SYLLABUS

MANONMANIAM SUNDARANAR UNIVERISTY, TIRUNELVELI-12

UG COURSES – AFFILIATED COLLEGES

B.Sc. PHYSICS

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

Semester-I							
Part	Subject Status	Subject Title	Subject Code	Credit			
Ι	Language	Tamil / Other Language	C1TL11/ C1MY11	4			
II	Language	Communicative English	C2EN11	4			
III	Core	Properties of Matter & Mechanics	CMPH11	4			
	Practical	Practical-I	CMPHPI	2			
	Core	Professional English for Physical Sciences-I	CPPS11	4			
	Allied	Algebra and Differential Equations	CAMA11	4			
IV	Common	Environmental Studies	CEVS11	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 **I 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	0	10	Outstanding
2	80-89	A+	9	Excellent
3	70-79	А	8	Very Good
4	60-69	B+	7	Good
5	50-59	В	6	Above Average
6	40-49	С	5	Pass
7	0-39	RA	-	Reappear
8	0	AA	-	Absent

<u>Cumulative Grade Point Average (CGPA)</u>

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

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

> Classification

- a) First Class with Distinction : CGPA $\ge 7.5^*$
- b) First Class

- : CGPA \geq 7.5* : CGPA \geq 6.0
- . CUFA ≥
- c) Second Class : $CGPA \ge 5.0 \text{ and } < 6.0$ d) Third Class : $CGPA \le 5.0$



முதலாம் பருவம்

பாடத்திட்டப்பதிப்பு -2021-2022

பகுதி – ஒன்று – பொதுத்தமிழ் - முதல் தாள்

Unit:1

செய்யுள்

தமிழ்த்தாய் வாழ்த்து முதல் நாட்டுப்புறப்பாடல்கள் வரை பல்கலைக்கழக வெளியிடு, அனுசித்ரா பப்ளிகேஷன்ஸ், சென்னை-33. தொலைபேசிஎண் : 044-24743719, Email : <u>anuchitrapublications@gmail.com</u>

Unit:2

இலக்கணம் : எழுத்து இலக்கணம்

- 1. எழுத்தின் விளக்கம்
- 2. எழுத்தின் வகைகள் முதல் எழுத்துக்கள், சார்பு எழுத்துக்கள்
- 3. வினா எழுத்துக்கள், சுட்டெழுத்துக்கள்
- 4. வல்லினம் மிகும் இடங்கள், வல்லினம் மிகா இடங்கள்
- 5. ஒலிப்பு மாறுபாடுகளும் பொருள் வேறுபாடுகளும

Unit:3

உரைநடை

இலக்கியச்சாரல் - தொகுப்பாசிரியா் முனைவா் ச.அருள்மணி பிரிசாட் பப்ளிகேஷன்ஸ் சென்னை – 3

Unit:4

சிறுகதை

நவரத்தினக்கதைகள் - தொகுப்பாசிரியர் முனைவர் சு.நயினார் அறிவுப்பதிப்பகம்(பி)லிட்., சென்னை —14,தொலைபேசி எண் : 044-28482441

Unit:5

இலக்கிய வரலாறு

- 1. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்
- 2. சிறுகதையின் தோற்றமும் வளர்ச்சியும்
- 3. நாவலின் தோற்றமும் வளர்ச்சியும்
- 4. நாடகத்தின் தோற்றமும் வளர்ச்சியும்
- 5. நாட்டுப்புறப்பாடல்களின் தோற்றமும் வளர்ச்சியும்



PART-1 MALAYALAM

For B.Com., BCA, B.Sc. Computer Science, B.Sc. Electronics, BBA and other Job Oriented Courses, Part-1 Language will be in the first two semesters only. In that case they are supposed to study Paper-III & Paper-IV only. Other B.A. & B.Sc. Degree Course Students should study all four papers. Each paper shall divide into five units having one or two poems / prose works / parts / chapters etc for detailed study. In addition to these lessons, the teachers should brief about the Origin and History of the Literary Movements, Disciplines, Theories of Classical and Modern Theatre, Print & Visual Media.

The present Board of Studies in Malayalam is strictly adhered to the directions put forwarded by UGC & TANSCHE Govt. of Tamilnadu. Presently the language learning is closely associated with Print and Visual Media. The learner must be aware about the practicality of the language in the present scenario. That is why in the last semester media literature and art of advertising is included. The new curriculum is designed on par with the Part-1 Malayalam Syllabus of other major Universities in Kerala. The Course Structure is 75% equal in compared with other Universities

OBJECTIVE OF THE STUDY

The study of early days of Malayalam poetry, origin from Pattu movement to contemporary poetry should be introduced. The aim is to develop general knowledge about Malayalam poetry. To Develop ability to appreciate poetry and critical analysis. By understanding the history of poetry and its growth over time, one can understand the various levels associated with poetical studies and criticism.



UNIT - 1

കവിത - പ്രാചീന-മധ്യകാല കവിതകൾ

പാട്ടുപ്രസ്ഥാനം - മണിപ്രവാളഭാഷ - കവിതയിലുണ്ടായ പ്രവണതകൾ -ഗാഥാപ്രസ്ഥാനം - കിളിപ്പാട്ട് - സംസ്തുത സ്വാധീനം - ഭാഷയുടെ വളർച്ച

FOR DETAILED STUDY

1. ചെറ്റശ്ശേരി - കാളിയമർദ്ദനം (കൃഷ്ണഗാഥ) കായ്കളെക്കൊള്ളവാൻ പാഴ്മരമേറീട്ടു... ... ശാപംകൊണ്ടിങ്ങവൻ വാരായിന്നും. 2. എഴുത്തച്ഛൻ - പാർത്ഥസാരഥിവർണ്ണനം (അധ്യാത്മരാമായണം കിളിപ്പാട്ട്) നിറന്ന പീലികൾ നിരക്കവേ കത്തി കുറഞ്ഞൊരു നേരം.

3. പൂന്താനം - ജ്ഞാനപ്പാന സ്ഥാനമാനങ്ങൾ ചൊല്ലിക്കലഹിച്ചു... ... ഭ്രമിക്കുന്നിതൊക്കെയും.

<u>UNIT - 2</u>

കവിത - ആധുനിക കവിത്രയം

കവിതയിലെ ആധുനികത - രചനാപശ്ചാത്തലം - പ്രമേയം - ആഖ്യാനരീതി എന്നിവയിൽ വന്ന മാറ്റങ്ങൾ - പ്രസക്തി

FOR DETAILED STUDY

- 4. കുമാരനാശാൻ ചണ്ഡാലഭിക്ഷുകി ഭാഗം രണ്ട് തൂമ തേടും തൻ പാള കിണറ്റിലി-... ...തെല്ലിട സുന്ദരി
- 5. ഉള്ളൂർ കർണ്ണഭ്രഷണം താപസമന്ത്രത്തിൻ തത്വപരീക്ഷയാം... ... പ്രാവിശ്യം മാഴ്ജിടട്ടെ.
- 6. വള്ളത്തോൾ നാരായണമേനോൻ എന്റെ ഭാഷ മിണ്ടിത്തടങ്ങാൻ ശ്രമിക്കുന്ന പിഞ്ചിളം ...

... മിന്നിച്ചു നിൽക്കുന്ന തൂമുത്തുകൾ.

UNIT-3

കവിത - ആധുനികപൂർവ്വ-ആധുനികഘട്ടം

ആധുനിക കവിതകളുടെ പ്രോദ്ഘാടനം - പ്രത്യേകതകൾ - കൈകാര്യം ചെയ്ത വിഷയങ്ങൾ - മാനവികത



FOR DETAILED STUDY

7. വൈലോപ്പിള്ളി ശ്രീധരമേനോൻ - ജലസേചനം 8. എൻ. വി. കൃഷ്ണവാരിയർ - എലികൾ

UNIT - 4

ആധുനികഘട്ടം

കവിതയിൽ കൈകാര്യം ചെയ്യുന്ന പ്രമേയം - രൂപഘടന - മാറ്റങ്ങൾ - വിവിധ രീതികൾ

FOR DETAILED STUDY

9. അയ്യപ്പപ്പണിക്കർ - കാടെവിടെ മക്കളേ 10. ബാലചന്ദ്രൻ ചുള്ളിക്കാട് -സന്ദർശനം

<u>UNIT - 5</u>

ആധുനിക-ആധുനികാനന്തരഘട്ടം പ്രസക്തി - സാംസ്കാരിക - സാമ്മഹിക ഇടപെടൽ

FOR DETAILED STUDY

11. വിജയലക്ഷ്മി - കൗസല്യ

12. എ. അയ്യപ്പൻ - അത്താഴം

REFERENCE BOOKS

മലയാള കവിതാസാഹിത്യചരിത്രം - ഡോ. എം. ലീലാവതി വർണ്ണരാജി - ഡോ. എം. ലീലാവതി കൈരളിയുടെ കഥ - പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള തെരഞ്ഞെടുത്ത പ്രബന്ധങ്ങൾ - ഡോ. എം. അച്യൂതൻ നവോത്ഥാനന്തരകവിത - എസ്. രാജശേഖരൻ കടലിൽ തങ്ങിയ കാന്തഭൂമി - ഡോ. ബി. വി. ശശികുമാർ



ഭാവഗീതത്തിന്റെ അടയാളങ്ങൾ മലയാളകവിതയിൽ - ഡോ. ആർ. എസ്. രാജീവ് ഉത്തരകാവൃകാന്തി - പ്രകാശനവിഭാഗം, കേരള സർവ്വകലാശാല കവിതാപഥം - പ്രകാശനവിഭാഗം, കേരള സർവ്വകലാശാല പദ്യസാഹിതി - പ്രകാശനവിഭാഗം, കേരള സർവ്വകലാശാല കാവ്യമാലിക - പ്രകാശനവിഭാഗം, കേരള സർവ്വകലാശാല



PART II ENGLISH

Unit I

- 1. Listening and Speaking
 - a. Introducing self and others
 - b. Listening for specific information
 - c. Pronunciation (without phonetic symbols)
 - i. Essentials of pronunciation
 - ii. American and British
 - iii. pronunciation
- 2. Reading and Writing
 - a. Reading short articles newspaper reports / fact based articles
 - I. Skimming and scanning
 - II. Diction and tone
 - III. Identifying topic sentences
 - b. Reading aloud: Reading an article/report
 - c. Journal (Diary) Writing
- 3. Study Skills 1
 - a. Using dictionaries, encyclopaedias, Thesaurus
- 4. Grammar in Context:
 - Naming and Describing
 - Nouns & Pronouns
 - Adjectives

Unit II

- 1. Listening and Speaking
 - a. Listening with a Purpose
 - b. Effective Listening
 - c. Tonal Variation
 - d. Listening for Information
 - e. Asking for Information
 - f. Giving Information
- 2. Reading and Writing
 - 1. a. Strategies of Reading:
 - Skimming and Scanning
 - b. Types of Reading :
 - Extensive and Intensive Reading
 - c. Reading a prose passage
 - d. Reading a poem
 - e. Reading a short story



- 2. Paragraphs: Structure and Types
 - a. What is a Paragraph?
 - b. Paragraph structure
 - c. Topic Sentence
 - d. Unity
 - e. Coherence
 - f. Connections between Ideas: Using Transitional words and expressions
 - g. Types of Paragraphs
- 3. Study Skills II:

Using the Internet as a Resource

- a. Online search
- b. Know the keyword
- c. Refine your search
- d. Guidelines for using the Resources
- e. e-learning resources of Government of India
- f. Terms to know
- 4. Grammar in Context

Involving Action-I

- a. Verbs
- b. Concord

Unit III

1. Listening and Speaking

- a. Giving and following instructions
- b. Asking for and giving directions
- c. Continuing discussions with connecting ideas
- 2. Reading and writing
 - a. Reading feature articles (from newspapers and magazines)
 - b. Reading to identify point of view and perspective (opinion pieces, editorials etc.)
 - c. Descriptive writing writing a short descriptive essay of two to three paragraphs.
- 3. Grammar in Context:
 - Involving Action II
 - a. Verbals Gerund, Participle, Infinitive
 - b. Modals

Unit IV

1. Listening and Speaking

a. Giving and responding to opinions

- 2. Reading and writing
 - a. Note taking
 - b. Narrative writing writing narrative essays of two to three paragraphs

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- 3. Grammar in Context:
 - Tense
 - a. Present
 - b. Past
 - c. Future

Unit V

- 1. Listening and Speaking
 - a. Participating in a Group Discussion
- 2. Reading and writing
 - a. Reading diagrammatic information interpretations maps, graphs and pie charts
 - b. Writing short essays using the language of comparison and contrast
- 3. Grammar in Context:
 - Voice (showing the relationship between Tense and Voice)



Core-1

PROPERTIES OF MATTER & MECHANICS

PREAMBLE:

- To expose students to the fundamentals of Properties of Matter
- To identify the characteristics of solids and fluids in terms of their properties
- To know the principle of conversation of momentum, energy and their consequences

UNIT-I:

ELASTICITY

Hooke's law - Stress-strain diagram - Elastic moduli-Relation between elastic constants -Poisson's Ratio-Expression for Poisson's ratio in terms of elastic constants – experimental determination of poisson's ratio of rubber - Twisting couple on a cylinder -Work done in twisting a wire - Torsional pendulum Determination of Rigidity modulus and moment of inertia-q, n and σ by Searles method-I-section girders

UNIT-II: BENDING OF BEAMS

Bending of beams - Expression for bending moment - Cantilever - Expression for cantilever depression and oscillations - theory and experiments. Uniform bending and Non-uniform bending- theory and experiments.

UNIT-III:

FLUIDS

Surface Tension - Synclastic and anticlastic surfaces - Excess of pressure application tospherical and cylindrical drops and bubbles - variation of surface tension with temperature -Jaegar's method. Capillary rise - Experimental determination of surface tension by capillaryrise - angle of contact of mercury - Quincke's method. Viscosity - Rate flow of liquid in a capillary tube - Poiseuille's formula -Determination of coefficient of viscosity by capillary flow - Variations of viscosity of a liquid with temperature-lubricants.

UNIT-IV:

DYNAMICS OF RIGID BODIES

Translational and rotational motion - Angular momentum and angular impulse - moment of inertia and radius of gyration—Compound pendulum-theory-equivalent simple pendulum- reversibility of centres of oscillation and suspension -

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determination of g and k -Newton's second law for rotation – torque, work, rotational kinetic energy and expression for power during rotation - Kinetic energy of rolling - Acceleration of a uniform body, rolling down aninclined plane. Precessional motion.

UNIT-V:

HYDROSTATICS AND HYDRODYNAMICS

Pressure and thrust - Thrust on a plane surface immersed in a liquid - centre of pressure – centre of pressure on a rectangular lamina, a triangular lamina. Laws of floation determination of meta centric height of a ship - steady and streamline flow - equation of continuity-energy of a fluid-Bernoulli's theorem– proof-pitot's tube and venturimeter

Books for study

- 1. Properties of matter Murugeshan R, S Chand & Co.Pvt. Ltd., New Delhi
- 2. Mechanics-D.S.Mathur S Chand & Co
- 3. Mechanics and mathematical physics-R.Murugeshan S Chand & Co. Pvt. Ltd., New Delhi.

Books for Reference

- Elements of Properties of Matter Mathur DS, Shyamlal Charitable Trust, New Delhi, 1993
- Fundamentals of General Properties of Matter Gulati HR, R Chand & Co. New Delhi,1982
- 3. Fundamentals of Physics,-D Halliday, R Resnick and J Walker, Wiley NY2001.6th Edition
- 4. Mechanics–Berkeley Physics course: Charles Kittel-Tata McGraw Hill Publication



Major Practical-I

PRACTICAL - I

(6 experiments compulsory)

- 1. Young's modulus-non uniform bending pin and microscope
- 2. Young's modulus uniform bending optic lever and telescope
- 3. Young's modulus cantilever depression
- 4. Torsional pendulum Rigidity modulus and moment of inertia (with & without masses)
- 5. Compound pendulum g and I
- 6. Co-efficient of viscosity -Stoke's method
- 7. Co-efficient of viscosity Variable pressure head method
- 8. Surface tension Drop weight method



ALGEBRA AND DIFFERENTIAL EQUATIONS (I / III - Semester) Allied Paper – I

Objectives:

- To explain the simple concepts of the theory of equations.
- To find the roots of the equation by using techniques in various methods.

Course Learning Outcomes: It enables the students to

- Apply the methods to find the roots of the equation.
- Get self-confidence to do the problems related to this.

UNIT – 1:

Theory of Equations – Formation of Equations – Relation between roots and coefficients – Reciprocal equations.

UNIT – 2:

Transformation of Equations – Approximate solutions to equations – Newton's method and Horner's method.

UNIT – 3:

Matrices – Characteristic equation of a matrix – Eigen values and Eigen vectors – Cayley Hamilton theorem and simple Problems.

UNIT – 4:

Differential equation of first order but of higher degree – Equations solvable for p, x, y – Partial differential equations – formations – solutions – Standard form Pp +Qq=R.

UNIT – 5:

Laplace transformation–Inverse Laplace transform.

Text Books:

Dr.S.Arumugam&Isaac–Allied Mathematics Paper-I, New Gamma Publishing House(2012), Polayamkottai.

Books for Reference:

- 1. Narayanan.Sand T.K. ManickavachagamPillai–Differential equations and its applications, S.Viswanathan PrintersPvt.Ltd,2006.
- T.Veerarajan Algebra & Trigonometry Yes Dee Publishing Pvt. Ltd.,(2020).



ENVIRONMENTAL STUDIES

FOR UNDERGRADUATE COURSES PART IV-COMPULSORY PAPER

UNIT I: THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, scope and importance Natural resources and associated problems:

- a) Forest resources: Use and over-exploitation, deforestation, timber extraction, dams and their effects on forests and tribal people.
- b) Water resources: Use and over-utilization of surface and ground water, floods, drought, dams-benefits and problems, water conservation and watershed management.
- c) Mineral resources: Use and exploitation, environmental effects.
- d) Food resources: World food problems, changes, effects of modern agriculture, fertilizer-pesticide problems.
- e) Energy resources: Growing energy needs, renewables and non-renewable energy sources, alternate energy sources.
- f) Land resources: Land as a resource, land degradation, man-induced landslides, soil erosion and desertification.
- g) Role of an individual in conservation of natural resources.
- h) Equitable use of resources for sustainable lifestyles.

UNIT II: ECOSYSTEMS

- a) Forest Ecosystem
- b) Grassland Ecosystem
- c) Desert ecosystem
- d) Aquatic Ecosystem (Ponds rivers, oceans, estuaries)
 Food Chains, Food Webs and Ecological Pyramids Energy flow in the ecosystem
 Ecological succession

UNIT III : BIODIVERSITY AND ITS CONSERVATION

Introduction Definition: Genetic, species and ecosystem diversity. Bio geographical classification of India Values of Biodiversity Biodiversity at global, national and local levels India as a mega-diversity nation Hot-Spots of biodiversity Threats to biodiversity Endangered and endemic species of India Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.



UNIT IV: ENVIRONMENTAL POLLUTION

Definition- Causes, effects and control measures of:-

a) Air Pollution
b) Water Pollution
c) Soil Pollution
d) Marine Pollution
e) Noise Pollution.
f) Thermal Pollution
Solid Waste Management
Disaster Management: Floods, earthquake, cyclone and landslides.

UNI TV: SOCIAL ISSUES AND THE ENVIRONMENT

Climatic change, global warming, acid rain, ozone depletion. Wasteland reclamation Consumerism and Waste products, use and through plastics Environment Protection Act Air (Prevention and Control of Pollution Act Water (Prevention and Control of Pollution) Act Wildlife Protection Act Forest Conservation Act Population Explosion — Family Welfare Programme Human Rights

REFERENCES:

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