

# SYLLABUS

MANONMANIAM SUNDARANAR UNIVERSITY, TIRUNELVELI-12

UG COURSES – AFFILIATED COLLEGES

## B. Sc Mathematics

(Choice Based Credit System)  
(with effect from the academic year 2021-2022 onwards)

Semester-II				
Part	Subject Status	Subject Title	Subject Code	Credit
I	Language	Tamil / Other Languages	C1TL21/ C1MY21	4
II	Language	English	C2EN21	4
III	Core-II Paper- II	Differential Equations and Analytical Geometry of Three Dimensions	CMMA21	4
	Add on major(Mand atory)Paper- IV	Professional English for Physical Sciences – II	CPPS21	4
	Allied-II (For Maths students)	Allied Physics II	CAPH21	3 5
	Allied-II (For Science students)	Allied Practical II	CAPHP2	4
IV	Common	Value Based Education	CVBE21	2



**Total Marks: 100 Internal Exam: 25 marks + External Exam: 75 marks**

**A. Scheme for internal Assessment:**

Maximum marks for written test: **20 marks**

**3 internal tests**, each of **1 hour** duration shall be conducted every semester.

To the average of the **best two** written examinations must be added the marks scored in. The **assignment** for 5 marks.

The break up for internal assessment shall be:

Written test- 20 marks; Assignment -5 marks Total - 25 marks

**B. Scheme of External Examination**

**3 hrs.** examination at the end of the semester

A – Part : 1 mark question two - from each unit

B – Part : 5 marks question one - from each unit

C – Part : 8 marks question one - from each unit

➤ **Conversion of Marks into Grade Points and Letter Grades**

S.No	Marks	Letter Grade	Grade point (GP)	Performance
1	90-100	O	10	Outstanding
2	80-89	A+	9	Excellent
3	70-79	A	8	Very Good
4	60-69	B+	7	Good
5	50-59	B	6	Above Average
6	40-49	C	5	Pass
7	0-39	RA	-	Reappear
8	0	AA	-	Absent

➤ **Cumulative Grade Point Average (CGPA)**

$$CGPA = \frac{\Sigma (GP \times C)}{\Sigma C}$$

- **GP** = Grade point, **C** = Credit
- CGPA is calculated only for Part-III courses
- CGPA for a semester is awarded on cumulative basis

➤ **Classification**

- First Class with Distinction : CGPA  $\geq 7.5^*$
- First Class : CGPA  $\geq 6.0$
- Second Class : CGPA  $\geq 5.0$  and  $< 6.0$
- Third Class : CGPA  $< 5.0$



## Part I Tamil

## இரண்டாம் பருவம்

<b>21T</b>	செய்யுள், இலக்கணம், உரைநடை, வாழ்க்கை வரலாறு, இலக்கிய வரலாறு	3	6	-	25	75	100
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<b>Course Code</b>	<b>21T</b>	<b>பகுதி – ஒன்று – பொதுத்தமிழ் - இரண்டாம்தாள் (TITLE OF THE COURSE)</b>
<b>பாடத்திட்டத்தின் நோக்கங்கள் (Course Objectives)</b> ஆன்மிகச் சிந்தனையை இந்நீதி நெறிகளைப் புகட்டுதல்		
<b>எதிர்பார்க்கும் படிப்பின் முடிவுகள் (Expected Course Outcomes)</b>		
1. சமய இலக்கியங்கள் வழி, பக்தி நெறிகளை அறிவித்தல்		
2. நீதி நூல்கள் வாயிலாக ஒழுக்கச் சிந்தனைகளை எடுத்துரைத்தல்		
3. மொழி அமைப்பினை உணர்த்தி கடிதங்கள் எழுதப் பழக்குவித்தல்		
4. சான்றோர் வாழ்க்கை வரலாற்றினைப் போதித்து நல்வழிப்படுத்துதல்		
5. சமயங்களால் படைக்கப்பட்ட இலக்கியங்களை அறிமுகம் செய்தல்		
<b>K1 - நினைவில் கொள்ளுதல் (Remember) K2- புரிந்து கொள்ளுதல் (understand) K3 - விண்ணப்பித்தல் (Apply) K4 - பகுத்தாய்தல் (Analyze) K5 - மதிப்பிடு செய்தல் (Evaluate) K6 - உருவாக்குதல் (Create)</b>		
<b>Unit:1</b>	<b>செய்யுள்</b>	<b>30 Hours</b>
தேவாரம் முதல் நன்னெறி வரை - பல்கலைக்கழக வெளியிடு, அனுசித்ரா பப்ளிகேஷன்ஸ், சென்னை-33. தொலைபேசி எண் : 044-24743719, Email : anuchitrapublications@gmail.com.		
<b>Unit:2</b>	<b>இலக்கணம் : சொல் இலக்கணம்</b>	<b>15 Hours</b>



2. பெயர்ச்சொல் - இலக்கணம், வகைகள் 3. வினைச்சொல் - இலக்கணம், வகைகள் 4. இடைச்சொல் - இலக்கணம், ஏகார, ஓகார, உம்மை இடைச்சொற்கள். 5. உரிச்சொல் - இலக்கணம், வகைகள் 6. கடிதங்கள் <ul style="list-style-type: none"> <li>• முறையிட்டுக் கடிதம்</li> <li>• வேண்டுகைக் கடிதம்</li> <li>• விண்ணப்பக் கடிதம்</li> <li>• பத்திரிகையில் செய்திகள் வெளியிடுவதற்குப் பயிற்சி அளித்தல்</li> </ul>		
<b>Unit:3</b>	<b>உரைநடை</b>	<b>15 Hours</b>
உரை அமுதம் - தொகுப்பாசிரியர் - முனைவர் கெ.செல்லத்தாய், உங்கள் நூலகம், சென்னை -14 தொலைபேசி எண் : 044-28482441		
<b>Unit:4</b>	<b>வாழ்க்கை வரலாறு</b>	<b>15 Hours</b>
மனோன்மணியம் சுந்தரனாரின் வாழ்வும் பணியும் ஆசிரியர் முனைவர் அ.கா.பெருமாள், நெஸ்லிங் புகஸ் பப்ளிசிங், சென்னை -50 தொலைபேசி எண் : 044-26251968, 26258410, 48601884		
<b>Unit:5</b>	<b>இலக்கிய வரலாறு</b>	<b>15 Hours</b>
1. பன்னிரு திருமுறைகள் 2. நாலாயிரத் திவ்விய பிரபந்தம் 3. சமண இலக்கியங்கள் 4. பௌத்த இலக்கியங்கள் 5. கிறித்துவ இலக்கியங்கள் 6. இஸ்லாமிய இலக்கியங்கள் 7. அறநூல் பெயர்கள் மட்டும் (பதினெண் கீழ்க்கணக்கில்)		

## PART-1 MALAYALAM

### SECOND SEMESTER

#### PAPER – II

#### A1MY21 - ഗദ്യസാഹിത്യം (Gadyasahithyam) - Prose Literature

##### OBJECTIVE OF THE STUDY

The aim is to impart a general understanding of the origin of Malayalam prose and the various forms of prose literature. The origin and development of Malayalam Short-Story and Novel should be briefed. For detailed study a Short-Story & a Novel of famous authors are prescribed. The change from the early short stories and novel to the present should be introduced. The teacher should explain the theme, structure and narrative style of the authors in detail. The development of prose literature should be introduced on the basis of the texts for detailed study.

##### UNIT - 1- Short-Story

###### ചെറുകഥ

ആദ്യകാല ചെറുകഥകൾ - എഴുത്തുകാർ - വളർച്ച - വികാസം - ചെറുകഥയുടെ ആധുനിക കാലം - ഉത്തരാധുനിക കാലം - സാങ്കേതിക വിദ്യ - ആസ്വാദനരീതി - മാറ്റം

##### FOR DETAILED STUDY

1. കാരൂർ നീലകണ്ഠപ്പിള്ള - ഉതുപ്പന്റെ കിണർ
2. കെ. ആർ. മീര - കൃഷ്ണഗാഥ

##### UNIT - 2- Novel

###### നോവൽ

നോവലിന്റെ ഉത്ഭവവും വളർച്ചയും - ആദ്യകാല നോവലുകൾ - വിവിധതരം നോവലുകൾ - ആധുനികകാലം - ഉത്തരാധുനിക പ്രവണതകൾ

##### FOR DETAILED STUDY

3. വൈക്കം മുഹമ്മദ് ബഷീർ - മതിലുകൾ

##### UNIT - 3- Memoris

###### സ്മരണ

ആത്മകഥ - ജീവചരിത്രം - സ്മരണ തുടങ്ങിയവയുടെ വ്യത്യാസങ്ങളെക്കുറിച്ച് - സംസ്കാരം - സമൂഹം - ചരിത്രം തുടങ്ങിയ അറിവുകൾ

##### FOR DETAILED STUDY

4. കലാമണ്ഡലം കൃഷ്ണൻനായർ - ഗുരുസ്മരണ



#### UNIT - 4- Travlogue

##### സഞ്ചാരസാഹിത്യം

യാത്രാവിവരണഗ്രന്ഥങ്ങളുടെ പ്രത്യേകതകൾ - പ്രസക്തി - വായനാനുഭവം - സാഹിത്യാനുഭവം - ചരിത്രം - സംസ്കാരം എന്നിവയുമായുള്ള ബന്ധം

FOR DETAILED STUDY

5. എം. പി. വീരേന്ദ്രകുമാർ - ഹൈമവതഭൂവിൽ  
(അഞ്ച്, ആറ്, ഏഴ് അധ്യായങ്ങൾ)

#### UNIT - 5- Essays

##### ഉപന്യാസം

ഉപന്യാസരചനയുടെ തത്ത്വങ്ങൾ - പ്രസക്തി - വ്യത്യസ്ത മേഖലകളുമായി ബന്ധപ്പെടുന്നവ അവതരിപ്പിക്കുന്ന രീതി - ചരിത്രപശ്ചാത്തലം

FOR DETAILED STUDY

6. പ്രൊഫ. എം. എൻ. വിജയൻ - മനസ്സും മാധ്യമങ്ങളും

#### REFERENCE BOOKS

മലയാള ചെറുകഥാ സാഹിത്യചരിത്രം - ഡോ. എം. എം. ബഷീർ  
ചെറുകഥ ഇന്നലെ ഇന്ന് - എം. അച്യുതൻ  
ചെറുകഥയുടെ ചരന്തസ്സ് - വി. രാജകൃഷ്ണൻ  
മലയാളനോവൽ സാഹിത്യചരിത്രം - ഡോ. കെ. എം. തരകൻ  
കൈരളിയുടെ കഥ - പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള  
ചെറുകഥാപ്രസ്ഥാനം - എം. പി. പോൾ  
ഗദ്യപഥം - പ്രകാശനവിഭാഗം, കേരള സർവ്വകലാശാല  
ഗദ്യമാലിക - പ്രകാശനവിഭാഗം, കേരള സർവ്വകലാശാല  
ആത്മകഥാസാഹിത്യം മലയാളത്തിൽ - ഡോ. നടുവട്ടം ഗോപാലകൃഷ്ണൻ  
ജീവചരിത്രസാഹിത്യം - ഡോ. കെ. എം. ജോർജ്ജ്  
സഞ്ചാരസാഹിത്യം മലയാളത്തിൽ- വി. രമേഷ്ചന്ദ്രൻ  
സഞ്ചാരികളും ചരിത്രകാരന്മാരും - വേലായുധൻ പണിക്കശ്ശേരി  
ശുദ്ധമലയാളം - പ്രൊഫ. പത്മനാഭൻ രാമചന്ദ്രൻ



## PART II ENGLISH

### Unit I

1. Listening and Speaking
  - a. Listening and responding to complaints (formal situation)
  - b. Listening to problems and offering solutions (informal)
2. Reading and writing
  - a. Reading aloud (brief motivational anecdotes)
  - b. Writing a paragraph on a proverbial expression/motivational idea.
3. Word Power/Vocabulary
  - a. Synonyms & Antonyms
4. Grammar in Context
  - a. Adverbs
  - b. Prepositions

### Unit II

1. Listening and Speaking
  - a. Listening to famous speeches and poems
  - b. Making short speeches- Formal: welcome speech and vote of thanks.  
Informal occasions- Farewell party, graduation speech
2. Reading and Writing
  - a. Writing opinion pieces (could be on travel, food, film / book reviews or on any contemporary topic)
  - b. Reading poetry
    - b.i. Reading aloud: (Intonation and Voice Modulation)
    - b.ii. Identifying and using figures of speech - simile, metaphor, personification etc.
3. Word Power
  - a. Idioms & Phrases
4. Grammar in Context  
Conjunctions and Interjections

### Unit III

1. Listening and Speaking
  - a. Listening to Ted talks
  - b. Making short presentations – Formal presentation with PPT, analytical presentation of graphs and reports of multiple kinds
  - c. Interactions during and after the presentations
2. Reading and writing
  - a. Writing emails of complaint
  - b. Reading aloud famous speeches
3. Word Power



- a. One Word Substitution
- 4. Grammar in Context: Sentence Patterns

#### **Unit IV**

- 1. Listening and Speaking
  - a. Participating in a meeting: face to face and online
  - b. Listening with courtesy and adding ideas and giving opinions during the meeting and making concluding remarks.
- 2. Reading and Writing
  - a. Reading visual texts – advertisements
  - b. Preparing first drafts of short assignments
- 3. Word Power
  - a. Denotation and Connotation
- 4. Grammar in Context: Sentence Types

#### **Unit V**

- 1. Listening and Speaking
  - a. Informal interview for feature writing
  - b. Listening and responding to questions at a formal interview
- 2. Reading and Writing
  - a. Writing letters of application
- 3. Word Power
  - a. Collocation
- 4. Grammar in Context: Working With Clauses





## CORE – II

# DIFFERENTIAL EQUATIONS & ANALYTICAL GEOMETRY OF THREE DIMENSIONS

### Objectives:

- To explain ordinary differential equations with Constant and variable Coefficients.
- To describe sphere, intersection of two spheres and tangency of spheres.

### Course Learning Outcomes: It enables the students to

- know the differential equation with constant & variable Coefficients.
- understand the shape of a plane sphere in three dimensions.

### UNIT – 1:

First order higher degree equations- solvable for x, y, p and Clairaut's form – Simultaneous differential equations of the form  $f_1(D)x + g_1(D)y = h_1(t)$ ,  $f_2(D)x + g_2(D)y = h_2(t)$ .

### UNIT – 2:( Ordinary Differential Equation )

Second order linear differential equations with constant coefficients – Find the P.I for function of the form  $e^{ax}f(x)$  and  $x^n f(x)$ - Linear equations of second order with variable coefficients.

### UNIT – 3:

Analytical Geometry of 3D-Co-ordinate system, direction cosines, direction ratios- Equation of plane in different forms - angle between planes-Length of perpendicular-angle of bisection.

### UNIT – 4:

Equation of a line in different forms - image of a point- image of a line- The plane and the straight line-angle between plane and line-Coplanar lines- Shortest distance between two lines.

### UNIT – 5:

Sphere – Tangent plane – circle of intersections –Tangency of Spheres– Orthogonal Spheres.



**Text Books:**

1. Narayanan.SandT.K.ManickavachagamPillai–  
Differential equations and its applications, S. Viswanathan Printers Pvt. Ltd, (2006).
2. Manickavasagam Pillai .T.K and T. Natarajan–A text book of Analytical  
Geometry – Part-II Three Dimensions – S. Viswanathan (Printers &  
Publisher) Pvt. Ltd. (2012).

**Books for Reference:**

1. Kandasamy. PandK. Thilagavathi-Mathematics for B.Sc., Vol.III & IV S.Chand  
and Co. New Delhi. (2004)
2. Braun .M. - Differential Equations and their applications (III edition) Springer  
– Verlag, New York 1983)
3. Boyce .W.E and R.C. DiPrima – Elementary differential equations and  
Boundary value Problems (VII editions) – John Wiley and Sons, Inc, New York  
(2001).



## PAPER IV

### PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCE – II

#### Objectives:

The Professional Communication Skills Course is intended to help Learners in Arts and Science colleges.

- Develop their competence in the use of English with particular reference to the workplace situation.
- Enhance the creativity of the students, which will enable them to think of innovative ways to solve issues in the workplace.
- Develop their competence and competitiveness and thereby improve their employability skills.
- Help students with a research bent of mind develop their skills in writing reports and research proposals.

#### LEARNING OUTCOMES:

At the end of the course, learners will be able to,

- Attend interviews with boldness and confidence.
- Adapt easily into the workplace context, having become communicatively competent.
- Apply to the Research & Development organizations/ sections in companies and offices with winning proposals.

#### UNIT I

##### COMMUNICATIVE COMPETENCE

**Listening** – Listening to two talks/lectures by specialists on selected subject specific topics -(TED Talks) and answering comprehension exercises(inferential questions) **Speaking**: Small group discussions (the discussions could be based on the listening and reading passages- open ended questions. **Reading**: Two subject-based reading texts followed by comprehension activities/exercises. **Writing**: Summary writing based on the reading passages. Grammar and vocabulary exercises/tasks to be designed based on the discourse patterns of the listening and reading texts in the book. This is applicable for all the units.

#### UNIT II

##### PERSUASIVE COMMUNICATION

**Listening**: Listening to a product launch- sensitizing learners to the nuances of persuasive communication. **Speaking**: debates – Just-A Minute



Activities. **Reading:** reading texts on advertisements (on products relevant to the subject areas) and answering inferential questions. **Writing:** Dialogue writing- writing an argumentative /persuasive essay.

### UNIT III – DIGITAL COMPETENCE

**Listening:** Listening to interviews (subject related). **Speaking:** Interviews with subject specialists (using video conferencing skills) Creating V logs (How to become a v logger and use v logging to nurture interests – subject related). **Reading:** Selected sample of Web Page (subject area) **Writing:** Creating Web Pages. **Reading Comprehension:** Essay on Digital Competence for Academic and Professional Life. The essay will address all aspects of digital competence in relation to MS Office and how they can be utilized in relation to work in the subject area.

### UNIT IV CREATIVITY AND IMAGINATION

**Listening** to short (2 to 5 minutes) academic videos (prepared by EMRC/ other MOOC videos on Indian academic sites –

E.g. <https://www.youtube.com/watch?v=tpvicScuDy0>)

**Speaking:** Making oral presentations through short films – subject based  
**Reading:** Essay on Creativity and Imagination (subject based). **Writing – Basic Script**  
**Writing** for short films (subject based) - Creating blogs, flyers and brochures (subject based) - Poster making – writing slogans/captions(subject based)

### UNIT V WORKPLACE COMMUNICATION

**Speaking:** Short academic presentation using PowerPoint. **Reading & Writing:** Product Profiles, Circulars, Minutes of Meeting. Writing an introduction, paraphrasing Punctuation (period, question mark, exclamation point, comma, semicolon, colon, dash, hyphen, parentheses, brackets, braces, apostrophe, quotation marks, and ellipsis) Capitalization (use of upper case).



## **ALLIED PHYSICS - II**

### **Unit I: Electricity**

Current and current density – Expression for current density – Ohm's law – Resistors in series and in parallel – I-V characteristic of a resistor – Color coding – Conversion of a galvano meter into an ammeter and voltmeter – Kirchoff's laws – Application of Kirchoff's laws in Wheat stone network– sensitiveness of bridge.

### **Unit II: Electromagnetism**

Magnetism: Definition of magnetic induction B, Magnetic field intensity H, Intensity of magnetization M – Properties of Dia, Para and Ferro magnetic materials. Electromagnetism: Faraday's law of electromagnetic induction–Lenz's law – Expression for induced current and charge–Self inductance–Self inductance of along solenoid – Mutual inductance – Coefficient of coupling – Determination of mutual inductance using BG.

### **Unit III: Electronics**

Junction diodes - forward and reverse bias-diode characteristics - Zener diode – VI characteristic of a Zenerdiode – Transistors – Characteristics of a transistor (common emitter mode only). Digital Electronics: Decimal and binary numbers – binary to decimal and decimal to binary -Binary addition – Binary subtraction by 1's and 2's complement method – Basic logic gates OR,AND, NOT (Symbol, Boolean equation, truth table, circuit and working) – NAND, NOR, EX-OR(Symbol, Boolean equation, truth table only) – DeMorgan's theorem.

### **Unit IV: Nuclear physics**

Introduction – Classification of nuclei – General properties of nucleus – Nuclear size, Nuclear mass, Nuclear density, Nuclear charge, Nuclear spin & Nuclear magnetic dipole moments–Mass defect – Binding energy – Binding energy curve – Nuclear forces – Properties – Fundamental laws of radioactivity

### **Unit V: Mechanics and Relativity**

Projectiles – Time of flight – Range on the horizontal plane – Greatest height attained by the projectile–Path of the projectile–Relativity: Frames of references – Postulates of special theory of relativity – Galilean & Lorentz transformation equations – Length contraction – Time dilation.



**Books for study**

1. Electricity and Magnetism – R.Murugesan
2. Modern physics – R.Murugesan
3. Principle of Electronics – V.K.Mehta
4. Digital principles and applications - Albert Paul Malvino & Donald P.Leach
5. Mechanics – D.S.Mathur

**Books for Reference**

1. Modern Physics- Seghal Chopra & Seghal, Sultan chand 1998 Electricity and Magnetism -K.K. Tiwari (S.Chand&Co.)
2. Electronic fundamentals and applications – John D. Ryder–Prentice Hall
3. Electronic principles - Malvino
4. Electricity and Magnetism – Vasudeva



## **ALLIED PRACTICAL-II**

(6 experiments compulsory)

1. Potentiometer - calibration of voltmeter (low range)
2. Potentiometer – calibration of ammeter
3. Series resonance circuit
4. Parallel resonance circuit
5. Basic logic gates using discrete components – AND,OR,NOT
6. Zener diode - Diode characteristics
7. Absolute determination of mutual inductance–BG
8. Tangent galvanometer – Horizontal earth's magnetic induction



# Value Based Education

II Semester

## Course Objectives:

*The course will enable the student to:*

1. state the meaning of social justice, human rights, Globalization, mass media and new media
2. enumerate the rights of women, children, Dalits, minorities and physically challenged as per Indian constitution
3. comprehend the social realities and issues and challenges in globalization and inculcate an essential value system towards building a healthy society

## Course Prerequisites:

- a. positive attitude towards social justice and communal harmony
- b. aspiration to create a better world
- c. respect for Indian constitution, humanity, ethics and value

## Course Outcome (COs):

*After completing the course the students will be able to:*

**CO1:** Identify the contribution of social reformers and factors that influence social justice

**CO2:** Compare and list the legal rights provided to women, children, Dalits, minorities and physically

challenged as per human rights and Indian constitution

**CO3:** Stay as a responsible citizen and raise voice for any violence against women

**CO4:** analyze the prospects and challenges in mass media role of media in

**CO5:** assess the influence of new media on children and youth and use them to inculcate communal

harmony and social justice

**CO6:** frame their own personal values based on social ethics to moderate the social issues and lead a secular society

**Course Outline:** The course inculcates value and ethics in individual for being a responsible citizen and build a nation with social justice and communal harmony.

## Unit I:

### Social Justice

Social Justice: definition – need – parameters – influencing factors – caste and gender – contributions of social reformers.

## Unit II:

### Human Rights and Marginalized People





Human Rights: concept – principles – human rights and Indian constitution – Rights of Women and children – violence against women – Rights of marginalized people, women, children, dalits, minorities and physically challenged.

### **Unit III:**

#### **Social Issues and Communal Harmony**

Social issues: causes and magnitude – alcoholism, drug addiction, poverty, unemployment – Communal harmony: concept – religion and its place in public in public domain – separation of religion from politics – secularism role of civil society.

### **Unit IV:**

#### **Media Education and Globalized World Scenario**

Mass media: functions, characteristics, need and purpose – effects and influence – youth and children – media power – socio cultural and political consequences – mass mediated culture – consumeristic culture – Globalization – New media: prospects and challenges

### **Unit V: Values and Ethics**

Personal values – family values – social values – cultural values – Professional values – and overall ethics – duties and responsibilities

### **Reference Books:**

1. Francis, K. (1993). Education reform for social justice (Vol. 2). Discovery publishing house
2. Satvinder Juss. (2020). Human rights in India. Routledge
3. Smarak Swain, S. (2011). Social issues of India. New Vishal publications
4. Chakraborty, S. K., Chakraborty, D. (2006). Human Values and Ethics. ICFAI University Press
5. David Buckingham. (2013). Media Education: Literacy, Learning & Contemporary culture. Wiley Publishers.

