Generic Elective - 1		Credits : 1	
Course Code: 18UGEW32		<u>Internal</u> 100	<u>External</u> -

COURSE OUTCOMES

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

- understand the concept of Feminism.
- acquire the knowledge on the atrocities committed against women.
- know more of women's organisations and political rights.
- know about the various Government welfare schemes for women.
- gain knowledge on the legal rights of women.
- analyse the real empowerment of women in all fields.

UNIT I

Women Studies - Definition - Feminism- Kinds of Feminism.

UNIT II

Violence Against Women – Female Foeticide–Domestic violence - Problems of working women -Eve-Teasing - Sexual Harassment- Portrayal of women in Mass Media.

UNIT III

Women Indian Association -National Council of Women in India - Self Help Groups – Panchayat Raj and role of women in politics -NGOs and women Development.

UNIT IV

Central Government's Social Welfare schemes- State Government's Social Welfare Programmes for Women – Women and Children.

UNIT V

Dowry Prohibition Act 1961 - Equal Remuneration Act 1976 – Hindu Women’s Right to Property Act 1989 – Prohibition of indecent Representation of Women Act 1987 – Domestic Violence (Prevention) Act 2005 – POCSO Act 2012.

TEXT BOOK

Study Material prepared by the faculty in Department of History.

REFERENCE BOOKS

1. Anwarul Yaquin, Badar Anwar, (1982). *Protection of Women Under the Law*, New Delhi.
2. Chatterjee, B.B, (1971). *Impact of Social Legislation on Social Change*, Calcutta.
3. Gandhi,M.K., (1962). *Women and Social Injustice*, Ahemadabad.
4. Gangrade,K.D, (1978). *Social Legislation in India, Vol.I and II*, Delhi.
5. Mandakini Das, Pritirekha, Das Pathnayak (ed)., (2010). *Empowering Women: Issues and Challenges and Strategies*, New Delhi.

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Semester: III & IV	CONSTITUTION OF INDIA	Hours/Week: 1 + 1	
Generic Elective - 2		Credits : 1	
Course Code: 18UGEC41		(2018 -19 onwards)	<u>Internal</u> 100

COURSE OUTCOMES

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

- understand the basic tenets of the Constitution.
- realize the duties and responsibilities as a citizen of India.
- shine in competitive examinations.
- understand that the constitution is a base for the functioning of the Government
- aware of the actual working of political institutions.
- know the powers of Judiciary in the protection of citizen.

UNIT I

Constituent Assembly - Sources – Salient Features of the Constitution – Fundamental Rights – Fundamental Duties – Directive Principles of State Policy.

UNIT II

President and Vice-President – Election, Position, Powers and Functions – Prime Minister and his cabinet.

UNIT III

Indian Parliament – Lok Sabha and Rajya Sabha – Composition – Powers and Functions.

UNIT IV

Process of Law making – Committee system – Mode of Amendments-
Constitutional Amendments.

UNIT V

Judiciary – Supreme Court – Composition - Powers and Functions – Judicial
Review - State Government – Governor - Chief Minister- High court.

TEXT BOOK

Study Material prepared by the faculty in Department of History.

REFERENCE BOOKS

1. Gomathinayagam,P& Anusuya,R. (1980). *Modern Governments*, Rajapalayam:
Sri Vinayaga Pathipagam.
2. Kapur,A.C. (1975). *Select Constitutions*, New Delhi: S.Chand & Co.
3. Kasthuri,J. (1998). *Modern Governments*, Udumalpet: Ennes Publications.
4. Mahajan, V.D. (1969). *Select Modern Governments*, New Delhi: S.Chand & Co.
5. Ramalingam, T.S. (1971). *Modern Governments*, Madurai: T.S.R. Publications.

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Semester: III & IV	MODERN ECONOMICS (2018-2019 Onwards)	Hours/Week: 1 +1	
Generic Elective - 2		Credits: 1	
Course Code 18UGEM42		Internal 100	External -

COURSE OUTCOMES

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

- understand the economic development and the various sectors of Indian Economy.
- get clear knowledge about economic issues.
- get introduced to the framework of Budgets and Income and Expenditure of the Government.
- understand the role of banks in economic development.
- apply the E-payment methods in day to day life.

UNIT I: Economic Development: Economic Development – Meaning – Nature of Indian Economy – Features of Indian Economy - Agriculture and Economic Development – Industrial Sector and Economic Development – LPG – Advantages and Disadvantages – MNCs – Obstacles to Economic Development.

UNIT II: Economic Issues: Population growth in India –Causes – Measures –Poverty – Causes – Measures – Unemployment – Causes – Types – Measures.

UNIT III: Government Budget and the Economy: Meaning –Types –Principles of Budgeting –Budgetary Procedure –Direct and Indirect Taxes –Merits –Demerits –Causes for Growth of Public Expenditure.

UNIT IV: Role of Commercial Banks in Economic Development: Commercial Banks – Classifications – Public Sector Banks – Merits - Private Sector Banks – Merits – Differences between Public Sector Banks and Private Sector Banks - Role of Commercial

Banks in Economic Development —Innovative Schemes for developing Infrastructure – Demonetization – Reasons for Demonetisation – Merits and Demerits of Demonetisation.

UNIT V: E-Banking: E-Banking – Advantages – Disadvantages – Mobile Banking – Facilities – Advantages – Disadvantages - Internet Banking – Types – Features – Advantages – Disadvantages – Electronic Payment System (EPS) – Meaning – Benefits – Disadvantages – Methods of EPS– ATM – Debit Card – Credit Card – Smart Card– Electronic Clearing Service (ECS) – National Electronic Funds Transfer (NEFT) – Real Time Gross Settlement (RTGS) - Risks involved in E-Payments – Security tips to overcome Risks in E-Payments

TEXT BOOK

Study Material prepared by the faculty in Department of Commerce and Economics.

REFERENCE BOOKS

1. Sankaran .S, (2012). *Micro Economics*, Chennai: Margham Publications.
2. Sankaran. S, (2012). *Monetary Economics*, Chennai: Margham Publications.
3. Ruddar Dutt and Sundharam. K.P.M., (2017). *Indian Economy*, New Delhi: S. Chand & Company Ltd.
4. Mithani.D.M., (2010). *Money, Banking, Trade and Public Finance*, Mumbai: Himalaya Publishing House.
5. Rama. A and Aruna Devi. A. (2019). *Banking Technology*, Chennai: New Century Book House (P) Ltd.

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Semester: III & IV	ADOLESCENT PSYCHOLOGY	Hours/Week: 1+ 1	
Generic Elective- 2		Credits: 1	
Course Code 18UGEA43		Internal 100	External -

COURSE OUTCOMES

On completion of the course, students will be able to

- gain knowledge regarding the changes in different domains of development during adolescence.
- develop and maintain good relationship with parents and peers.
- aware of the issues challenging adolescents and measures to be taken to prevent those issues.
- face the challenges they face across the life span
- adopt a few counseling techniques.

UNIT I

Adolescence- Age of adolescence, characteristics, problems of adolescence. Biological transitions, Emotional transitions, Social transitions, Cognitive transitions, Changes in moral behavior, Developmental tasks.

UNIT II

Challenges of Adolescents-Health issues, Sexually transmitted diseases, Mental health issues, Social issues- Sexual abuse, Substance abuse, Influence of electronic media.

UNIT III

Development of Self- Identity development and autonomy, self - esteem, Gender and self- regulation. Self-reliance and personal decision making process. Peer Pressure and Family conflicts.

UNIT IV

Counselling – Styles of Counselling – An effective Counseling relationship-
Managing crises – Effective Counselor - Maintain boundaries – Taking care of
ourselves.

UNIT V

Qualities of a good Counsellors

Empathy – open mindedness – Genuine and Trust Winning – Maintaining
confidentiality – certain Do's and Dont's.

Related Experience

Discussion about the problems confronting adolescents today.

Group discussion on the use and misuse of electronic media by adolescents.

Discussion on issues relating to parent, adolescents relationship.

To study about the health problems of adolescents.

To make a study on the stress experience by adolescents.

Critical Analyses issues and debates in Counseling psychology.

Reflect on the their role in different fields of Counseling.

TEXT BOOK

Study Material prepared by the faculty in Department of Home Science.

REFERENCE BOOKS

1. Chauhan S. (1983), *Psychology of Adolescence*, New Delhi: Allied Publishers Private Limited.
2. Elizabeth B Hurlock (1985). *Developmental Psychology A Life - Span Approach*, New York: TMH Edition.
3. Aron, A., & Aron, E.N. (1994). *Statistics for Psychology*. New Jersey: Prentice Hall.
4. Miles, J. (2001). *Research Methods and Statics*, Exeter: Crucial.

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Semester: III & IV	DISASTER MANAGEMENT	Hours/Week: 1+ 1	
Generic Elective- 2		Credits: 1	
Course Code 18UGED44		Internal 100	External -

COURSE OUTCOMES

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

- get a general insight in the dimensions of disasters caused by nature as well as the disasters and environmental hazards induced by human developmental activities
- become aware of the fundamentals of disaster assessment and environmental impact assessment
- become sensitized to the various institutional agencies for disaster management
- be aware of disaster recovery plan
- understand the association at National, State and District level of cope up with disaster

UNIT I

Disaster – Features and Effects of Disaster – Process of Disaster – Hazards and its Classification – Vulnerability and its Categories - Stages in Disaster – Disaster Management and its Activities – Disaster Management Cycle.

UNIT II

Earthquake - Factors Determining Earthquakes –Seismic Waves in Earthquake Processes - Magnitude and Intensity - Earthquake Damages - Disaster Management and Earthquake.

Volcanoes - Active and Non-Active Volcanoes - Types of Volcanoes – Landslides - Basic Causes of Landslides – Tsunami - Causes of Tsunami - Tsunami Warning System - Disaster Management Team and Tsunami – Flood - Types of Flood - Damages due to Floods.

UNIT III

Damage Assessments for Different Disaster – Objectives, Features, Levels, Types: Damage to Buildings, House Property, Land, Crops and Live Stock – Impact of Human Lives – Assessment Damages - Damage Reports: Flash Report, Initial Report, Interim Report, Specialist Report and Final Report – Points to be Considered while Preparing Reports - Reporting Format and Quantification of Needs– Disaster Assistance: Individual Assistance and Public Assistance.

UNIT IV

National Crisis Management Committee (NCCM), State Crisis Management Group (SCMG): Task, District Disaster Management Committee, Disaster-Related Roles and Resources, Disaster Agencies, Site Operations Centre and Rescue Camps.

UNIT V

Disaster Mitigation Strategies in Floods and Water Hazards, Earthquakes, Volcanic Eruptions, Landslides, Drought and Desertification – Main Mitigation Strategies - - The Disaster Recovery Planning: Objectives and Phases - Reconstruction and Rehabilitation: Physical, Social, Psychological and Economic rehabilitation.

TEXT BOOK

Study material prepared by the faculty in Department of Commerce.

REFERENCE BOOKS

1. Rajdeep Dasgupta. (2011). *Disaster Management and Rehabilitation*, New Delhi: Mittal Publications.
2. Sunder.I. & Sezhiyan.T. (2012). *Disaster Management*, New Delhi : Sarup and Sons.
3. Ramana Murthy.K. (2004). *Disaster Management*, New Delhi: Dominant.

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B.Sc. MATHEMATICS (SEMESTER) (2018 -19 onwards)

Semester IV	DYNAMICS	Hours/Week: 3	
Core Course-7		Credits: 3	
Course Code 18UMTC41		Internal 25	External 75

COURSE OUTCOMES

On completion of the course, students will be able to

- analyse the motion of projected particles in any direction and velocity.
- understand the notions such as greatest height, time of flight and the horizontal range of a projectile.
- solve Simple Harmonic Motion equation and study the geometrical representation of a S.H.M.
- find radial and transverse components of velocity and acceleration.
- identify the Pedal equation of central orbits and find the equation of orbit by using law of force.

UNIT I

Projectiles

Definitions - Two Fundamental Principles - To show that the path of a Projectile is a parabola - Characteristics of the Motion of a Projectile - A Particle is projected horizontally from a point at a certain height above the ground; to show that the path described by it is a Parabola- To determine when the horizontal range of a Projectile is maximum, given the magnitude u of the velocity of projection- To show that, for a given initial velocity of projection there are, in general two possible directions of projections so as to obtain a given horizontal range. (9 hours)

UNIT II
Projectiles Continued

To find the velocity of the Projectile in magnitude and direction at the end of time t - To show that the velocity at any point P of a Projectile is equal in magnitude to the velocity acquired in falling freely from the directrix to the point - Given the magnitude of the velocity of projection, to show that there are two directions of projection for the particle so to reach a given point - Range on an inclined plane - To find the greatest distance of the projectile from the inclined plane and show that is attained in half the total time of flight - To determine when the range on the inclined plane is maximum, given the magnitude u of the velocity of projection - To show that, for a given initial velocity of projection, there are, in general, two possible directions of projection so as to obtain a given range on an inclined plane - Motion on the surface of a smooth inclined plane. (9 hours)

UNIT III
Simple Harmonic Motion

Introduction-Simple Harmonic Motion in a straight line – General solution of S.H.M equation- Geometrical Representation of a Simple Harmonic Motion-Change of origin - Composition of two Simple Harmonic Motions of the same period and in the same straight line. (9 hours)

UNIT IV
Motion Under the Action of Central Forces

Introduction - Velocity and Acceleration in polar coordinates - Equations of motion in polar coordinates - Note on the equiangular spiral - Motion under a central force -Differential equation of central orbits-Perpendicular from the pole on the tangent formulae in polar coordinates. (9 hours)

UNIT V
Motion Under the Action of Central Forces Continued

Pedal equation of the central orbit-Pedal equation of some of the well known curves-Velocities in a central orbit-Two fold problems in central orbits-Apses and apsidal distances-Given the law of force to the pole to find the orbit. (9 hours)

TEXT BOOK

Venkataraman. M. K. (July 2015). *Dynamics*, 17th edition, Agasthiar Publications.

Unit	Chapter	Section
I	6	6.1 - 6.8
II	6	6.9 - 6.16
III	10	10.1 - 10.6
IV	11	11.1 - 11.7
V	11	11.8 - 11.13



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VIRUDHUNAGAR - 626 001

B.Sc. MATHEMATICS (SEMESTER)

(2018 -19 onwards)

Semester IV	TRIGONOMETRY AND VECTOR CALCULUS	Hours/Week: 4	
Core Course-8		Credits: 3	
Course Code 18UMTC42		Internal 25	External 75

COURSE OUTCOMES

On completion of the course, students will be able to

- convert a scalar valued function into a vector valued function using the del operator.
- calculate divergence and curl of a vector valued function.
- evaluate double and triple integrals using the concept of Green's Stokes and Gauss theorem.
- expand any trigonometric function in powers of θ from the generalized expansion of trigonometric function.
- identify the hyperbolic functions and find their inverses.

UNIT I

Applications of De Moivre's Theorem

Expression for $\sin n\theta$, $\cos n\theta$ and $\tan n\theta$ - Expression for $\sin^n\theta$ and $\cos^n\theta$

- Expansion of $\sin \theta$, $\cos \theta$, $\tan \theta$ in powers of θ . (12 hours)

UNIT II

Hyperbolic Functions

Hyperbolic Functions – Inverse Hyperbolic Functions.

Logarithm of a Complex Number

Logarithm of a Complex Number. (12 hours)

UNIT III

Vector Differentiation

Differentiation of Vectors – Gradient. (12 hours)

UNIT IV**Vector Differentiation continued**

Divergence and Curl.

Line and Surface Integrals

Line Integrals.

(12 hours)

UNIT V**Line and Surface Integrals Continued**

Surface Integrals. Statements of Green, Gauss and Stokes theorems. (Without Proof) - Problems only.

(12 hours)

TEXT BOOKS

1. Arumugam & Isaac (Nov 2012). *Trigonometry*, MKU & MSU (CBCS syllabus) New Gamma Publishing House.
2. Arumugam Isaac (Jan 2014). *Analytical Geometry 3D and Vector Calculus*, New Gamma Publishing House.

TEXT BOOK 1		
Unit	Chapter	Section
I	1	1.1, 1.2, 1.3
II	2	2.1, 2.2
	3	full
TEXT BOOK 2		
III	5	5.2, 5.3
IV	5	5.4
	7	7.1
V	7	7.2, 7.3

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B.Sc. MATHEMATICS (SEMESTER) (2018 -19 onwards)

Semester IV	PROGRAMMING IN C	Hours/Week: 4	
Allied Course-II		Credits: 4	
Course Code 18UAMA41		Internal 25	External 75

COURSE OUTCOMES

On completion of the course, students will be able to

- understand the fundamentals of C Programming Language.
- use loops in decision making statements.
- handle different operations properly on arrays.
- identify the role of functions in the programme.
- understand the concept of structures and their unions in C Programming Language.

UNIT I

Constants, Variables and Data Types:

Introduction- Character set- C tokens- Keywords and Identifiers - Constants - Variables - Data types – Declaration of Variables, Storage Class – Assigning Values to Variables - Defining Symbolic Constants – Declaring a Variable as Constant, Volatile – Overflow and Underflow of data.

Operators and Expressions:

Introduction - Arithmetic, Relational, Logical, Assignment Operators – Increment and Decrement Operators – Conditional Operators, Bitwise Operators, Special Operators -Arithmetic Expression – Evaluation of Expressions – Precedence of Arithmetic Operators- Some Computational Problems –Type Conversions in Expressions – Operator Precedence and Associativity – Mathematical Functions.

(12 hours)

UNIT II

Managing Input and Output Operations:

Introduction-Reading and Writing a Character – Formatted Input, Output.

Decision Making and Branching:

Introduction-Decision Making with if Statement –Simple if Statement – the if else Statement - nesting of if...else Statements – The else if Ladder – The Switch Statement - The ? : Operator – The goto Statement. (12 hours)

UNIT III

Decision Making and Looping:

Introduction - The while Statement – The do Statement – The for Statement – Jumps in Loops.

Arrays:

Introduction -One Dimensional Arrays – Declaration, Initialization of One-dimensional Arrays– Two dimensional Arrays- Initializing Two- dimensional Arrays- Multi dimensional arrays - Dynamic arrays. (12 hours)

UNIT IV

Character Arrays and Strings:

Introduction-Declaring and Initializing String Variables – Reading Strings from Terminal - Writing Strings to Screen – Arithmetic Operations on Characters – Putting Strings Together –Comparison of Two Strings– String- Handling Functions – Table of Strings –Other Features of Strings.

User Defined Functions:

Introduction –Need for User Defined Functions - A Multi_Function Program – Elements of User Defined Functions – Definition of Functions – Return Values and Their Types –Function Calls - Function Declaration - Category of Functions – No Arguments and No Return Values- Arguments but No Return Values - Arguments with Return Values – No Arguments but Returns a value-Functions that Return Multiple Values –Nesting of Functions – Recursion –Passing Arrays to Functions - Passing Strings to Functions – The Scope, Visibility and Life time of Variables – Multifile Programs. (12 hours)

UNIT V**Structures and Unions:**

Introduction- Defining a Structure- Declaring Structure Variables – Accessing Structure Members – Structure Initialization – Copying and Comparing Structure Variables–Operations on Individual Members – Arrays of Structures –Arrays within Structures - Structures within Structures – Structures and functions –Unions – Size of Structures – Bit Fields.

File Management in C:

Introduction -Defining and Opening a File-Closing a File- Input/Output Operations on Files – Error Handling During I/O Operations –Random Access to Files – Command Line Arguments. (12 hours)

TEXT BOOK

Balagurusamy. E (5th Reprint 2017). *Programming in ANSI C*, (7th Edition), McGraw Hill Education (India) Private Limited, Chennai.

Unit	Chapter	Section/Page Number
I	2	22 - 45
	3	51 - 73
II	4	81 - 102
	5	111 - 136
III	6	149 - 174
	7	189 - 215
IV	8	234 - 258
	9	267 - 311
V	10	320 - 343
	12	391 - 412

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B.Sc. MATHEMATICS (SEMESTER) (2018 -19 onwards)

Semester IV	C - PRACTICAL	Hours/Week: 2	
Allied Course-II		Credits: 2	
Course Code 18UAMA41P		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- understand the basic programming structure of C language
- develop C programs to solve mathematical equations
- implement programs with effective use of C-features including arrays, functions and structures

List of Practical Programs in C:

1. (a) Program to calculate simple and compound interest for the given data
 (b) Program to convert temperature in Fahrenheit to Celsius.
2. (a) Program to check whether the given number is odd or even
 (b) Program to assign grade for student mark statement
3. (a) Program to evaluate sine series.
 (b) Program to check whether the given number is a prime number.
4. Program to multiply the given two matrices
5. Program to solve quadratic equation using switch statement.
6. Program to check whether two strings are Anagrams.
7. (a) Program to generate the first n terms of the Fibonacci sequence using recursion
 (b) Program to construct Pascal triangle for a given positive integer
8. Program to calculate mean and standard deviation of a given set of numbers using function.
9. Program to maintain employee details using structures.

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B.Sc. MATHEMATICS (SEMESTER) (2018 -19 onwards)

Semester IV	TRANSFORMS	Hours/Week:2	
SEC-3		Credits: 2	
Course Code 18UMTS41		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- understand the concept of Fourier transforms and its properties.
- understand the notion of Parseval's identity and other related identities.
- understand the definition and linear property of Z-transforms in discrete system.
- evaluate the inverse Z-transforms using power series and partial fraction methods.
- apply Z-transforms to find the solution of linear difference equations with constant coefficients

UNIT I

Fourier transforms:

Introduction - Fourier transforms - Fourier integral Theorem -Properties of Fourier transforms – Convolution Theorem and Parseval's Identity. (5 hours)

UNIT II

Fourier transforms continued:

Fourier Sine and Cosine Transforms – Properties of F_c and F_s - Parseval's Identity and other related identities . (5 hours)

UNIT III

Z-Transforms:

Introduction – Definitions – Some Standard Z- Transforms – Linearity Property – Damping rule - Some Standard Results. (6 hours)

UNIT IV**Z-Transforms continued:**

Shifting U_N to the Right – Multiplication by n - Two Basic Theorems – Some Useful Z- Transforms - Some Useful inverse Z- Transforms - Convolution Theorem.

(7 hours)

UNIT V**Z-Transforms continued:**

Evaluation of inverse Z-Transform – Power Series method – Partial Fraction Method (Inversion Integral Method is omitted) – Applications to Difference Equations (Problems involving Residue Method is omitted).

(7 hours)

TEXT BOOKS

1. Narayan, Manicavachagom Pillay, T.K. (2002). *Advanced Methods For Engineering Students - Vol-III*, S.Viswanathan Printers and Publishers Pvt. Ltd.
2. Grewal B.S, *Higher Engineering Mathematics* (43rd Edition), Khanna Publications.

TEXT BOOK 1		
Unit	Chapter	Section
I	1	8.1 - 8.4.
II	1	8.6 – 8.8.
TEXT BOOK 2		
III	23	23.1 – 23.6.
IV	23	23.7 – 23.12.
V	23	23.15, 23.16

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B.Sc. MATHEMATICS (SEMESTER) (2018 -19 onwards)

Semester IV	STATISTICS AND OPERATIONS RESEARCH	Hours/Week:2	
NMEC-2		Credits: 2	
Course Code 18UMTN41		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- understand in a single effort the significance of the whole using the statistical constants.
- estimate the value of the dependent variable for a given value of the independent variable using the fitted straight line.
- compare the price of a commodity at a particular period with the price of the same commodity at a previous period of time
- make decision in a competitive situation using game theory.
- give an appropriate order for a series of jobs to be done on a finite number of machines.

UNIT I

Statistics – Mean, Median, Mode – Standard Deviation. (6 hours)

UNIT II

Curve Fitting: Straight line only. (4 hours)

UNIT III

Index numbers - calculation of indices using simple aggregate method and average of price relative methods-weighted index numbers- Laspeyre's and Paasche' index numbers - Fisher's index number. (6 hours)

UNIT IV

Games and strategies – Two person zero sum games - Basic terms - Maximin - Minmax principle - solution of 2×2 game without saddle point (Theorems without proof). (7 hours)

UNIT V

Sequencing-Problem of Sequencing-Basic terms used in sequencing-Processing of n jobs through 2 machines (7 hours)

TEXT BOOKS

1. Arumugam.S (July 2009). *Statistics*, New Gamma Publishing House.
2. Kanti Swarup, Gupta P.K and Man Mohan(2006). *Operations Research*, Sultan Chand & Sons, Educational Publications.

TEXT BOOK 1		
Unit	Chapter	Sections
I	II III	2.1 (Theorems without proof) 2.2 (Omitting theorems, Quartiles, Deciles & Percentiles) and 2.3 3.1 (Theorems without proof)
II	V	Full
III	IX	9.1
TEXT BOOK 2		
IV	XVII	17.2, 17.3, 17.4, 17.5 (Problems only)
V	XII	12.2, 12.3, 12.4 (Problems only)

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B.Com. (SEMESTER)

(2018 -19 onwards)

Semester IV	MATHEMATICS FOR COMPETITIVE EXAMINATIONS	Hours/Week:2	
SEC-1		Credits: 2	
Course Code 18UCOS41		Internal 40	External 60

COURSE OUTCOMES

On completion of the course, students will be able to

- appear for various competitive examinations.
- acquire right skills to tackle aptitude problems.
- improve mental calculations.
- improve the speed of solving problems
- solve problems with ease and confidence.

UNIT I

Problems on Numbers (5 hours)

UNIT II

Percentage (7 hours)

UNIT III

Profit and Loss (7 hours)

UNIT IV

Time and Work (6 hours)

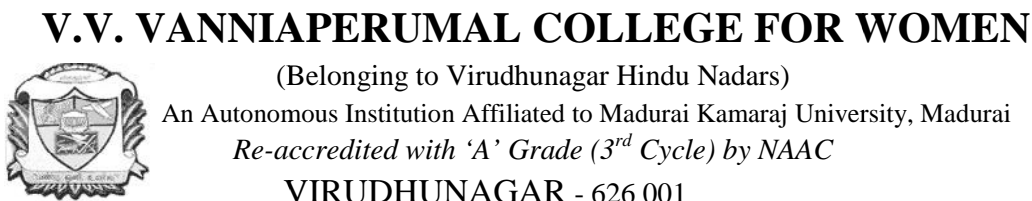
UNIT V

Odd Man Out & Series (5 hours)

TEXT BOOK

Aggarwal. R.S (Reprint 2013). *Quantitative Aptitude for Competitive Examinations*, (Seventh Revised Edition), New Delhi: S.Chand Publications.

Unit	Chapter	Section
	Section-I Arithmetical ability	
I	7	Solved Examples: 1 - 15 Problems and Exercise 7A: 1 – 20 Problems
II	10	Solved Examples: 1 - 15 Problems and Exercise 10: 1 – 20 Problems
III	11	Solved Examples: 1 - 20 Problems and Exercise 11A: 1 – 15 Problems
IV	15	Solved Examples: 1 - 11 Problems and Exercise 15A: 1 – 10 Problems
V	35	Exercise 35: 1 – 50 Problems

**B.Sc. COMPUTER SCIENCE (SEMESTER)**

(2018 -19 onwards)

Semester III	RESOURCE MANAGEMENT TECHNIQUES	Hours/Week: 4	
Allied Course - I		Credits: 4	
Course Code 18UCSA31		Internal 25	External 75

COURSE OUTCOMES

On completion of the course, students will be able to

- plan an optimal transportation schedule
- have a conceptual understanding of the role that management science plays in the decision making process
- reduce customers' /clients' waiting period for service delivery
- identify the fastest or the cheapest or the most scenic route, using shortest route problem
- utilize planning and controlling techniques for real life projects

UNIT I**Transportation Problem**

Introduction – LP Formulation of the Transportation Problem - Existence of Solution in T. P – The Transportation Table – Loops in Transportation Table – Solution of a Transportation Problem – Finding an Initial Basic Feasible Solution – Test for Optimality – Degeneracy in Transportation Problem – Transportation Algorithm (MODI Method) – Some Exceptional Cases.

(12 hours)

UNIT II**Inventory Control – I**

Introduction – Types of Inventories – Reasons for Carrying Inventories – The Inventory Decisions – Objectives of Scientific Inventory Control - Costs

Associated with Inventories – Factors Affecting Inventory Control – An Inventory Control Problem – The Concept of EOQ – Deterministic Inventory Problems with No Shortages. (12 hours)

UNIT III **Queueing Theory**

Introduction – Queueing System – Elements of a Queueing System – Operating Characteristics of a Queueing System – Deterministic Queueing System – Probability Distributions in Queueing Systems – Classification of Queueing Models – Definition of Transient and Steady States – Poisson Queueing System (Model I and Model III). (12 hours)

UNIT IV **Network Routing Problems**

Minimal Spanning Tree Problem – Some Applications of the Minimal Spanning Tree Problem – Minimal Spanning Tree Algorithm – Shortest Route Problem – The Dijkstra's Shortest Path Algorithm. (12 hours)

UNIT V **Network Scheduling by PERT / CPM**

Introduction – Network: Basic Components – Logical Sequencing – Rules of Network Construction – Critical Path Analysis. (12 hours)

TEXT BOOK

Kanti Swarup, Gupta. P. K, ManMohan (Reprint 2011). *Operations Research*, Sultan Chand & Sons.

Unit	Chapter	Section
I	10	10. 1 - 10. 3, 10. 5, 10. 6, 10. 8 - 10. 10, 10. 12, 10. 13, 10. 15
II	19	19. 1 – 19. 10
III	21	21. 1 – 21 .9 (Models I and III only)
IV	24	24. 3, 24. 3. 1, 24. 3. 2, 24. 4, 24. 4. 1
V	25	25. 1 – 25. 4, 25. 6

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B.Sc. COMPUTER SCIENCE (SEMESTER)

(2018 -19 onwards)

Semester IV	QUANTITATIVE APTITUDE	Hours/Week: 4	
Allied Course		Credits: 4	
Course Code 18UCSA41		Internal 25	External 75

COURSE OUTCOMES

On completion of the course, students will be able to

- appear for various competitive examinations.
- acquire right skills to tackle aptitude problems.
- improve mental calculations.
- improve the speed of solving problems
- solve problems with ease and confidence.

UNIT I

Numbers-HCF & LCM of numbers –Decimal fraction (11 hours)

UNIT II

Average - Problems on numbers – Problems on Ages (11 hours)

UNIT III

Percentage – Profit & loss- Ratio & Proportion (12 hours)

UNIT IV

Time & work – Time & Distance – Problems on Trains (13 hours)

UNIT V

Simple Interest – Compound Interest Permutation & Combination.

(13 hours)

TEXT BOOK

Aggarwal.R.S. (Reprint 2008). S.Chand Publications, *Quantitative Aptitude for Competitive Examinations*, New Delhi: Seventh Revised Edition.

Unit	Page No. for solved Problems	Exercise No.	Problems
I	1 - 9	1	1 - 140
	30 - 34	2	1 - 83
	46 - 50	3	1 - 119
II	139 - 141	6A	1 - 25
	161 - 163	7A	1 - 25
	182 - 183	8A	21 - 40
III	208 - 215	10	194 - 203
	251 - 256	11A	150 - 160
	294 - 296	12	1 - 40
IV	341 - 344	15A	21 - 40
	384 - 386	17	1 - 25
	405 - 407	18A	31 - 48
V	445 - 447	21A	51 - 70
	466 - 470	22A	21 - 41
	613 - 615	30	1 - 21