

DEPARTMENT OF PHYSICS
SHIFT I
ACADEMIC YEAR 2021-2022

S.No	Faculty Name	Qualificatiom
1	Dr. N.Mahalakshmi	M.Sc., M.Phil,Ph.D
2	Dr. A. Suvitha	M.Sc., M.Phil,Ph.D
3	Dr. M. Jayanthi	M.Sc., M.Phil,Ph.D
4	Dr. Shreevidhyaa Suressh	M.Sc., M.Phil,Ph.D
5	Mrs. M. Sheeba Gnanaselvi	M.Sc., M.Phil

PREAMBLE

Physics is one of the basic and fundamental sciences. The curriculum for the graduate programme in Physics is revised as per the UGC guidelines on Learning Outcome based Course Framework. The learner- centric courses let the student progressively develop a deeper understanding of various aspects of Physics.

The new curriculum offers courses in the core areas of Mechanics, Acoustics, optics and spectroscopy, Atomic physics etc. The courses will train students with sound theoretical and experimental knowledge that suits the need of academics and industry .In addition to the theoretical course work, students also learn physics laboratory methods for different branches of physics, specialized measurement techniques, analysis of observational data, including error estimation.Students will have deeper understanding of laws of nature through the subjects like classical mechanics, quantum mechanics, statistical physics etc. Students' ability of problem solving will be enhanced. Students can apply principles in physics to real life problems. Subjects like Integrated electronics and Microprocessors will enhance the logical skills as well as employability skills. Numerical methods and Mathematical Physics provide analytical thinking and provides a better platform for higher level physics and research.

The restructured courses with well defined objectives and learning outcomes, provides guidance to prospective students in choosing the elective courses to broaden their skills in the field of physics and interdisciplinary areas. The elective modules of the framework offer students choice to gain knowledge and expertise in specialized domains of Physics like Astrophysics, Medical Physics, etc.

PROGRAMME LEARNING OUTCOME

Nature and Extent of the Programme

The main objective of science education has evolved to concern the education of future citizens being able to contribute to the growth of global issues. Physics is a unique training that provides a basis of key skills, develops innovative ways of tackling problems, addresses fundamental needs of industry and contributes to economic development.

Physics is the most fundamental of the experimental sciences, as it seeks to explain the universe itself from the very smallest particles—currently accepted as quarks, which may be truly fundamental—to the vast distances between galaxies. Classical physics, built upon the great pillars of Newtonian mechanics, electromagnetism and thermodynamics, went a long way in deepening our understanding of the universe. Maxwell's theory of electromagnetism described the behaviour of electric charge and unified light and electricity, while thermodynamics described the relation between energy transferred due to temperature difference and work and described how all-natural processes increase disorder in the universe. However, experimental discoveries dating from the end of the 19th century eventually led to the demise of the classical picture of the universe as being knowable and predictable. Newtonian mechanics failed when applied to the atom and has been superseded by quantum mechanics and general relativity. However, observations remain essential to the very core of physics. The body of scientific knowledge has grown in size and complexity, and the tools and skills of theoretical and experimental physicists have become so specialized that the students need to be highly proficient in both areas. This is very critical in developing a scientific temperament and urge to innovate, create and discover in Physics.

The Degree Programme in physics course allows students to develop traditional practical skills and techniques and increase their abilities in the use of mathematics, which is the language of physics. It also allows students to develop interpersonal and digital communication skills which are essential in modern scientific endeavour and are important life-enhancing, transferable skills in their own right.

AIM OF THE PROGRAMME:

This Programme enables the students to develop scientific temper, observation skills, problem solving and critical thinking skills. It empowers them with knowledge leading to higher learning in applied sciences. It fosters research attitude among the students and helps them serve for the betterment of the society.

GRADUATE ATTRIBUTES:

After the completion of B.Sc Physics Programme, students will be able to

- ❖ Acquire a thorough understanding of physical phenomena, identify the principles and basic concepts in physics.
- ❖ Tests the validity of Physical theories in a Scientific Method.
- ❖ Use a methodical approach to compare the implications of a theory with the conclusions drawn from its related experiments.
- ❖ Use Observations to test the validity of a theory in a logical, unbiased and repeatable way.
- ❖ Apply Numerical methods and mathematical approach involved in Physics leading to research.

Employ critical thinking and efficient problem solving skills in all the basic areas of Physics

COURSE STRUCTURE

FIRST SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part – I	Language Paper – I	4	3	25	75	100
Part - II	English Paper – I	4	3	25	75	100
Part III	CC I-Properties of Matter and Sound	6	4	25	75	100
	Allied I –Mathematics I	9	5	25	75	100
Part IV	Basic Tamil/Adv. Tamil/NME-I	2	2	25	75	100
	Soft skill - I	2	3	50	50	100

SECOND SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part – I	Language Paper – II	4	3	25	75	100
Part - II	English Paper – II	4	3	25	75	100
Part - III	CC II- Thermal Physics	6	4	25	75	100
	CC III -Practical I	3	4	40	60	100
	Allied II –Mathematics II	9	5	25	75	100
Part IV	Basic Tamil/Adv. Tamil/ NME-II	2	2	25	75	100
	Soft skill - II	2	3	50	50	100

THIRD SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part – I	Language Paper – III	6	3	25	75	100
Part - II	English Paper – III	6	3	25	75	100
Part - III	CC IV- Mathematical Methods in Physics	5	4	25	75	100
	Allied III-Paper -I- Chemistry I	5	3	25	75	100
	Soft Skill III	2	3	50	50	100

FOURTH SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Hrs	Ext. Marks	Total
Part – I	Language Paper – IV	6	3	25	75	100
Part - II	English Paper – IV	6	3	25	75	100
Part - III	CC V-Mechanics	5	4	25	75	100
	CC VI-Practical II	3	4	40	60	100
	Allied IV-Paper -II-Chemistry	5	3	25	75	100
	Allied – Practical	3	4	40	60	100
Part-IV	Environmental Studies	2	2			100
	Soft skill - IV	2	3	50	50	100

FIFTH SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. marks	Total
Part-III	CC VII- Electricity And Electromagnetism	5	4	25	75	100
	CC VIII- Nuclear Physics And Particle Physics	5	4	25	75	100
	CC IX- Solid State Physics	5	4	25	75	100
	CC X- Basic Electronics	5	4	25	75	100
	DSE I A-Numerical Methods	4	5	25	75	100
Part-IV	Value Education	1	2			

SIXTH SEMESTER

Course Content	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part-III	CC XI- Relativity And Quantum Mechanics	5	4	25	75	100
	CC XII- Mathematical Methods In Physics	5	4	25	75	100
	CC XIII- Elective 1 Numerical Methods	5	4	25	75	100
	DSE II A- Integrated Electronics	5	5	25	75	100
	DSE III A- Microprocessor Fundamentals	4	5	25	75	100
	CC -XIV-Practical III-General	2	4	40	60	100
	CC XV- Practical IV- Basic Electronics	2	4	40	60	100
	CC XVI -Practical V-Applied Electronics	2	2	40	60	100
Part V	Extension Activities	1	1			

பொதுத்தமிழ் - முதலாமாண்டு - முதற்பருவம் (FIRST SEMESTER)

நோக்கும் கற்றல் பயன்பாடும் (2021 - 2022)

Objective - Syllabus - Out come (2021 -2022) (LA11A)

பாடத்திட்டத்தின் நோக்கம்:

காலந்தோறும் தமிழ் அடைந்துள்ள வளர்ச்சியையும், இன்றைய நவீன காலத்தில் உருவான தமிழ் இலக்கியங்களையும் ஒற்றுமை வேற்றுமைப்படுத்தி ஆராய்கின்ற நோக்கில் பொதுத்தமிழ்ப் பாடப்பகுதி கட்டமைக்கப்பட்டுள்ளது.

பாரதியார், பாரதிதாசன், கவிமணி உள்ளிட்டோரின் மரபுக்கவிதைகளும், அப்துல் ரகுமான், சிற்பி, மு.மேத்தா, வைரமுத்து உள்ளிட்டோரின் புதுக் கவிதைகளும் இரா.பி.சுதுப்பிள்ளை அவர்களின் உரைநடை, முத்துசாமி அவர்களின் நாடகம் போன்றவை இடம்பெற்றுள்ளன.

தமிழ் மக்களின் வாய்மொழி இலக்கியங்களில் சிலபாடல்கள் பாடமாக வைக்கப்பட்டுள்ளன. இந்த இலக்கியங்கள் சார்ந்த வரலாற்றுப் பின்புலமும் பாடமாக அமைந்துள்ளன.

மாணவர்களுக்குப் படிப்பின் ஆர்வத்தைத் தூண்டும் வகையில் கவிதைகள், சிறுகதை, உரைநடை, நாடகம் போன்ற எளிமையான பகுதிகள் அமைக்கப்பட்டுள்ளன.

இலக்கிய வாசிப்பின் ஆர்வத்தை ஊக்குவித்தலும் தற்கால தமிழ் இலக்கியத்தின் ஆளுமைகளை மாணவர்கள் புரிந்துகொள்ள வைத்தலும் பாடத்திட்டத்தின் நோக்கமாகும்.

தமிழ் இலக்கிய வரலாற்றில் தற்கால படைப்பாளர்களையும் படைப்புகளையும் அறிமுகப்படுத்தித் தமிழ் இலக்கியப் பாரம்பரியத்தைப் புரிய வைத்தலும் பிழையின்றி எழுதுவதற்குரிய இலக்கண விதிமுறைகளைத் தெரிந்து கொள்ளுதலும் பாடத்திட்டத்தின் நோக்கமாகும்.

தமிழ் மொழியின் கடினமான சொற்களுக்குரிய பொருளைத்
தெரிந்துகொள்ளும் வகையில் அகராதியைப் பயன்படுத்துவதற்குரிய
அடிப்படையைக் கற்றுத்தருதலே நோக்கமாகும்

பாடத்திட்டம்

பாடப்பகுப்பு

- I.இலக்கியம்
- II.அதைச் சார்ந்த தமிழிலக்கிய வரலாறு
- III.மொழிப் பயிற்சி

அலகு - 1

மரபுக்கவிதை

1. பாரதியார் - பாரத சமுதாயம்.
2. பாரதிதாசன் - ஒற்றுமைப்பாட்டு
3. கவிமணி தேசிக விநாயகம் பிள்ளை - உடல் நலம் பேணல்
4. நாமக்கல் கவிஞர் வெ. இராமலிங்கம்பிள்ளை - தமிழன் இதயம்
5. கவிஞர் கண்ணதாசன் - குடும்பம் ஒரு கதம்பம்
6. பட்டுக்கோட்டை அ. கல்யாணசுந்தரம் - வருங்காலம் உண்டு
7. தமிழ் ஒளி - வழிப்பயணம்

புதுக்கவிதை

1. கவிஞர் ந. பிச்சமூர்த்தி - காதல்
2. கவிஞர் அப்துல் ரகுமான் - பித்தன்
3. கவிஞர் மு.மேத்தா - காதலர் பாதை, ஒரு கடிதம் அனாதையாகிவிட்டது,

நிழல்கள்

4. கவிஞர் இன்குலாப் - ஒவ்வொரு புல்லையும் பெயர் சொல்லி அழைப்பேன்
5. கவிஞர் தமிழன்பன் - சொல்லில் உயர்வு தமிழ்ச்சொல்லே
6. கவிஞர் வைரமுத்து - விதைச்சோளம்

7. கவிஞர் அ.சங்கரி - இன்று நான் பெரிய பெண்

அலகு - 2

நாட்டுப்புற இலக்கியம்

1. ஏற்றப்பாட்டு
2. தெம்மாங்கு
3. அம்பா பாடல்கள்
4. விளையாட்டுப் பாடல்கள்
நடவுப் பாடல்கள்

அலகு - 3

சிறுகதைகள்

1. கு.ப.ரா- கனகாம்பரம்
2. கு.அழகிரிசாமி - குமாரபுரம் ஸ்டேஷன்
3. தமிழ்ச்செல்வன் - வெயிலோடு போய்
- 4.தோப்பில் முகமது மீரான் - வட்டக்கண்ணாடி
- 5.அம்பை - பிளாஸ்டிக் டப்பாவில் பராசக்தி முதலியோர்

உரைநடை

- 1.இரா.பி.சேதுப்பிள்ளை - வண்மையும் வறுமையும்

அலகு - 4

நாடகம்

நா.முத்துசாமி - நாற்காலிக்காரர்

அலகு -5

தமிழிலக்கிய வரலாறு

1. மரபுக் கவிதை - இருபதாம் நூற்றாண்டு கவிஞர்கள்
2. புதுக்கவிதை - தோற்றம் - வளர்ச்சி -வரலாறு

3. நாட்டுப்புறப் பாடல்கள், கதைகள், கதைப்பாடல்கள், பழமொழிகள், விடுகதைகள் - வரலாறு
4. சிறுகதை, உரைநடை வரலாறு
5. நாடகம் - வரலாறு

அலகு - 6

மொழிப் பயிற்சி

1. வாக்கிய வகை(தொடர் வாக்கியம், தனி வாக்கியம், கூட்டு வாக்கியம்)
2. இரு வழக்குகள் (பேச்சு, எழுத்து)
3. எழுவாய், பயனிலை, செயப்படுபொருள்
4. ஒருமை, பன்மை மயக்கம்
5. திணை, பால், எண், இட வேறுபாடு
6. நால்வகைச் சொற்கள் (பெயர், வினை, இடை, உரி)
7. அகரவரிசைப் படுத்துதல்

கற்றலும் பயன்பாடும்:

தமிழ் மொழியின் இலக்கிய வளங்களின் மதிப்பைப் புரிதல். தமிழ் இலக்கிய வாசிப்பின் வழி சமூக விழிப்புணர்வைத் தூண்டுதல். தமிழ் இலக்கிய வளங்களின் வாயிலாகத் தமிழ்ப்பண்பாட்டை அடுத்த தலைமுறைக்குக் கொண்டுசெல்லுதல். மொழிவளத்தின் தேவையை வலியுறுத்துதல். மாணவர்கள் பிழையின்றி எழுத மொழிப்பயிற்சி உதவுகிறது.

இப்பாடத்திட்டம் மாணவர்கள் தங்கள் படைப்புகளை உருவாக்குவதற்கும் பயன்படுகிறது. போட்டித்தேர்வுகளை எதிர்கொள்வதற்குரிய வகையில் இலக்கிய வரலாற்றுப்பகுதி மிகுந்த பயனுடையதாய் உள்ளது.

பாடநூல்

சென்னைப்பல்கலைக்கழகம் (university of Madras)

➤ அடித்தளப் படிப்பு - பகுதி - I தமிழ்

முதலாம் மற்றும் இரண்டாம் பருவங்களுக்குரியது. அனைத்துப் பட்டப்படிப்பு பிரிவுகளுக்கும் ஐந்தாண்டு ஒருங்குமுறை பட்ட மேற்படிப்புப் பிரிவுகளுக்கும் பொதுவானது.

தாள் -I - செய்யுள் திரட்டு

(Foundation Course

Part - I Tamil - For I & II Semesters

Common to all undergraduate course and Five-Year Integrated postgraduate courses.

(2020 - 2021 onwards.)

➤ நாற்காலிக்காரர் - நா.முத்துசாமி

➤ தமிழ் இலக்கிய வரலாறு பாடம் தழுவியவை

➤ மொழிப்பயிற்சி

Reference book

தமிழ் - பகுதி 4 - சென்னைப் பல்கலைக்கழகம் வடிவமைத்த பாடத்திட்டங்கள் ஆகையால் குறிப்புதவி நூல் என்று தனியாக இல்லை.

(Reference book not applicable)

**DEPARTMENT OF HINDI – SHIFT-I
FOUNDATION COURSE IN HINDI
COURSE OBJECTIVES AND COURSE OUTCOMES
ACADEMIC YEAR 2021-2022**

NAME OF THE STAFF: Dr. J. PADMAPRIYA

**SUBJECT CODE: CLE1E
YEAR/SEMESTER: I YR/ I SEMESTER**

I. COURSE OBJECTIVES:

The objectives of the course is to sensitize the students -

1. To the aesthetic and cultural aspects of literary appreciation and analysis.
2. To introduce modern Hindi Prose to the students and to understand the cultural, social and moral values of modern Hindi Prose.
3. To familiarize Official correspondence , General letter correspondence and technical words.
4. To motivate to demonstrate human value in different life situations

PART-I - HINDI

(With effect from the Academic Year 2015-2016)

I YEAR – I SEMESTER

PAPER – I - PROSE, FUNCTIONAL HINDI & LETTER WRITING

I . PROSE (Detailed Study) : HINDI GADHYA MALA
Ed. by Dr. Syed Rahamathulla
Poornima Prakashan, 4/7 Begum III Street Royapettah, Chennai
– 14.

LESSONS PRESCRIBED :

1. Sabhyata ka Rahasya
2. Mitrata
3. Yuvavon sen
4. Paramanu Oorja evam Khadya Padarth Sanrakshan
5. Yougyata aur Vyavasay ka Chunav.

II. FUNCTIONAL HINDI & LETTER WRITING

Students are expected to know the office and Business Procedures, Administrative and Business Correspondence.

1. General Correspondence:

1. Personal Applications
2. Leave Letters
3. Letter to the Editor
4. Opening an A/C
5. Application for Withdrawal
6. Transfer of an A/C
7. Missing of Pass Book / Cheque Leaf

8. Complaints
9. Ordering for Books
10. Enquiry

III. OFFICIAL CORRESPONDENCE:

1. Government Order
2. Demi Official Letter
3. Circular
4. Memo
5. Official Memo
6. Notification
7. Resolution
8. Notice BOOKS FOR

REFERENCE :

1. Karyalayeen Tippaniya : Kendriya Hindi Sansthan, Agra
2. Prayojan Moolak Hindi : Dr. Syed Rahamathulla, Poornima Prakashan
4/7, Begum III Street, Royapettah, Chennai – 14.

UNITISED SYLLABUS

UNIT-I

1. Sabhyata ka Rahasya
2. Personal Applications
3. Leave Letters
4. Government Order
5. Administrative Terminology Hindi to English (25 Words)

UNIT - II

1. Mitrata
2. Letter to the Editor
3. Opening an A/C
4. Demi Official Letter
5. Administrative Terminology English to Hindi (25 Words)

UNIT-III

1. Yuvavon Se
2. Application for Withdrawal
3. Circular
4. Memo
5. Administrative Terminology Hindi to English (25 Words)

UNIT-IV

1. Paramanu Oorja evam Khadya Padarth Sanrakshan
2. Transfer of an A/C
3. Missing of Pass Book / Cheque Leaf
4. Official Memo
5. Administrative Terminology English to Hindi (25 Words)

UNIT-V

1. Yougyata aur Vyavasay ka Chunav
2. Complaints
3. Ordering for Books
4. Notification
5. Official Noting Hindi to English (25 words)

UNIT-VI

1. Enquiry
2. Resolution
3. Notice
4. Official Noting English to Hindi (25 words)

- **COURSE OUTCOMES:**

1. Understanding the concept and importance of functional Hindi
2. Understanding various forms of functional Hindi and its usage according to its area of application
3. Knowledge about good civilization qualities and culture.
4. Knowledge about the importance of human values.

**DEPARTMENT OF ENGLISH
COURSE OBJECTIVES, SYLLABUS AND OUTCOME FOR B.SC. COURSES
SEMESTER I**

LZ11A-COMMUNICATIVE ENGLISH-I

Subject: COMMUNICATIVE ENGLISH – I

Subject Code: LZ11A

Class: I B.Sc.

Semester: ODD (I)

Hours: 60

COURSE OBJECTIVES:

- To give English language skill practice to students to enhance their English proficiency.
- To expose students to native speakers' spoken language to enable students to recognize native speakers' accent and language usage.
- To simulate real life situations in the classroom to practice real English dialogues and speeches to gain English language fluency.
- To give both silent and loud reading practice to students, to enhance their comprehension and English sound recognition skills
- To help students overcome their fear and to speak in English in front of their peers and teachers thus, build their self-confidence through various classroom activities and outdoor activities

SYLLABUS:

Unit I

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 pronunciation
 - iii.
- 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

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

Verbals - Gerund, Participle, Infinitive

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

3. Grammar in Context:

Tense

Present

Past

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

Grammar in Context: Voice (showing the relationship between Tense and Voice)

COURSE OUTCOMES:

- The course seeks to develop the students' abilities in grammar, oral skills, reading, writing and study skills
- Students will heighten their awareness of correct usage of English grammar in writing and speaking
- Students will improve their speaking ability in English both in terms of fluency and comprehensibility
- Students will give oral presentations and receive feedback on their performance
- Students will increase their reading speed and comprehension of academic articles

Students will improve their reading fluency skills through extensive reading

SEMESTER – I
Core Paper – I
PROPERTIES OF MATTER AND SOUND

Course Objectives:

- To make the students learn and understand the properties of materials and acoustics.

Learning outcome:

After successful completion of this paper, students will be able to:

- Analyse the strength of materials in terms of their size and shape.
- Understand the fluid dynamics that gives the fundamental knowledge over many practical applications
- Analyze the phenomena of simple harmonic motion and the properties of systems executing such motions
- Know the different methods of producing ultrasonic waves and its applications
- Determine the modulus of elasticity through different experimental techniques

Lecture: 60 Hours

Tutorial: 15 Hours

Credits:4

UNIT I: ELASTICITY (12 Hours)

Hooke's Law – Stress–Strain diagram –Elastic constants –Poisson's ratio – Relation between elastic constants and Poisson's ratio – Work done in stretching and twisting a wire – Twisting couple on a cylinder -Rigidity modulus by Static torsion– Torsional pendulum (with and without masses)

UNITII: BENDING OF BEAMS (12 Hours)

Cantilever– Expression for Bending moment – Expression for depression at the loaded end of the cantilever–Oscillations of a cantilever – Expression for time period-Experiment to find Young's Modulus – Non-Uniform bending– Experiment to determine Young's Modulus by Koenig's method- Uniform Bending-Expression for elevation-Experiment to determine Young's Modulus using microscope

UNIT III : FLUID DYNAMICS (12 Hours)

Surface tension-: Definition – Molecular forces– Excess pressure over curved surface – Application to Spherical and Cylindrical Drops and Bubbles-Variation of Surface Tension with Temperature —Jaegar's method.

Viscosity:-Definition-Streamline and Turbulent motion – Rate of flow of liquid in a capillary tube-Poiseuille's formula –Corrections-Terminal Velocity and Stoke's formula– Variation of Viscosity of a liquid with Temperature

UNITIV: WAVES AND OSCILLATIONS (12 Hours)

Simple Harmonic Motion – Differential Equation of SHM – Graphical representation of SHM – Composition of two S.H.M in a straight line-at right angles-Lissajous's figures-Free, Damped, Forced vibrations -Resonance and Sharpness of resonance.

Laws of transverse vibration of strings- Sonometer-Determination of AC frequency using sonometer - Determination of frequency using Melde's apparatus.

UNITV: ACOUSTICS OF BUILDINGS AND ULTRASONICS (12 Hours)

Intensity of sound – Decibel – Loudness of sound –Reverberation – Sabine's reverberation formula – Acoustic Intensity – Factors affecting the Acoustics of Buildings.

Ultrasonic waves – Production of Ultrasonic Waves – Piezoelectric crystal method – Magnetostriction effect – Application of Ultrasonic Waves.

Books for Study:

1. Elements of Properties of Matter, D. S Mathur, S. Chand & Co (2010)
2. Properties of Matter, BrijLal and N. Subrahmanyam, S.Chand and Co(2003)
3. Textbook of Sound, D.R.Khanna and R.S. Bedi, Atma Ram and sons (1969)
4. A Text Book of Sound, BrijLal and N.Subrahmanyam, Vikas Publishing House – Second revised edition (1995)

Books for Reference:

1. General Properties of Matter, C.J. Smith, Orient Longman Publishers (1960).
2. Fundamental of General Properties of Matter, H.R Gulati, R Chand and Co, Fifth edition (1977)
3. Vibration and Waves, A.P French, MIT Introductory Physics, Arnold–Heinmann India (1973)

MAPPING-COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	M	S	M	S
CO3	S	S	S	M	S
CO4	M	S	S	M	S
CO5	S	M	S	S	S

Key : S- Strong; M-Medium; L-Low

ALLIED PAPER MATHEMATICS -I

COURSE OBJECTIVES:

1. To enable students to learn basic concepts of Algebra and Numerical methods.
2. To enable students to understand Matrices and Theory of equations.
3. To learn circular, hyperbolic and inverse hyperbolic functions and to understand differential calculus and its applications.

COURSE OUTCOMES:

1. Student gain knowledge to find the summation of series and to solve problems in Numerical methods.
2. Student will be able to find the Eigen values, Eigen vectors, apply Cayley Hamilton theorem to find inverse of a Matrix, Powers of a Matrix and to solve polynomial equations.
3. Student will be able to evaluate circular, Hyperbolic, inverse hyperbolic functions and to find higher derivatives of functions and its applications

Unit 1

Algebra And Numerical Methods:

Algebra: Summation of series - simple problems.

Numerical Methods: Operators E, Δ, ∇ , difference tables- Newton-Raphson method- Newton's forward and backward interpolation formulae for equal intervals, Lagrange's interpolation formula.

Chapter 2, Section 2.1.3, 2.2, 2.2.1, 2.3, 2.3.3

Chapter 3, Section 3.4.1 and Chapter 5, Section 5.1 and 5.2.

Unit 2

Matrices: Symmetric, Skew-Symmetric, Orthogonal, Hermetian, Skew-Hermetian and Unitary matrices. Eigen values and Eigen-vectors, Cayley-Hamilton theorem (without proof) – verification- Computation of inverse of matrix using Cayley - Hamilton theorem.

Chapter 4, Section 4.1.1 to 4.1.6, 4.5, 4.5.2, 4.5.3.

Unit 3

Theory Of Equations: Polynomial equations with real coefficients, irrational roots, complex roots, symmetric functions of roots, transformation of equation by increasing or decreasing roots by a constant, reciprocal equation-simple problems.

Chapter 3, Section 3.1 to 3.4.1(omit section 3.2.1)

Unit 4

Trigonometry: Expansions of $\sin(n\theta)$ and $\cos(n\theta)$ in a series of powers of $\sin\theta$ and $\cos\theta$ - Expansions of $\sin^n\theta$, $\cos^n\theta$, $\tan^n\theta$ in a series of sines, cosines and tangents of multiples of " θ " - Expansions of $\sin\theta$, $\cos\theta$ and $\tan\theta$ in a series of powers of " θ " – Hyperbolic and inverse hyperbolic functions .

Chapter 6, Section 6.1 to 6.3.

Unit 5

Differential Calculus: Successive differentiation, n^{th} derivatives, Leibnitz theorem (without proof) and applications, Jacobians, Curvature and radius of curvature in Cartesian co-ordinates, maxima and minima of functions of two variables- Simple problems

Chapter 1, Section 1.1 to 1.3.1 and 1.4.3.

Reference:-

1. S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics, S. Viswanathan Printers, 1986, Chennai.
2. Allied Mathematics by Dr. A. Singaravelu, Meenakshi Agency.

e-Resources:

1. <http://www.themathpage.com>
2. <http://nptel.ac.in>
4. To Evaluate circular and Hyperbolic and inverse hyperbolic functions and their powers. [5 .To](#) find higher derivatives of functions and its applications.

NME-I: FUNCTIONAL MATHEMATICS-I

COURSE OBJECTIVE:

1. To enhance problem solving skills
2. To improve basic mathematical skills
3. To help students prepare for competitive exams.

UNIT I

Ratio and Proportion

UNIT II

Percentages

UNIT III

Profit and Loss,

UNIT IV

Simple Interest and Compound interest

UNIT V

Solutions of Simultaneous equations, Problems on Ages and Numbers.

COURSE OUTCOME:

1. Students learn to solve problems on ratio, percentage.
2. To do problems on profit and loss, simple and compound interest.
3. To solve problems on numbers and problems on age.

Reference:

Quantitative Aptitude- R.S. Agarwal

சென்னைப் பல்கலைக்கழகம்
அடிப்படைத்தமிழ் - நோக்கும் கற்றல் பயன்பாடும்
அண்ணா ஆதர்ஷ் மகளிர் கல்லூரி, சென்னை
தமிழ்த்துறை
முதலாமாண்டு (2020 -2021)
அடிப்படைத் தமிழ் - முதல் பருவம்

பாடத்திட்டத்தின் நோக்கம் (Objective)

தமிழ்மொழியைப் பேசவும் எழுதவும் படிக்கவும் தெரியாத மாணவர்கள் அடிப்படைத்தமிழ் பாடம் படித்துப் பயன்பெறும் நோக்கில் பாடத்திட்டம் அமைகிறது. அண்டை மாநிலங்களிலிருந்தும் பிற நாடுகளிலிருந்தும் இளங்கலை, இளம் அறிவியல் பட்டம் பெறும் மாணவர்கள் தமிழ் நாட்டின் மாநில மொழியைப் பேசவும் எழுதவும் துணைபுரியும் வகையில் பாடத்திட்டம் வடிவமைக்கப்பட்டுள்ளது.

இம்மாணவர்கள் முதற்பருவத்தில் தமிழ் மொழியின் எழுத்துக்களை எழுதவும் படிக்கவும் பயிற்சி அளிக்கப்படுகிறது. மேலும் தமிழ் மொழியின் சொல் வகை, தொடரமைப்பு, தமிழில் எண்ணுப்பெயர்கள், உடல் உறுப்புகள், அன்றாட வாழ்விற்குத் தேவையான பொருள்களை அறிந்துகொள்ள வைப்பதே இதன் நோக்கமாகும்.

பாடத்திட்டம் - முதல் பருவம் (SYLLABUS)

அலகு - 1. எழுத்துகள்

1. உயிர் எழுத்து, ஆய்த எழுத்து, 2. மெய் எழுத்து, 3. உயிர் மெய் எழுத்து

அலகு - 2 சொற்கள்

1. பெயர்ச்சொல், 2. வினைச் சொல், 3. இடைச் சொல், 4. உரிச் சொல்

அலகு -3. தொடரமைப்பு

1. எழுவாய், 2. பயனிலை, 3. செயப்படுப் பொருள்

அலகு -4. பிழை நீக்கம்

1. ஒற்றுப் பிழை, 2. எழுத்துப் பிழை, 3. தொடர்ப்பிழை,

அலகு - 5 எண்கள், உறவுப் பெயர்கள், வாழ் இடங்களும், பொருள்களும்

அலகு - 6 அறிமுகம்

1. விழாக்கள், 2. இயற்கை, 3. உணவு முறைகள்-சுவை-காய்கள்-பழங்கள் போன்றன.

பாடத்திட்டத்தின் பயன்கள் (Subject Outcome)

இந்தப் பாடத்தினால் வேற்றுப்புல மாணவர்கள் தமிழகத்தில் பாமர மக்களிடமும் தமிழில் பேச முடியும். தமிழ் மொழியிலுள்ள சிறு சிறு படைப்புகளைப் பார்த்து இலக்கிய இன்பம் பெறமுடியும். தமிழகத்திலுள்ள சுற்றுலாத்தலங்களுக்கு வழிகாட்டி இன்றிப் போய் வருதல்.

சென்னைப் பல்கலைக்கழகம்
சிறப்புத்தமிழ் - நோக்கும் கற்றல் பயன்பாடும்
அண்ணா ஆதர்ஷ் மகளிர் கல்லூரி, சென்னை
தமிழ்த்துறை
முதலாமாண்டு (2020 -2021)
சிறப்புத் தமிழ் - முதல்பருவம்

பாடத்திட்டத்தின் நோக்கம் (Objective)

இப்பாடத்திட்டம் பள்ளிகளில் ஒரு சில வகுப்புகளில் தமிழைப் படித்து தமிழ் மொழியை முழுமையாக அறிந்து கொள்ளாத கல்லூரிகளில் பிற மொழி கற்பவர்களுக்காக வடிவமைக்கப்படுகிறது. இங்கு தமிழ் இலக்கியப்பகுதியும், தமிழிலக்கிய வரலாற்றுப்பகுதியும், மொழிப்பயிற்சியும் பாடமாக அமைகிறது. தமிழ் இலக்கிய இன்பத்தை உணரும் நோக்கிலும் இலக்கிய வளத்தை உணரும் நோக்கிலும் பாடத்திட்டம் உள்ளது.

பாடத்திட்டம் (SYLLABUS)

பாடப்பகுப்பு

- I. இலக்கியம்
- II. அதைச் சார்ந்த தமிழிலக்கிய வரலாறு
- III. மொழிப் பயிற்சி

அலகு -1

நாட்டுப் புறப்பாடல்

1. பஞ்சம். 2. மானம் விடிவதெப்போ?

அலகு -2

புனை கதை

1. "கட்டை விரல்" -சி. என். அண்ணாதுரை

அலகு -3

புதுக்கவிதை

1. ஆடிக்காற்றே -சிற்பி, 2. கடமையைச் செய்-மீரா, 3. இழந்தவர்கள்-அப்துல் ரகுமான்

அலகு - 4.

மொழித்திறன்

1. கலைச்சொல்லாக்கம், 2. பொருந்திய சொல் தருதல், 3. பிழை நீக்கி எழுதுதல்

பாடத்திட்டத்தின் பயன்கள் (Subject Outcome)

இப்பாடத்தைப் படிப்பதால் தமிழ் மொழியின் இலக்கியஇன்பம், சொல் வளம், புது கலைச்சொல் படைத்தல் போன்றவற்றை உணர உதவுகிறது.

PZ1SA PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES I

OBJECTIVES:

- To develop the language skills of students by offering adequate practice in professional contexts.
- To enhance the lexical, grammatical and socio-linguistic and communicative competence of first year physical sciences students
- To focus on developing students' knowledge of domain specific registers and the required language skills.
- To develop strategic competence that will help in efficient communication
- To sharpen students' critical thinking skills and make students culturally aware of the target situation.

LEARNING OUTCOMES:

- Recognise their own ability to improve their own competence in using the language
- Use language for speaking with confidence in an intelligible and acceptable manner
- Understand the importance of reading for life
- Read independently unfamiliar texts with comprehension
- Understand the importance of writing in academic life
- Write simple sentences without committing error of spelling or grammar

SYLLABUS

UNIT 1: COMMUNICATION

Listening: Listening to audio text and answering questions - Listening to Instructions

Speaking: Pair work and small group work.

Reading: Comprehension passages – Differentiate between facts and opinion

Writing: Developing a story with pictures.

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 2: DESCRIPTION

Listening: Listening to process description. - Drawing a flow chart.

Speaking: Role play (formal context)

Reading: Skimming/Scanning-

Reading passages on products, equipment and gadgets. Writing: Process Description – Compare and Contrast Paragraph - Sentence Definition and Extended definition - Free Writing.

Vocabulary: Register specific - Incorporated into the LSRW tasks.

UNIT 3: NEGOTIATION STRATEGIES

Listening: Listening to interviews of specialists / Inventors in fields (Subject specific)

Speaking: Brainstorming. (Mind mapping). Small group discussions (Subject-Specific)

Reading: Longer Reading text. Writing: Essay Writing (250 words)

Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 4: PRESENTATION SKILLS

Listening: Listening to lectures.Speaking: Short talks.
Reading: Reading Comprehension passagesWriting:
Writing Recommendations Interpreting Visuals inputs
Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 5: CRITICAL THINKING SKILLS

Listening: Listening comprehension- Listening for information.
Speaking: Making presentations (with PPT- practice).
Reading: Comprehension passages –Note making.
Comprehension: Motivational article on ProfessionalCompetence,
Professional Ethics and Life Skills)
Writing: Problem and Solution essay– Creative writing –Summary
writing
Vocabulary: Register specific - Incorporated into the LSRW tasks

SECOND SEMESTER

சென்னைப் பல்கலைக்கழகம்

பொதுத்தமிழ் (2020 ஆம் ஆண்டு முதல்)- நோக்கும் கற்றல் பயன்பாடும்

அண்ணா ஆதர்ஷ் மகளிர் கல்லூரி, சென்னை

தமிழ்த்துறை

முதலாமாண்டு (2020 - 2021)

பொதுத் தமிழ் - இரண்டாம் பருவம்

பாடத்திட்டத்தின் நோக்கம்

காலந்தோறும் தமிழ் அடைந்துள்ள வளர்ச்சியும் பரந்து விரிந்து கிடக்கும் அதன் ஆழ அகலத்தையும் ஒரு பருந்து பார்வையில் நோக்கும் வகையில் பொதுத்தமிழ் பாடப்பகுதி கட்டமைக்கப்பட்டுள்ளது.

பழந்தமிழ் இலக்கியங்கள் வழி அறம், பொருள், இன்பம் ஆகியவற்றைப் போதித்தல். பழந்தமிழ் இலக்கியங்களின் பா செறிவையும் சொல் வளங்களையும் உணர வைத்தல். பழந்தமிழ்ச் சொற்களின் அருமையைப் புரியவைத்து மொழி கலப்பின்றிப் பேசுவதன் அவசியத்தை வலியுறுத்தல். பழந்தமிழ் மக்களின் வாழ்வியலை எடுத்துரைத்தல். இவையே இப்பாடத்திட்டத்தின் நோக்கமாகும்.

பாடத்திட்டம்

பாடப்பகுப்பு

IV.இலக்கியம்

V.அதைச் சார்ந்த தமிழிலக்கிய வரலாறு

VI.மொழிப் பயிற்சி

அலகு 1

1. நற்றிணை - 87, 88
2. குறுந்தொகை - 46, 88, 89
3. கலித்தொகை - 11 ஆம் பாடல் - “ அரிதாய அறன் எய்தி..

அலகு 2

அகநானூறு - 86 ஆம் பாடல் (உழுந்து தலைபெய்த)

1. ஐங்குறுநூறு - கிள்ளைப்பத்து

2. பரிபாடல் - செவ்வேள் 5, கடுவன் இளவெயினார் (1 முதல் 10 வரிகள் - வெற்றி வேல்)

அலகு 3

1. புறநானூறு - 182, 192
2. பதிற்றுப்பத்து - காக்கைப்பாடினியார், நச்செள்ளையார் பாடல் (56, 57)

அலகு 4

1. பத்துப்பாட்டு - முல்லைப்பாட்டு

அலகு 5

1. திருக்குறள் - பொருட்பால் - 3 அதிகாரம் (காலமறிதல், சுற்றந்தழால், கண்ணோட்டம்)
2. நாலடியார் - ஈகை (முதல் 5 பாடல்கள்)

II தமிழிலக்கிய வரலாறு

1. முச்சங்க வரலாறு, பதினெண்மேற்கணக்கு நூல்கள் (எட்டுத்தொகை, பத்துப்பாட்டு)
2. பதினெண்கீழ்க்கணக்கு நூல்கள்

III மொழிப் பயிற்சி

1. இலக்கணக் குறிப்பு (வேற்றுமைத் தொகை, உவமைத் தொகை, பண்புத் தொகை, உம்மைத் தொகை, அன்மொழித் தொகை.....வடிவம்) [பத்தியிலிருந்து இலக்கணக் குறிப்புகளைக் கண்டறிதல்]
2. ஒற்று மிகும் மிகா இடங்கள்
3. மரபுத் தொடர்கள் (தமிழ் மரபுத் தொடர்களைக் கண்டறிதல்)

பாடத்திட்டத்தின் பயன்கள்

பழந்தமிழ் இலக்கியங்களின் நுட்பமும் செறிவையும் உணர்தல். சங்க இலக்கியங்களைப் படிப்பதன் வாயிலாக அக்கால மக்களின் அகவுணர்வுகளையும் அக ஒழுக்கங்களையும் பண்பாட்டையும் உணர்ந்து கொள்ளுதல். பழந்தமிழ் இலக்கிய வாசிப்பின் வழி இயற்கையின் உன்னத மகத்துவத்தைப் புரியவைத்தல். தமிழ் இலக்கிய வளங்களின் வாயிலாகத் தமிழ்ப்பண்பாட்டை அடுத்த தலைமுறைக்குக் கொண்டுசெல்லுதல். தமிழ் இலக்கியங்களின் செறிவைக் கூறுதல். ஒவ்வொருவருக்கும் மொழிவளத்தின் தேவையை வலியுறுத்துதல். போன்றவை தலையாய பயன்களாக அமைந்துள்ளன. மேலும், மாணவர்கள் பிழையின்றி எழுத மொழிப்பயிற்சி உதவுகிறது. இப்பாடத்திட்டம் மாணவர்கள் தங்கள் நடிப்பு திறனை வளர்த்துக்கொள்ளப் பயன்படுகிறது. போட்டித்தேர்வுகளை எதிர்கொள்வதற்குத் தமிழ் இலக்கிய வரலாற்றுப்பகுதி மிகுந்த பயனுடையதாய் அமைகிறது.

பாடநூல்

சென்னைப்பல்கலைக்கழகம் (university of Madras)

அடித்தளப் படிப்பு

பகுதி - I தமிழ்

முதலாம் மற்றும் இரண்டாம் பருவங்களுக்குரியது.

அனைத்துப் பட்டப்படிப்பு பிரிவுகளுக்கும் ஐந்தாண்டு ஒருங்குமுறை பட்ட மேற்படிப்புப் பிரிவுகளுக்கும் பொதுவானது.

தாள் - I

செய்யுள் திரட்டு

❖ தமிழ் இலக்கிய வரலாறு

❖ மொழிப்பயிற்சி

**DEPARTMENT OF HINDI –
SHIFT-IFOUNDATION COURSE
IN HINDI**

**COURSE OBJECTIVES AND
COURSE OUTCOMES ACADEMIC
YEAR 2020-2021**

COURSE OBJECTIVES:

The objectives of the course is

- To appreciate and analyse the dramatic elements in Hindi literature.
- To understand the distinct features Hindi short stories and One Act Play.
- To understand the importance and process of translation and the qualities of translators.
- To understand the importance of vocabularies.

I YEAR – II SEMESTER

PAPER – II – ONE ACT PLAY, SHORT STORY & TRANSLATION

I. ONE ACT PLAY (Detailed Study): **AATH EKANKI**, Edited By: Devendra Raj Ankur, Mahesh Aanand, Vani prakashan, 4695, 21-A Dariyagunj,; New Delhi – 110 002

LESSONS PRESCRIBED :

1. Aurangzeb ki Aakhari Raat
2. Laksmi Ka Swagat
3. Basant Ritu ka Naatak
4. Bahut Bada Sawal

I. SHORT STORIES (Non- Detailed Study): **SWARNA MANJARIE** Edited by:

Dr. Chitti. Annapurna ,Rajeswari Publications ,21/3, Mothilal Street, (Opp. Ranganathan Street), T. Nagar, Chennai – 600 017.

LESSONS PRESCRIBED :

1. Mukthidhan
2. Mithayeewala
3. Seb aur Dev
4. Vivah ki Teen Kathayen

II. TRANSLATION PRACTICE : (English to Hindi) **BOOKS FOR REFERENCE :**

1. Prayojan Moolak Hindi : Dr. Syed Rahamathulla
Poornima Prakashan, 4/7,
Begum III Street, Royapettah,
Chennai – 14.
2. Anuvad Abhyas Part III Dakshin Bharat Hindi Prachar Sabha
T. Nagar, Chennai -17.

UNITISED SYLLABUS

UNIT – I

Auranzeb ki Aakhiri Raat

1. Mukthidhan

2. Practice of Annotation Writing
3. Practice of Summary and Literary evaluation Writing

UNIT – II

1. Laksmi ka Swagat
2. Mithayeewala
3. Practice of Annotation Writing
4. Practice of Summary and Literary evaluation Writing

UNIT-III

1. Basant Ritu ka Natak
2. Seb Aur Dev
3. Practice of Annotation Writing
4. Practice of Summary and Literary evaluation Writing

UNIT-IV

1. Bahut Bada Sawal
2. Vivah ki Teen Kathayen
3. Practice of Annotation Writing
4. Practice of Summary and Literary evaluation Writing

UNIT-V

1. Translation Practice. (English to Hindi)

COURSE OUTCOMES:

Understand the role of Hindi short stories and One Act Play in the development of the society. Knowledge about the importance of cultural, social and moral responsibility of human beings.

Enculcating the habit of book reading to gain knowledge of vocabularies.

Understanding the importance of art of translation.

LZ12A-COMMUNICATIVE ENGLISH-II

Subject: COMMUNICATIVE ENGLISH-II

Subject LZ12A Class: I B.Sc.

Semester: EVEN (II) Hours: 60

COURSE OBJECTIVES:

To develop communicative skills.

To understand the relevance of Listening, Speaking, Reading and Writing in Communication.

To develop understanding of grammar.

To enhance vocabulary.

SYLLABUS:

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 Adverbs 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

. Idioms & Phrases

Grammar in Context Conjunctions and Interjections

Unit III

1. Listening and Speaking

a. Listening to Ted talks

Making short presentations – Formal presentation with PPT, analytical presentation of graphs and reports of multiple kinds

c. Interactions during and after the presentations , Reading and writing

a. Writing emails of complaint

b. Reading aloud famous speeches

3. Word Power

a. One Word Substitution

Grammar in Context: Sentence Patterns

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

b. Readers' Theatre (Script Reading)

c. Dramatizing everyday situations/social issues through skits. (writing scripts and performing)

3. Word Power

a. Collocation

Grammar in Context: Working With Clauses

COURSE OUTCOMES:

At the end of this course students will be able to:

- Possess excellent Listening, Speaking, Reading and Writing skills in communicating in English
- Have a good understanding of grammar and vocabulary.
- Make presentations and speeches.
- Familiarise themselves with script writing, drafting assignments, reading visual texts, drafting emails etc.

THERMAL PHYSICS

Course Objective:

- To make the students understand the various thermo dynamical concepts and principles and to solve problems.

Learning Outcome:

Upon completion of the course students will be able to:

- Acquire knowledge of Heat and different measurement techniques in calorimetry.
- Use thermodynamic terminology correctly
- Explain fundamental thermodynamic properties
- Learn the basic aspects of kinetic theory of gases and the mean free path of molecular collision
- know about Vander Waals' equation of state and the Joule-Thomson effect

Lecture: 60 Hours

Tutorial: 15 Hours

Credits:4

UNIT I :KINETIC THEORY OF GASES AND MEAN FREE PATH(12 Hours)

Review of results of kinetic theory of gases: (Pressure exerted by gas -rms, average and most probable speed-Equipartition Theorem – Heat capacities) - Distribution of molecular velocities in a perfect gas-Distribution of molecular speeds-Mean free path (Zeroth and First order)

UNIT II: TRANSPORT PHENOMENA AND REAL GASES (12 Hours)

Transport phenomena- Viscosity (Zeroth order approximation)- Effects of Temperature and Pressure on viscosity- Thermal Conductivity- Diffusion – Real gases -Deviations from Perfect gas behaviour- Regnault's Experiment – Vander Waals' equation of state – Discussion of Vander Waals' equation – Joule Experiment – Porous Plug experiment – Joule –Thomson Coefficient for Vander Waals' gas

UNIT III: THERMOMETRY AND CALORIMETRY (12 Hours)

Platinum resistance thermometer – Callendar and Griffith's bridge – Thermistor – Specific heat capacity – Specific heat capacity of solids – Dulong and Petit's law – Specific heat capacity of liquid – method of mixtures – Barton's correction – Specific heat capacity of gases – C_p and C_v by Regnault's and Callendar & Barne's methods – Variation of Specific Heat Capacity of Diatomic Gases

UNIT IV: FIRST AND SECOND LAW OF THERMODYNAMICS (12 Hours)

Thermodynamic system, surroundings, boundaries-State of system and Thermodynamic variables – Thermodynamic equilibrium- Processes- The Zeroth law and concept of temperature- origin of the first law- Internal energy-Basic thermal, mechanical and diffusive interactions-the first law-applications of first law(heat capacities of gas, adiabatic equation of state and lapse rate)- Enthalpy- Second law –Origin of second law - Heat engines –The Carnot cycle- Carnot cycle as refrigerator –Kelvin, Planck and Clausius statements-Carnot's theorem

UNIT IV: ENTROPY AND THERMODYNAMIC RELATIONS (12 Hours)

Entropy- Entropy change in reversible processes – Reversible heat transfer- Clausius inequality -Entropy change in irreversible process-the principle of increase of entropy- Joule's expansion-the entropy form of first law- Entropy of an Ideal gas- Entropy of mixing - Unavailable energy: Thermal death of universe - Physical concept of entropy- Maxwell relations- Thermodynamic relations involving heat capacities- TdS equations.

Books for Study:

1. Thermal Physics, S.C.Garg, RM Bansal & CK Ghosh ,Tata McGraw Hill Publications, 2ndedition. (2018).

Books for Reference:

1. Heat and Thermodynamics, Zemansky, McGraw – Hill Book Co. Inc., New York.
2. Heat and Thermodynamics , Brijlal and N. Subramanyam, S.Chand& Co, New Delhi (2000)
3. Heat, Narayana Moorthy and KrishnaRao, Triveni Publishers, Madras (1969).
4. Fundamentals of Physics, Resnick Halliday and Walker, 6th edition, , John Willey and Sons, Asia Pvt.Ltd., Singapore.
5. Fundamentals of Thermodynamics, Carroll M.Leonard, Prentice-Hall of India (P) Ltd., New Delhi (1965).

https://swayam.gov.in/nd1_noc20_cy14/preview

MAPPING-COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M
CO2	S	M	S	S	S
CO3	S	S	M	S	S
CO4	S	S	S	S	M
CO5	M	S	S	S	S

Key : S- Strong; M-Medium; L-Low

Practical - I

1. Young's modulus – Non-uniform Bending – Pin and microscope.
2. Young's modulus – Uniform Bending – Scale and Telescope
3. Rigidity modulus – Torsional pendulum (without symmetrical masses)
4. Rigidity modulus and Moment of Inertia – Torsional pendulum (With symmetric masses)
5. Surface Tension and Interfacial Surface Tension – Drop Weight Method
6. Coefficient of Viscosity of Liquid – GraduatedBurette (radius of capillary tube by Mercury pellet method).
7. Sonometer–Frequency of Tuning Fork
8. Sonometer – Relative Density of a Solid and Liquid
9. Specific heat capacity of liquid–Method of Mixtures (Half-time correction).
10. Comparison of Viscosities of two Liquids–Burette Method
11. Focal length, Power, R and Refractive Index of a long Focus Convex Lens
12. Focal length, Power, R and Refractive Index of a Concave Lens
13. P.O. Box – Temperature coefficient of resistance
14. Spectrometer – Refractive index of a Glass Prism
15. Spectrometer – Hollow Prism- Refractive index of a liquid.
16. Newton's law of cooling-Specific heat Capacity of the Liquid
17. Carey Foster's Bridge-Resistance and Specific Resistance
18. Potentiometer – Calibration of a Low Range Voltmeter
19. Deflection magnetometer – Tan A Position

Allied Mathematics -I (SM3AE)

(Effective from the Academic Year 2020-2021)

COURSE OBJECTIVES:

1. Enable the students to know Integration using Recurrence relation and Fourier series for circular functions.
2. To understand Differential equations, Laplace transforms and its applications
3. To know the derivatives in Vector and Vector integration.

Unit 1

Integral Calculus: Bernoulli's formula – Reduction formulae – $\int_0^{\pi/2} \sin^n x \, dx$, $\int_0^{\pi/2} \cos^n x \, dx$, $\int_0^{\pi/2} \sin^m x \cos^n x \, dx$ (m, n being positive integers), Fourier series for functions in $(0, 2\pi)$, $(-\pi, \pi)$.

Chapter 2: Section 2.7 & 2.9, Chapter 4: Section 4.1.

Unit 2

Differential Equations: Ordinary Differential Equations: second order non-homogeneous differential equations with constant coefficients of the form $ay'' + by' + cy = X$ where X is of the form $e^{\alpha x} \cos \beta x$ and $e^{\alpha x} \sin \beta x$ – Related problems only.

Partial Differential Equations: Formation, complete integrals and general integrals, four standard types and solving Lagrange's linear equation $Pp + Qq = R$.

Chapter 5: Section 5.2.1, Chapter 6: Section 6.1 to 6.4

Unit 3:

Laplace Transforms: Laplace transformations of standard functions and simple properties, inverse Laplace transforms, Application to solution of linear differential equations up to second order – simple problems.

Chapter 7: Section 7.1.1 to 7.1.4 & 7.2 to 7.3

Unit 4:

Vector Differentiation: Introduction, Scalar point functions, Vector point functions, Vector differential operator Gradient, Divergence, Curl, Solenoidal, irrotational, identities.

Chapter 8, Section 8.1 to 8.4.4

Unit 5:

Vector Integration: Line, surface and volume integrals, Gauss, Stoke's and Green's theorems (without proofs). Simple problems on these.

Chapter 8, Section 8.5 to 8.6.3.

COURSE OUTCOMES:

1. Students will be able to apply reduction formulae to evaluate integrals and to find Fourier series of a given periodic function.
2. Student will be able to solve differential equations and to apply Laplace transform to solve differential and integral equations.
3. To find derivatives of vector functions and to evaluate Line, surface and Volume integrals using Greens, Stokes & Gauss divergence theorem and verifying the same.

Content and treatment as in

Allied Mathematics, Volume I and II, P. Durairam and S. Udayabaskaran, S. Chand Publications.

Reference:-

- S. Narayanan and T.K. Manickavasagam Pillai – Ancillary Mathematics,
- S. Viswanathan Printers, 1986, Chennai.
- Allied Mathematics by Dr. A. Singaravelu, Meenakshi Agency.

e-Resources:

1. <http://www.sosmath.com>
[http://www.analyzemath.com/Differential Equations/applications.html](http://www.analyzemath.com/Differential_Equations/applications.html)

NME-II: FUNCTIONAL MATHEMATICS-II**SUB. CODE: SM5AB****SEM: II****YEAR/CLASS: I/ I B.Sc****PHYSICS****COURSE OBJECTIVE:**

1. To enhance problem solving skills
2. To improve basic mathematical skills
3. To help students prepare for competitive exams.

UNIT I

Time and work – Pipes and cisterns- Problem

UNIT II

Time and Distance, Relative speeds- Problems on Races, Boats and Trains.

UNIT III

Mensuration – Problems.

UNIT IV

Polygons – Interior angles- Number of diagonals- Regular Polygons- Problems

UNIT V

Stocks and Shares – Problems

COURSE OUTCOME:

1. Students learn to solve problems on time and work, distance and speed.
2. To do problems on trains, races, pipes and cisterns and mensuration.
3. To solve problems on stocks and shares, polygons.

Reference:

1. Quantitative Aptitude- R.S. Agarwal
2. Functional Mathematics, M. Sivananda Rani, Margham Publications, Chennai.

சென்னைப் பல்கலைக்கழகம்
அடிப்படைத்தமிழ் - நோக்கும் கற்றல் பயன்பாடும்
அண்ணா ஆதர்ஷ் மகளிர் கல்லூரி, சென்னை
தமிழ்த்துறை
முதலாமாண்டு (2020 -2021)
அடிப்படைத் தமிழ் - இரண்டாம் பருவம்

பாடத்திட்டத்தின் நோக்கம் (Objective)

தமிழ்மொழியைப் பேசவும் எழுதவும் படிக்கவும் தெரியாத மாணவர்கள் அடிப்படைத்தமிழ் பாடம் படித்துப் பயன்பெறும் நோக்கில் பாடத்திட்டம் அமைகிறது. அண்டை மாநிலங்களிலிருந்தும் பிற நாடுகளிலிருந்தும் இளங்கலை, இளம் அறிவியல் பட்டம் பெறும் மாணவர்கள் தமிழ் நாட்டின் மாநில மொழியைப் பேசவும் எழுதவும் துணைபுரியும் வகையில் பாடத்திட்டம் வடிவமைக்கப்பட்டுள்ளது.

இம்மாணவர்கள் இரண்டாம் பருவத்தில் தமிழ் மொழியிலுள்ள சிறு சிறு இலக்கியப்பகுதிகளைப் படிப்பர். சிறு கதைகள், சுற்றுலாத்தலங்கள், தமிழ் இலக்கியங்களின் வரலாறு ஆகியவற்றைப் புரிந்துகொள்ளும் நோக்கில் பாடத்திட்டம் அமைகிறது.

பாடத்திட்டம் (SYLLABUS)

அலகு -1.

நீதி நூல்கள்

1. ஆத்திச் சூடி(1-12), 2. கொன்றை வேந்தன்(1-8),
3. திருக்குறள்(5)

1. அகர முதல (1), 2. செயற்கரிய (26), 3. மனத்துக்கண் (34), 4. கற்க கசடறக்..... (391), 5. எப்பொருள் (423).

அலகு - 2.

நீதிக் கதைகள்

1. பீர்பால் கதை, 2. பரமார்த்த குரு கதை

அலகு - 3.

அறிமுகம்

அ. தமிழ் இலக்கிய வரலாறு - இலக்கியங்கள் புலவர்கள்

ஆ.தமிழக வரலாறு - வரலாற்றுச் சின்னங்கள்- சுற்றுலாத்தலங்கள்-

அலுவலகப் பெயர்கள்

இ.பழமொழிகள்.

பாடத்திட்டத்தின் பயன்கள் (Subject Outcome)

தமிழ் இலக்கியத்தின் சிறப்பினையும் தமிழ் மொழியின் சிறப்பினையும் மொழிவளத்தையும் அறிந்து கொள்ள உதவுகிறது. தமிழக மக்களின் பண்பாட்டுக்கூறுகளை உணர்ந்து கொள்ளுதல்.

சென்னைப் பல்கலைக்கழகம்
சிறப்புத்தமிழ் - நோக்கும் கற்றல் பயன்பாடும்
அண்ணா ஆதர்ஷ் மகளிர் கல்லூரி, சென்னை
தமிழ்த்துறை
முதலாமாண்டு (2020 -2021)
சிறப்புத் தமிழ் - இரண்டாம்பருவம்

பாடத்திட்டத்தின் நோக்கம் (Objective)

இப்பாடத்திட்டம் பள்ளிகளில் சில வகுப்புகள் வரையில் மட்டுமே தமிழைப் படித்துக் கல்லூரிகளில் பிற மொழி கற்பவர்களுக்காக வடிவமைக்கப்படுகிறது. இங்கு தொடக்க கால செய்யுள் முதல் தற்கால புதுக்கவிதை வரை உள்ள ஒருசில பகுதிகள் அமைந்துள்ளன. அனைத்துக் கால இலக்கியங்களின் தன்மையை உணர்ந்துகொள்ளுதல். தமிழ் இலக்கியப்பகுதியும், தமிழிலக்கிய வரலாற்றுப்பகுதியும், மொழிப்பயிற்சியும் பாடமாக அமைகிறது.

பாடத்திட்டம் (SYLLABUS)

பாடப்பகுப்பு

VII. இலக்கியம்

VIII. அதைச் சார்ந்த தமிழிலக்கிய வரலாறு

IX. மொழிப் பயிற்சி

அலகு - 1 கட்டுரை

1. பெண்ணின் பெருமை-திரு. வி. க

அலகு -2. செய்யுள்

1. புறநானூறு - அ. கெடுகசிந்தை-ஓக்கூர் மாசாத்தியார்,

ஆ. ஈன்று புறந்தருதல் - பொன்முடியார், இ. யாதும் ஊரே -
கனியன்பூங்குன்றனார்

ஈ. திருக்குறள் - வான் சிறப்பு முழுமையும்

உ. சிலப்பதிகாரம் - மங்கல வாழ்த்துப் பாடல்

ஊ. திருவாசகம் - வேண்டத்தக்கது

எ. திருவாய்மொழி - உயர்வற

ஏ. இரட்சண்ய யாத்ரிகம் (சிலுவைப்பாடு)-பாடல்எண்-1,3,4

ஐ. சீறாப்புராணம் - வானவர்க்கும்

ஓ. பாரதியார்- நல்லதோர்வீணை

அலகு -3. இலக்கிய வரலாறு , பாடம் தழுவிய இலக்கிய வரலாறு

அலகு -4. மொழிபெயர்ப்பு, ஆங்கிலப் பகுதியைத் தமிழாக்கம் செய்தல்

பாடத்திட்டத்தின் பயன்கள் (Subject Outcome)

தமிழ் மொழி, தமிழ் இலக்கியத்தின் தொன்மையை அறிதல். தமிழ் மக்களின் பண்பாட்டைக் கால வாரியாக உணர்ந்து கொள்ளுதல்.

மொழிபெயர்ப்புத்துறையிலும் செயலாற்ற முடியும்

PZ1SC - PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES

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 organisations/ sections in companies and offices with winning proposals.

Syllabus

Unit 1- 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.

Unit 2 - 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 3- Digital Competence

Listening to interviews (subject related)

Speaking: Interviews with subject specialists (using video conferencing skills)

Creating Vlogs (How to become a vlogger and use vlogging 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 4 - 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 5- Workplace Communication & Basics of Academic Writing

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)

அண்ணா ஆதர்ஷ் மகளிர் கல்லூரி, சென்னை
தமிழ்த்துறை

சென்னைப் பல்கலைக்கழகப் பாடத்திட்டம்

பொதுத்தமிழ் - இரண்டாமாண்டு – மூன்றாம்பருவம்

PART – I – SECOND YEAR – III SEMESTER

நோக்கும் கற்றல் பயன்பாடும்(2021 -2022)

பாடத்திட்டத்தின் அறிமுகம்

சைவம், வைணவம், கிறித்துவம், இசுலாமியம், சித்தர்கள் ஆகிய சமயம் சார்ந்த இலக்கியங்கள் பாடங்களாக வடிவமைக்கப்பட்டுள்ளன. மேலும் சிற்றிலக்கியங்களில் ஒருசில பகுதிகளும் பாடமாக அமைந்துள்ளன. இந்த இலக்கியங்கள் சார்ந்த வரலாறும் பாடமாக அமைந்துள்ளன. மொழிப்பயிற்சியும் இடம்பெற்றுள்ளது.

பாடத்திட்டத்தின் நோக்கம்

மக்களுக்குரிய வாழ்வியல் நெறிமுறைகளையே பல சமய இலக்கியங்களும் போதிக்கின்றன என்பதை உணர வைத்தல். பக்திக்கும் அன்றாட வாழ்வியலுக்கும் உள்ள தொடர்பினைப் புரிய வைத்தலே இப்பாடத்திட்டத்தின் நோக்கமாகும்.

சிற்றிலக்கியங்களின் வகைகளையும் யாப்பின் புது வடிவங்களையும் தெரிந்துகொள்ள செய்தல். சிற்றிலக்கிய காலத்தின் பாடுபொருளின் மாற்றத்தை உணரவைத்தல். இறைப்பணியோடு மக்கள் பணி செய்த இறையடியார்களை அடையாளம் காட்டுவதும் இதன் தலையாய நோக்கமாகும்.

தமிழ் மொழியில் சொற்களின் பொருள்கள் காலத்திற்குக் காலம் மாறுபடும் தன்மையினைப் புரியவைத்தல். ஒரு சொல்லுக்கு பல பொருள்கள் காணப்படுவதை உணர வைத்தல். இதன் மூலம் மொழி பயன்பாட்டுக்குச் சொல்வளம் தேவை என்பதை உணர்த்துதல்.

இலக்கிய வரலாற்றைக் கற்பிப்பதன் வாயிலாக இலக்கியத் தோற்றப்பின்னணி அறிந்துகொள்ள செய்தல். இவையே இப்பாடத்திட்டத்தின் நோக்கம் ஆகும்.

பாடப் பகிர்வு

- I. இலக்கியம்
- II. அதைச் சார்ந்த தமிழிலக்கிய வரலாறு
- III. மொழிப் பயிற்சியும் மொழி பெயர்ப்பும்

அலகு I

1. காரைக்கால் அம்மையார் – அற்புதத் திருவந்தாதி (பிறந்து மொழி எனத் தொடங்கி 5 பாடல்கள்)
2. தேவாரம் – திருஞானசம்பந்தர் – திருத்தில்லை பதிகம் ‘கற்றாங்கு’ எனத் தொடங்கி 11 பாடல்கள்
3. திருநாவுக்கரசர் – மாசில் வீணையும் எனத் தொடங்கி 10 பாடல்கள்
4. சுந்தரர் – பித்தா பிறை சூடி எனத் தொடங்கி 10 பாடல்கள்
5. மாணிக்கவாசகர் – திருப்பள்ளியெழுச்சி 10 பாடல்கள்

அலகு 2

1. ஆண்டாள் – நாச்சியார் திருமொழி – ஏழாம் பத்து
2. பொய்கையாழ்வார் – முதல் பாடல் (முதல் திருவந்தாதி)
3. பூதத்தாழ்வார் – முதல் பாடல் (இரண்டாம் திருவந்தாதி)
4. பேயாழ்வார் – முதல் பாடல் (மூன்றாம் திருவந்தாதி)
5. நம்மாழ்வார் – முதல் பத்து – நான்காம் திருமொழி முதல் 5 பாடல்கள்

அலகு 3

1. தாயுமானவர் – பைங்கிளி கண்ணி (5 கண்ணிகள்)
2. வள்ளலார் – திருவருட்பா – பிள்ளைச் சிறு விண்ணப்பம் (1-5)
3. அருணகிரிநாதர் – விநாயகர் துதி – “நினது திருவடி..” எனத் தொடங்கும் 5 ஆம் பாடல்

அலகு 4

1. சித்தர் பாடல்கள் – திருமூலர் – திருமந்திரம் (270,271,274,275,285)
2. குணங்குடி மஸ்தான் - பராபரக்கண்ணி
3. வேதநாயகம் பிள்ளை – தாய் தந்தையர் வணக்கம் 25-32 வரிகள்
(பெண்மதி மாலை)

அலகு 5

1. முத்தொள்ளாயிரம் – ஏற்கனவே உள்ள பகுதி
2. தமிழ்விடுதூது – முதல் 16 கண்ணிகள்
3. நந்திக்கலம்பகம் – ஏற்கனவே உள்ள பகுதி (61, 96, 100, 105, 110)

II தமிழிலக்கிய வரலாறு

1. பக்தி இலக்கியம் (சைவம், வைணவம், சித்தர்கள், இஸ்லாம், கிறித்துவம்)
2. சிற்றிலக்கியங்கள்

III மொழிப் பயிற்சியும் மொழி பெயர்ப்பும்

ஒரு பொருள் குறித்த பலசொல், பலபொருள் குறித்த ஒரு சொல், பிறமொழிச் சொல் நீக்கல், அலுவலகக் கடிதம் வரைதல், தமிழில் மொழி பெயர்த்தல்

பாடத்திட்டத்தின் பயன்கள்

தமிழில் காணப்படும் அனைத்துச் சமய இலக்கியங்களும் வாழ்க்கைக்குரிய நல்ல விழிகாட்டியாக விளங்குகின்றன. இறைபக்தியின் இன்றியமையாமை உணர்த்துதல்.

சமயச் சான்றோர்கள் தமிழ் மொழிக்கு ஆற்றியுள்ள பங்களிப்புகளை அறிந்து கொள்ளுதல்.

நாயன்மார்களும் ஆழ்வார்களும் தங்கள் புலமையினால் பாசுரங்களைப் படைத்ததோடு நில்லாமல் இசையோடு இசைத்துள்ளமையால் இசையின் தொன்மையினை அறிதல். கிறித்தவ

இலக்கியமும் இசுலாமிய இலக்கியமும் தமிழ் மரபில் தோன்றித் தமிழ் மொழிக்குச் சிறப்பு செய்கிறது என்பதைப் புரிந்துகொள்ளுதல்.

பக்தி இலக்கியங்களின் வழி மனதை மேம்படுத்துதலும் வாழ்வியல் முறைகளைப் புரிய வைத்தலுமே இப்பாடத்திட்டத்தின் பயன் ஆகும். மொழிப்பயிற்சியினால் புதுப்புது சொற்களைப் பயன்படுத்த தூண்டுதல்.

தமிழ் இலக்கிய வரலாற்றுப்பகுதி போட்டித்தேர்வுக்கு உறுதுணையாக விளங்குதல் ஆகியவையே பயன் ஆகும்.

பாடநூல்:

❖ சென்னைப் பல்கலைக்கழகம் (University of Madras)

அடித்தளப் படிப்பு - பகுதி - I பொதுத்தமிழ்

மூன்றாம் மற்றும் நான்காம் பருவங்களுக்குரியது.

அனைத்துப் பட்டப்படிப்பு பிரிவுகளுக்கும் ஐந்தாண்டு ஒருங்குமுறை பட்ட

மேற்படிப்புப் பிரிவுகளுக்கும் பொதுவானது.

தாள் -I - செய்யுள் திரட்டு

Foundation Course - Part - Tamil - For III & IV Semesters

Common to all undergraduate course and Five Year Integrated postgraduate courses.
2021 - 2022 onwards.

❖ தமிழ் இலக்கிய வரலாறு – பாடம் தழுவிய இலக்கிய வரலாறு

❖ மொழிப்பயிற்சி

Reference book

தமிழ் – பகுதி 1 - சென்னைப் பல்கலைக்கழகம் வடிவமைத்த பாடத்திட்டங்கள் ஆகையால் குறிப்புதவிநூல் என்று தனியாக இல்லை. (Reference book not applicable)

**DEPARTMENT OF HINDI – SHIFT-I
FOUNDATION COURSE IN HINDI
COURSE OBJECTIVES AND COURSE OUTCOMES
ACADEMIC YEAR 2020-2021**

SUBJECT CODE: CLE3H

YEAR/SEMESTER:

IYR/IISEMESTER

COURSE OBJECTIVES:

The objectives of the course is to

1. Describe the beginning stage of Hindi literature in the development of Hindi language.
2. Describe the influence of Mughal dynasty on Indian culture and the poetic skill of Indian poets.
3. Understand the importance of Bhakthikaal in bringing the unity in diversity.
4. Describe the History of Hindi literature
5. Describing the role played by poets of Aadhikaal, Bhakthi Kaal and Reethi Kaal for the development of Hindi literature and the society.

IIYEAR-IIISEMESTER

Paper III Ancient Poetry and Introduction to Hindi Literature (Upto Reeti Kaal)

IIYEAR-IIISEMESTER

Paper III Ancient Poetry and Introduction to Hindi Literature (Upto Reeti Kaal)

1. Ancient Poetry

Prescribed Text Book: Selections in Poetry(2007)

Lessons Prescribed:

1. Kabirdas-Saakhi(Dohas from 1 to 10)
2. Surdas- Bramargeet Saar only
3. Tulasidas- Vinayke Pad only
4. Meera Bai-Pad only
5. Tiruvalluar (Dharmaka and only)
6. Biharilal (Dohas 1 to 5)

2. Introduction to Hindi Literature (upto Reethikaal)

Lessons Prescribed:

1. Literary Trends of Veeragatha Kaal(Aadikaal)-Important poets:
1.Chand Baradai 2.Vidhyapathi and their Works
2. Literary Trends of Bhakthi Kaal – Important Poets: 1.Kabirdas 2.Joyasi
3. Tulasidas 4.Surdas and their works
3. Literary Trends of Reethikaal–Important Poets:
1.Bihari 2. Bhushan 3. Ghananan

Reference Books:

1. Hindi Sahithya Ka Itihas ,By: Ramchandra Shukla, Jayabharathi , Publications, 217, B, Maya Press Road, Allahabad– 211 003.
2. Hindi Sahithya Yug Aur Pravritthiya By: Dr.Sivakumar Varma, Asok Prakashan Nayi Sarak, New Delhi– 6
3. Hindi Sahithya ka Sybodh Itihas By: Babu Gulabroy, Lakshmi Narayanan Agarwas Book Publishers seller, Anupama Plaza-1, Block.No.50, Sanjay Place, Agra-282002.

Unit wise Syllabus for III

Semester UNIT –I

1. Kabirdas-Saakhi(Dohas from 1 to 10)
2. Literary Trends of Veeragatha Kaal(Aadikaal)
3. Chand Baradai and his Works
4. Vidhyapathi and his works

UNIT-II

1. Surdas- Bramargeet Saar
2. Literary Trends of Bhakthi Kaal
3. Gyan Margi Shakha
4. Important Poet : 1. Kabirdas

UNIT-III

1. Tulasidas– Vinayke Pad only
2. Literary Trends of Bhakthi Kaal–Prem Margi Shakha
3. Literary Trends of Bhakthi Kaal-Ram Bhakthi Shakha
4. Important Poets – 1. Joyasi and 2. Tulasidas

UNIT-IV

1. Meera Bai–Padonly
2. Tiruvalluar(Dharmaka and only)
3. Literary Trends of Bhakthi Kaal– Krishna Bhakthi Shakha
4. Important Poet – Surdas

UNIT-V

1. Biharilal(Dohas1to5)
2. Literary Trends of Reethi kaal
3. Important Poet:Bihariand his works
4. Bhushanand his works and Ghananand and his works

I. COURSE OUTCOMES:

1. Understanding the role played by the poets of Bhakthi cult in literature and society.
2. Describing the Ram leela and Krishna leela poetry by Thulsidas, Surdas and Meerabai respectively by relating it with philosophy of life.
3. Knowledge about the influence of Rama Bhakthi and Krishna Bhakthi in Indian Religion and literature.
4. Knowledge about Idol worship concepts and the influence of it in the development of Indian culture and Patriotic spirit.
5. Knowledge about the Aadhikaal of its artitect skill , Reethikall of its shringar ras.
6. Knowledge about the Idolless worship and Prem Marga cult of literature .
7. Knowledge about the History of Hindi Literature upto Reethi Kaal.

LZ13B - LANGUAGE THROUGH LITERATURE – I

Subject: Language through Literature – I

Subject Code: LZ13B

Class: II B.Sc.

Semester: ODD (III)

Hours: 60

COURSEOBJECTIVES:

- To use literature as a medium to teach/learn grammar, reading, spelling, vocabulary, writing mechanics, creative writing and thinking skills
- To strengthen contextual understanding of the language through texts relevant to specific disciplines and offer scope for imaginative involvement and self-expression

- To stimulate interest in acquiring twentyfirst century skills
- To engage inself-assessment activities for self-development

To help absorb the values, **ethics and attitudes of life and culture expressed in literature**

SYLLABUS:

THEME	TEXT	ENGLISHLANGUAGESKILLS
Ethics	1.1 Humanities vs Sciences <i>S. Radhakrishnan</i>	Vocabulary skills <ul style="list-style-type: none"> • Etymology • Etymological derivation of words Grammar skills <ul style="list-style-type: none"> • Tenses • The simple present vs the present continuous tense • The simple past vs present perfect tense
Learning	1.2 Wings of Fire (AnExtract) <i>A.P. J.Abdul Kalam</i>	Vocabulary skills <ul style="list-style-type: none"> <input type="checkbox"/> One-word substitutes/meanings of expressions Grammar skills <ul style="list-style-type: none"> <input type="checkbox"/> Combining sentences
	Worksheet 1.2	
Society	1.3 On the Rule of the Road <i>A.G.Gardiner</i>	Vocabulary skills <ul style="list-style-type: none"> • Some literary devices • Word association Grammar skills <ul style="list-style-type: none"> • Error identification • Types of questions: Wh- andYes/No
	Worksheet 1.3	
UNIT2:POETRY[12Hours]		
THEME	TEXT	ENGLISHLANGUAGESKILLS
Human Values	2.1 Leisure <i>W.H. Davies</i>	Vocabulary skills <ul style="list-style-type: none"> • Content words and function words • Compound words Grammar skills

		<ul style="list-style-type: none"> • Punctuation • Use of punctuation marks • Conversion of sentences <ul style="list-style-type: none"> ▪ Active and passive voice ▪ Reported speech
	Worksheet2.1	
Science	2.2	Vocabulary skills
	The Secret of the Machines <i>Rudyard Kipling</i>	<ul style="list-style-type: none"> • Commonly confused words <ul style="list-style-type: none"> • Prefixes and suffixes • Negative prefixes
	Worksheet2.2	
UNIT2:POETRY[12Hours]		
THEME	TEXT	ENGLISHLANGUAGESKILLS
Human Values	2.1	Vocabulary skills
	Leisure <i>W.H. Davies</i>	<ul style="list-style-type: none"> • Content words and function words • Compound words Grammar skills <ul style="list-style-type: none"> • Punctuation • Use of punctuation marks • Conversion of sentences <ul style="list-style-type: none"> ▪ Active and passive voice ▪ Reported speech
	Worksheet2.1	
Science	2.2	Vocabulary skills
	The Secret of the Machines <i>Rudyard Kipling</i>	<ul style="list-style-type: none"> • Commonly confused words <ul style="list-style-type: none"> • Prefixes and suffixes • Negative prefixes
	Worksheet2.2	
		Grammar skills <ul style="list-style-type: none"> • Conversion of word class
Environment	2.3	Vocabulary skills
	Water <i>Ralph Waldo Emerson</i>	<ul style="list-style-type: none"> • Homophones • Homonyms • Homographs Grammar skills <ul style="list-style-type: none"> • Gerunds • Participles
	Worksheet2.3	
Sports	2.4	Vocabulary skills

	Casey at the Bat <i>Earnest Lawrence Thayer</i>	<ul style="list-style-type: none"> • Completing words • Grammar skills • Phrasal verbs
	Worksheet2.4	
Satire	2.5 Very Indian Poem in Indian English <i>Nissim Ezekiel</i>	Vocabulary skills <input type="checkbox"/> Metonymy Grammar skills <input type="checkbox"/> Integrated grammar activities <input type="checkbox"/> Cloze test
	Worksheet2.5	
UNIT3: SHORTSTORIES[15Hours]		
THEME	TEXT	ENGLISH LANGUAGE SKILLS
Attitude	3.1 Witches'Loaves <i>O.Henry</i>	Pronunciation <ul style="list-style-type: none"> • Tongue twisters • Pronouncing words of foreign origin • Using adictionary to understand pronunciation
	Worksheet3.1	
Fantasy	3.2 The Country of the Blind <i>H.G.Wells</i>	Writing skills <ul style="list-style-type: none"> • Descriptive writing • Narrative writing • Writing long essays
	Worksheet3.2	
Humour	3.3 The Boy Who Broke the Bank <i>Ruskin Bond</i>	Writing skills <ul style="list-style-type: none"> • Converting a story into a play
	Worksheet3.3	
Soci al Justice	3.4 The Squirrel <i>Ambai</i>	Writing skills <ul style="list-style-type: none"> • Filling forms • Letter writing
	Worksheet3.4	
UNIT4:NON-FICTION[14Hours]		
THEME	TEXT	ENGLISHLANGUAGE SKILLS

Artificial Intelligence	4.1 A I and Literature: The Muse in the Machine <i>John Thornhill</i>	Writing skills <ul style="list-style-type: none"> • Writing blogs • Creating vlogs
	Worksheet4.1	
Social Media	4.2 Facebook Is Making Us Miserable <i>Daniel Gulati</i>	Writing skills <ul style="list-style-type: none"> • Writing emails
	Worksheet4.2	
Culture	4.3 One World One Culture <i>Kenneth J. Pakenham, JoMcEntire, JessicaWilliams</i>	Writing skills <ul style="list-style-type: none"> • Résumés • Cover letters • Format of a cover letter Speaking skills <ul style="list-style-type: none"> • Introduction to job interviews
	Worksheet4.3	
Food and Nutrition	4.4 Portion Size is the Trick!!! <i>Ranjani Raman</i>	Writing skills <ul style="list-style-type: none"> • Argumentative essays
	Worksheet4.4	
UNIT5: SCENESFROMSHAKESPEARE[14Hours]		
THEME	TEXT	ENGLISHLANGUAGESKILLS
Hum	5.1 The Merchant of Venice[ActIV,SceneI; Lines170–419]	Writing skills <ul style="list-style-type: none"> • Recreating a court scene

anN atur e	Worksheet5.1	<ul style="list-style-type: none"> • Role play
	5.2 Henry IV Part I[ActII,Scene4]	Writing skills <ul style="list-style-type: none"> • Creating a webpage
	Worksheet5.2	
Formative Assessment [5Hours]		Unit-end Assessment Tasks I-V

LEARNINGOUTCOMES:

After completing the course, the students will be able to

- Reveal the extent of enhancement of their vocabulary and use them appropriately to communicate in contexts
- become aware of commonly occurring errors and avoid committing them in language use
- rewrite words and sentences by changing their forms and use them appropriately
- show improvement in their pronunciation
- attempt different kinds of writing – essays, emails, blogs, letters etc
- prepare resumes to face interviews
- convert short stories into plays or skit
- role play the scenes and make a dramatic presentation of the scenes
- create a webpage for themselves and others show their awareness of contemporary issues and themes that are socially relevant by reading texts of different literary genres

**SEMESTER - III
CORE PAPER IV**

MATHEMATICAL METHODS IN PHYSICS

Course Objective :

To familiarize students with essential mathematical methods for solving advanced problems in theoretical physics.

Learning Outcomes :

Upon completion of the course, the student should be able:

- To use advanced mathematical methods and theories on various mathematical and physics problems.
- To develop the skill of problem-solving ability.
- Use Matrices to solve simultaneous equations
- Solve quantum mechanical problems using special functions and polynomials.
- Apply Fourier series to simple circuits.
- To understand electromagnetic theory with Vector Calculus

Lecture: 60 Hours

Tutorial: 15 Hours

Credits:4

UNIT I: VECTOR CALCULUS (12 Hours)

Scalar and Vector Fields - Gradient of a Scalar function - Divergence of a Vector function - Curl - Line Integral, Surface Integral and Volume Integral (Simple Problems) - Gauss Divergence Theorem - Stoke's Theorem and Green's Theorem (Statement and Proof)- Spherical Polar Coordinates - Expressions for Gradient, Divergence, Curl and Laplacian Operator in Cartesian and Spherical Polar Coordinates.

UNIT II: SPECIAL FUNCTIONS (12 Hours)

Special Functions - Beta and Gamma Functions - Definitions - Symmetry Property of Beta function - Evaluation of Integrals using Beta function - Transformation of Beta function - Evaluation of Gamma Function - The value of $\Gamma_{1/2}$ - Transformations of Gamma function (Other forms) - Relation between Beta and Gamma functions - Simple Problems in beta and gamma functions - Series Solutions for Bessel, Legendre and Hermite Differential Equations.

UNIT III: MATRICES (12Hours)

Special Types of Matrices - Symmetric and Skew-symmetric Matrices -Hermitian and Skew-Hermitian Matrices - Orthogonal Matrices - Unitary Matrices -Properties - Characteristics Equation - Determination of Eigen values and Eigen vectors - Properties - Statement and Proof of Cayley - Hamilton Theorem - Simple Problems - Inverse of Matrix by CH Theorem - Diagonalization of 2x2 Real Symmetric Matrices.

UNIT IV: COMPLEX VARIABLES (12 Hours)

Basics of Complex Numbers and their Graphical Representation - Euler's Formula, De-Moivre's Theorem - Functions of Complex Variables - Limit, Continuity and Differentiability - Analytic Function -Definition - Cauchy-Riemann Conditions - Examples of Analytic Functions (Analyticity) - Cauchy-Riemann Conditions in Polar Form

UNIT V: FOURIER SERIES (12 Hours)

Fourier Series in the interval $(-\pi$ to $\pi)$ - Definition – Dirichlet's Conditions (Statement Only) - Determination of Fourier Coefficients -Even and Odd Functions and their Fourier expansions. Sine and Cosine Periodic Functions - Simple Problems in Fourier Series in the interval $(-\pi$ to $\pi)$ - Applications of Fourier series - Half Wave Rectifier and Saw Tooth Wave.

Booksfor Study:

- 1.Mathematical Physics, H. K. Dass, S. Chand & Co. Ltd. (2010).
- 2.Mathematical Physics, Sathya Prakash, Sultan Chand & Sons, New Delhi, Fifth Revised and Enlarged Edition, 2006, (Reprint 2007).
- 3.Mathematical Physics ,B. D. Gupta, Vikas Publishing house Pvt. Ltd. (2010)

BOOKS FOR REFERENCE :

- 1.Mathematical Methods for Physicists , G. Arfken, (5th Edition) ,Academic Press, (2000).
- 2.Mathematical Physics , B.S. Rajput, 8th Edition,Pragati Prakashan(1978).
3. Foundations of Mathematical Physics , Sadri Hassani, Second Edition.Springer
- 4.Mathematical methods for Physics and Engineering, K.F.Riley, M.P.Hobson &S.J.Bence , Cambridge University Press, 3rd Edition.
5. [http://phy.syr.edu/~trodden/courses/math methods.](http://phy.syr.edu/~trodden/courses/math%20methods)

MAPPING-COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M
CO2	M	M	S	S	S
CO3	M	S	S	S	S
CO4	S	S	S	M	S
CO5	S	M	S	S	S

Key : S- Strong; M-Medium; L-Low

ALLIED CHEMISTRY – I (60 Hours) 4 Credits

(For Maths and Physics Students)

Subject Code: TBTAC

LEARNING OBJECTIVES

- Learning fundamentals of organic chemistry such as types of reagents and types of reactions and polar effects
- Learning the basics of physical chemistry such as thermodynamics, kinetics and photochemistry
- Introduction to fundamental concepts of Nuclear Chemistry and application of radioisotopes
- Learning about water technology, day to day applications of fuels, fertilizers and polymers.
-

Unit I: NUCLEAR CHEMISTRY

Fundamental particles of nucleus, isobars, isotones and isomers – Differences between chemical reactions; fusion and fission – Radio active series, group displacement law – Mass defect, derivation of $1\text{amu} = 931\text{ MeV}$ – nuclear binding energy and calculation – Applications of radio isotopes – carbon dating and in medicine.

Unit II: INDUSTRIAL CHEMISTRY

Fuels- Classification-gaseous fuels like water gas, producer gas, liquefied petroleum gas, gobar gas, compressed natural gas - Fertilizers- Classification – urea ,Ammoniumsulphate, superphosphate, Triple super phosphate, potassium nitrate- manufacture and uses - Silicones - Preparation, properties and applications.

Hardness of water: temporary and permanent hardness, disadvantages of hard water -Softening of hard water - Zeolite process, demineralization process and reverse osmosis - Purification of water for domestic use: use of chlorine, ozone and UV light –definition and determinations of BOD and COD.

Polymers: General method of preparation and properties of the following: PVC, Polyethylene, Teflon, Bakelite, Nylon 6 and Nylon 6, 6.

Unit III: FUNDAMENTALS OF ORGANIC CHEMISTRY

Classification of organic compounds -.Hybridization in methane, ethane, acetylene, benzene - classification of reagents - electrophiles, nucleophiles and free radicals - Classification of reactions- addition, substitution, elimination and polymerisation - Polar Effects - Inductive effect, resonance, hyper-conjugation, steric effect - Keto-enol tautomerism - electrophilic substitution mechanism in benzene (nitration and sulphonation) – Aromaticity – Huckel's rule and application to Benzene, Naphthalene, Anthracene and Phenanthrene.

Unit IV: THERMODYNAMICS

Definition of certain terms - system, surrounding, reversible and irreversible processes - Limitations of I law, Need for II Law - Different Statements of II. Law - Carnot cycle -

Efficiency - Carnot Theorem - Thermodynamic Scale of Temperature - Entropy- Definition, Unit and change of entropy for phase transformation ,Free energy - nature of process in terms of free energy and entropy-Statement of Third Law.

Unit V: CHEMICAL KINETICS AND PHOTOCHEMISTRY

Rate of chemical reaction- Differential rate expression - order and molecularity - Integrated rate expression for first, second, and zero order reactions - Half-life period— Effect of temperature on rate - Activation energy .Arrhenius equation - Arrhenius reaction rate theory – Homogeneous and Hetrogeneous Catalysis Photochemistry Statement of Grotthus - Draper Law, Stark-Einstein's Law, Quantum Yield.Hydrogen chlorine reaction (elementary idea only) Photosynthesis, Photsensitisation, Phosphorescence Fluorescence, Chemiluminiscence - Definition with examples

BOOKS FOR REFERENCE

- Gopalan R. and Sundaram S., Allied Chemistry, Sultan Chand & Sons Publishers, New Delhi 2nded.
- Soni P.L. and Mohan Katyal, Text Book of Inorganic Chemistry, Sultan Chand and Company Pvt. Ltd, New Delhi, 20th ed.
- Bahl B.S. and AunBahl, A text book of Organic Chemistry 21st ed., S.Chand and Company Pvt. Ltd
- Puri B.R., Sharma L.R and Pathania M.S, Text book of Physical Chemistry, Vishal Publishing Co., New Delhi, 2010
- Jainudeen M.D, Text book of Chemical Kinetics and Photochemistry.
- Dara S.S., Text book of Environmental chemistry and Pollution Control, S.Chand andCo., NewDelhi, 2006
- Billmayer F.W, Text book of Polimer science, Wiley India Pvt. Ltd., 3rd Edition, 2007
- Gowrikar V.R, Viswanathan N.V and Sreedhar J, Polimer science, New Age, International publication, New Delhi, Reprint ed. 2005

LEARNING OUTCOMES

- Learnt about basic concepts of organic chemistry and how electron displacement affects reactivity
- Introduced to fundamental concepts of thermodynamics and chemical kinetics
- Introduced to nuclear chemistry concepts and got to know various applications of radioisotopes such as treatment of cancer. Learnt about radiocarbon dating to determine age of natural specimens
- Learnt about purification of water and gained insight into reverse osmosis process. The chapter helped to understand which is the best fuel for domestic and industrial purposes. Gained insight into various photophysical processes such as phosphorescence, fluorescence.

MAPPING – COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	S	S
CO2	M	S	S	S	S
CO3	S	M	M	M	M
CO4	S	S	S	M	S
CO5	S	M	M	S	S

TSSEC - ESSENTIALS OF SPOKEN & PRESENTATION SKILL - LEVEL I

Subject: Essentials of Spoken & Presentation Skill - level I

Subject Code: TSSEC

Class: II B.Sc.

Semester: ODD (III)

Hours: 30

- **LEARNING OBJECTIVES:**

Courses on Soft skills are intended to improve the communication skills enrich personality development, Computing skills, Quantitative aptitude and knowledge of Foreign language of the students. These courses are intended to enhance the employability of the students.

- **SYLLABUS:**

UNIT- I: Communication Skills for effective Business Presentation:

1. Perfecting oral skills

2. Aural skills

3. Reading skills

UNIT- I I: Non Verbal Communication:

1. Cultural codes for effective Business Presentation

2. Business Etiquettes

UNIT- III: Formal and Informal Conversation:

1. Introducing

2. Opening & Closing speeches

3. Inviting

4. Thanking

5. Apologizing

6. Expressing anger

7. Resolving conflict

8. Giving and taking information

UNIT- IV: Etiquettes for Public Speaking

1. Extempore

2. Lectures

3. Interviews

4. Group discussion

5. Telephone conversation

6. Business meetings

UNIT- V: Etiquettes for Business Presentation:

1. Team Presentation

2. Individual presentation

LEARNING OUTCOME:

The courses will help to bridge the gap between the skill requirements of the employer or industry and the competency of the students.

FOURTH SEMESTER

அண்ணா ஆதர்ஷ் மகளிர் கல்லூரி, சென்னை

தமிழ்த்துறை

சென்னைப் பல்கலைக்கழகப் பாடத்திட்டம்

பொதுத்தமிழ் - இரண்டாமாண்டு - நான்காம்பருவம்

நோக்கும் கற்றல் பயன்பாடும் (2021 - 2022)

பாடத்திட்டத்தின் அறிமுகம்

இரட்டைக்காப்பியங்கள், இதிகாச காப்பியம், புராணம், கிறித்துவ காப்பியம், இசுலாமிய காப்பியம், சிற்றிலக்கியங்கள் ஆகியவற்றிலிருந்து தேர்ந்தெடுக்கப்பட்ட பகுதிகள் பாடமாக அமைந்துள்ளன. இந்த இலக்கியங்கள் சார்ந்த வரலாறும் மொழிப்பயிற்சியும் பாடங்களாக இடம்பெற்றுள்ளன.

பாடத்திட்டத்தின் நோக்கம்

காப்பியங்கள் தோன்றிய வரலாற்றுப்பின்னணியையும் வாழ்க்கைக்கூறுகளையும் கற்பதால் கலை இலக்கியங்களின் வேறுபாட்டை உணர வைத்தல். கற்பனை வளமும் சிந்தனைத்திறமும் இலக்கியச்சுவையும் உடைய நீண்ட புனைவே காப்பியங்கள். இத்தகைய இலக்கியங்களின் செழுமையையும் புலவர்களின் திறமையும் சமயஅறக்கோட்பாடுகளையும் எடுத்துரைப்பதே இதன் நோக்கமாகும்.

காப்பிய இலக்கியங்கள் தமிழகத்துக்கும் தமிழ்மொழிக்கும் தமிழ் பண்பாட்டிற்கும் ஏற்ற வகையில் அமைந்துள்ளமையை விளக்கிக் கூறுதல்.

சிற்றிலக்கியங்கள் பாடுபொருளுக்கேற்ப படைக்கப்பட்டுள்ளமையை உணரவைத்தல். இவை சார்ந்த இலக்கிய வரலாற்றினைக் கூறுவதும் இப்பாடத்திட்டத்தின் நோக்கம் ஆகும்.

மொழிப்பயிற்சியில் துறைசார் கலைச்சொற்களை அறிமுகப்படுத்திப் புதிய கலைச்சொற்களை உருவாக்க வைத்தல். ஒவ்வொரு மாணவர்களும் தங்கள் சிந்தனைகளை வெளிகொணரும் வகையில் சிறுகதை, புதுக்கவிதை போன்றவற்றைப் படைக்கத் தூண்டுதல். இதுவே இப்பாடத்திட்டத்தின் நோக்கமாகும்.

பாடத்திட்டம்

பாடப் பகிர்வு -

I இலக்கியம்

II அதைச் சார்ந்த தமிழிலக்கிய வரலாறு

III மொழித் திறன்

அலகு 1

1. சிலப்பதிகாரம் - ஊர் காண் காதை (முழுமையும்)
2. மணிமேகலை - பாத்திர மரபு கூறிய காதை (முழுமையும்)

அலகு 2

1. சீவக சிந்தாமணி – ஏமாங்கத நாட்டு வளம் 10 பாடல்கள் மட்டும்
2. சூளாமணி – 5 பாடல்கள் (நாட்டுச் சருக்கம், நகரச் சருக்கம், தூது சருக்கம், கல்யாணச் சருக்கம், சுயம்வரச் சருக்கம்)

அலகு 3

1. கம்பராமாயணம் – குகப்படலம்
2. பெரியபுராணம் – மெய்ப்பொருள் நாயனார் புராணம்

அலகு 4

1. சீறாப்புராணம் - உடும்பு பேசிய படலம் (முழுமையும்)
2. தேம்பாவணி – வளன் சனித்த படலம் (முழுமையும்)

அலகு 5

1. மீனாட்சியம்மை பிள்ளைத் தமிழ் – சப்பாணி பருவம் – 5 பாடல்கள்
2. திருக்குற்றாலக் குறவஞ்சி - மலைவளம்

II இலக்கிய வரலாறு

1. காப்பிய இலக்கியங்கள்
2. சிற்றிலக்கியங்கள்
3. இஸ்லாமிய இலக்கிய வரலாறு
4. கிறித்துவ இலக்கிய வரலாறு

III மொழித் திறனறிதல்

- i. கலைச்சொற்கள்
- ii. படைப்பு – சிறுகதை (அ) புதுக்கவிதை

பாடத்திட்டத்தின் பயன்கள்

தனிப்பாடல்களாக இருந்த இலக்கிய வகை நீண்ட நெடிய செய்யுள்களால் மாறிய மரபு வேறுபாட்டை உணர வைத்தல். தமிழ்க் காப்பியங்கள் வாயிலாகப் பழந்தமிழகத்தின் பழமையான புனைவுகள் பற்றி அறிதல். மேலும் அக்கால மக்களின் வாழ்வு, சமயம், அரசியல், பண்பாடு போன்றவை தெரிந்து கொள்ளுதல். பழந்தமிழகத்தின் இயற்கைச்சூழல், காலநிலை ஆகியவற்றைப் புரிந்துகொள்ளுதல். புராணக்கதைகளை விளக்கமாகத் தெரிந்துகொள்ள தூண்டுதல்.

படைப்புகளைச் சொந்தமாக உருவாக்குவதால் ஒவ்வொரு மாணவனின் சிந்தனையும் மனநிலையும் உணர்தல். மேலும் மாணவர்கள் போட்டித்தேர்வுகளில் இவ்விலக்கியம் சார்ந்த கேள்விகளுக்கு விடையளித்தல். ஆகியவை இப்பாடத்திட்டத்தின் பயன்கள் ஆகும்.

பாடநூல்:

- ◆ சென்னை பல்கலைக்கழகம் (University of Madras)

அடித்தளப் படிப்பு - பகுதி - I தமிழ்

மூன்றாம் மற்றும் நான்காம் பருவங்களுக்குரியது.

அனைத்துப் பட்டப்படிப்பு பிரிவுகளுக்கும் ஐந்தாண்டு ஒருங்குமுறை பட்ட
மேற்படிப்புப் பிரிவுகளுக்கும் பொதுவானது.

தாள் - I - செய்யுள் திரட்டு

- ◆ தமிழ் இலக்கிய வரலாறு
- ◆ மொழிப்பயிற்சி

Reference book

- ◆ தமிழ் - பகுதி 1 - சென்னை பல்கலைக்கழகம் வடிவமைத்த பாடத்திட்டங்கள்
ஆகையால் குறிப்புதவிநூல் என்று தனியாக இல்லை. (Reference book not
applicable)

ANNA ADARSH COLLEGE FOR WOMEN
DEPARTMENT OF HINDI-SHIFT-I
FOUNDATION COURSE IN HINDI
COURSE OBJECTIVES AND COURSE OUTCOMES
ACADEMIC YEAR 2020-2021

SUBJECT CODE: CLE4J

YEAR/SEMESTER: II

YR/IV SEMESTER

I. COURSE OBJECTIVES:

Objective of the course is to

1. Gain awareness about the social, cultural and literary situations during the
Aadhu
nic Kaal .
2. Gain awareness on the importance of literature in addressing contemporary
issues such as an environmental concerns, gender issues, social problems,
thereby giving effective solution to such problems.
3. Acquire a comprehensive knowledge of historical, literary and theoretical
aspects of Hindi literature, and all the genres of literature leading to the
understanding of literary movements from times immemorial.
4. Imparting knowledge if Hindi as a world language and make communicate
both in speaking and writing in a variety of contexts and genres.
5. Imparting the knowledge about the beginning and the development of modern
Hindi literature such drama, short stories, novels, journalism and the famous
writers like Acharya Ramachandra Shukla, Bharathendhu Harichandra, etc.
6. Influence of British rule on Indian society.

IIYEAR-IVSEMESTER

Paper–IV Modern Poetry And Introduction To Hindi Literature

(Aadhunik Kaal)”

1. Modern Poetry

Prescribed Text Book: Selections in Poetry

University Publications, University of Madras.

Lessons Prescribed:

1. Asha–(Jayashankar Prasad)
2. Tum Logonse Door(Nagarjun)
3. Kavi Aur Kalpana–(Dhramaveer Bhaarathi)
4. Bharat Ki Aarthi-(Shamsher Bahadur Singh)
5. Varadan Mangoonga Nahi(Siva Mangal Singh Suman)
6. Anevalon Se Ek Savaal (Bharat Bhooshan Agarwal)

2. Introduction to Hindi Literature (Aadhunik

Kaal) Lessons Prescribed:

1. Literary Trends of Chayavaad
2. Literary Trends of Pragathivaad
3. Literary Trends of Nayee Kavita
4. Literary Trends of Hindi Short Stories
5. Literary Trends of Hindi One Act Plays
6. Brief Note on the writers and their works

Maithili Saran Gupta, Jayashankar Prasad, Nirala, Mahadevi Varma,
Panth, Dinakar, Premchand, Yashpaal Jainendra Kumar, Mohan Rakesh,

Reference Books:

1. Hindi Sahithya KaItihas
By: Ramchandra Shukla, Jayabharathi Publications, 217 ,B, Maya Press Road,
Allahabad– 211 003.
2. Hindi Sahithya Yug Aur
Pravrithiya By:

Dr.Sivakumar Varma,
Asok Prakashan Nayi Sarak, NewDelhi– 6
3. Hindi Sahithyaka SybodhItihas
By: Babu Gula broy, Lakshmi Narayanan Agarwas Book Publishers seller,
AnupamaPlaza-1, Block.No.50, SanjayPlace, Agra-282002.

Unitwise Syllabus for IV Semester

UNIT-I

1. Asha–(JayashankarPrasad)
2. Tum Logonse Door(Nagarjun)
3. Literary Trends of Chayavaad

UNIT-II

1. Kavi Aur Kalpana–(Dhramaveer Bhaarathi)
2. Bharat Ki Aarthi-(Shamsher Bahadhur Singh)
3. Literary Trends of Pragathivaad

UNIT-III

1. Varadan Mangoonga Nahi (Siva Mangal Singh Suman)
2. Anevalon Se Ek Savaal (Bharat Bhooshan Agarwal)
3. Literary Trends of Nayee Kavita

UNIT-IV

1. Literary Trends of Hindi Short Stories
2. Literary trends of Hindi One Act Plays

UNIT-V

1. Maithili Saran Gupta, Jayashankar Prasad, Nirala,
2. Mahadevi Varma, Panth, Dinakar ,Premchand,
3. Yashpaal Jainendra Kumar, Mohan Rakesh,

II. COURSE OUTCOMES:

1. Analysing the development of Khadiboli Hindi
2. Knowledge about the reason of emergence of Aadhunik Kaal in Hindi literature.
3. Knowledge about the literary trends of Aadhunik Kaal.
4. Identifying the history of development of Hindi drama, short stories and novels, i.e. prose and journalism.
5. Good knowledge of literature that includes the comprehension of recent developments in Hindi language and literature the world over.
6. Major impact on the development of society, helps shaping civilizations, bringing transformations, changing political systems and exposing injustice by giving detailed preview of human experiences.
7. Understand the impact of modern Hindi literature in social and environmental contexts and need for sustainable development.

LZ14B - LANGUAGE THROUGH LITERATURE –II

Subject: Language through Literature – II

Subject Code: LZ14B

Class: II B.Sc.

Semester: EVEN (IV)

Hours: 60

COURSE OBJECTIVE:

- To use literature as a medium to teach/learn grammar, reading, spelling, vocabulary, writing mechanics, creative writing and thinking skills
- To strengthen contextual understanding of the language through texts relevant to specific disciplines and offer scope for imaginative involvement and self-expression
- To stimulate interest in acquiring twenty first century skills
- To engage in self-assessment activities for self-development

To help absorb the values, ethics and attitudes of life and culture expressed in literature

SYLLABUS:

UNIT 1 : History Makers			
THEME	TEXTS	WRITING SKILLS	
	1.1 My Experience with ALS By Stephen Hawking	<ul style="list-style-type: none">➤ Gathering details and information – Brainstorming➤ Listing events and experiences➤ Creating Mind Map➤ Pre-Writing, Writing and Rewriting/ Revising	
	1.2 Vikram Sarabhai	Writing Autobiographical and Memoirs (Writing about one's own personality)	

		➤ Biographical, personalities	
UNIT 2 : Self Help Essays			
THEME	TEXTS	Writing about Life experiences and events (Writing based on facts)	
	2.1 Attitude by Margaret Atwood	<ul style="list-style-type: none"> ➤ Journal Writing ➤ Social events ➤ Festivals ➤ Sports <ul style="list-style-type: none"> ○ 	
	2.2 Creativity By Edward de Bono.	<ul style="list-style-type: none"> ➤ Travel writing , ➤ Preparing Itineraries ➤ Natural calamities, ➤ Environment 	
UNIT 3 : Contemporary Writings from India			
THEME	TEXTS	Critical / Analytical Writing	
	3.1 The Future of jobs By Amitabh Kant	<ul style="list-style-type: none"> ➤ Reading and analysing Media reports ➤ Social Media Posts and comments 	
	3.2 Education and the English Language By Shashi Tharoor	<ul style="list-style-type: none"> ➤ Film review ➤ Writing opinions ➤ Appraisal 	
Unit 4: Regional Indian Literature in Translation			

THEME	TEXTS	ENGLISH LANGUAGE SKILLS Critical / Analytical Writing	
	<p>POETRY</p> <p>4.1 Those who have lost the Nectar by O N V Kurup</p> <p>(Translated from Malayalam by S. Velayudhan)</p>	<ul style="list-style-type: none"> ➤ Translation ➤ Short poems – acrostics etc ➤ Critique/ Culture study 	
	<p>4.2 “Some People Laugh, Some People Cry” by Sri Srinivasa Rao</p> <p>(Translated from Telugu by V. Narayana Rao and A. K. Ramanujam)</p>	<ul style="list-style-type: none"> ➤ Fill in the story , ➤ expanding stories, ➤ rewriting tales ➤ Comic strips and cartoons 	
	<p>4.3</p> <p>The Rogue by Atulananda Goswami.</p> <p>(Translated from Assamese by the author)</p>		
	<p>SHORT STORY</p> <p>4.4The Holy Panchayat by Premchand</p> <p>(Translated from Hindi by Reshme Sehgal)</p>		

	4.5 The Card-Sharpener's Daughter by V. M. Basheer (Translated from Malayalam by K. M. Sheriff)		
UNIT 5 : Fiction			
THEME	TEXTS	Writing about Life experiences and events (Writing based on facts)	
	The White Tiger By Aravind Adiga Harper Collins Publishers	<ul style="list-style-type: none"> ➤ Creative writing ➤ Critical thinking 	

LEARNING OUTCOMES:

After completing the course, the students will be able to

- Reveal the extent of enhancement of their vocabulary and use them appropriately to communicate in contexts
- become aware of commonly occurring errors and avoid committing them in language use
- rewrite words and sentences by changing their forms and use them appropriately
- show improvement in their pronunciation
- attempt different kinds of writing – essays, emails, blogs, letters etc
- prepare resumes to face interviews
- convert short stories into plays or skit
- role play the scenes and make a dramatic presentation of the scenes
- create a webpage for themselves and others
- Show their awareness of contemporary issues and themes that are socially relevant by reading texts of different literary genres

SEMESTER - IV
CORE PAPER V
MECHANICS

Course Objective:

To make the students understand the basic principles of mechanics and enable them to analyze and solve problems

Learning Outcomes:

At the end of the course the student will be able to

- Understand the Newton's law of motion
- Know the motion of a particle in a Gravitational, electric and magnetic fields
- Acquire knowledge on the conservation law
- Gain knowledge on the basics of dynamics of linear and rotational motion.
- Realize the basic principles behind planetary motion
- Understand the space - time concept through relativity

Lecture: 60 Hours

Tutorial: 15 Hours

Credits:4

UNIT I: NEWTON'S LAWS OF MOTION(12 Hours)

Newton's Laws of Motion- Forces and Equations of Motion- Motion of a Particle in a Uniform Gravitational Field- Newtonian law of Universal Gravitation-Examples-Electric and Magnetic Forces on a Charged Particle-The Magnetic Field and Lorentz Force-Examples- Motion of Charged Particle in a Uniform Electric and Magnetic Field-Conservation of Momentum-Contact Forces: Friction- Problems

UNIT II : CONSERVATION LAWS(12 Hours)

Definition of concepts-Conservation of Energy-Work-Kinetic and Potential energy- Examples-Conservative Forces-Potential Energy and Conservation of Energy in Gravitational and Electric field- Examples.

Conservation of Linear and Angular Momentum: Internal forces and Momentum conservation-Center of mass- Examples- General Elastic Collision of Particles of Different Masses- System with Variable Mass-Examples- Conservation of Angular Momentum-Torque due to Internal Forces-Torque due to Gravity- Angular momentum about Center Of Mass- Proton scattering by heavy nucleus.

**UNIT III: HARMONIC OSCILLATOR AND INVERSE SQUARE LAW OF FORCE
(12 Hours)**

Mass on spring-Simple Pendulum (Force, energy and torque method)-Compound Pendulum-LC circuit- Motion of systems displaced from position of stable equilibrium-Average kinetic energy and potential energy.

Inverse Square Law of Forces and Static Equilibrium- Orbits: Equation and Eccentricity- Circular orbit-Kepler's laws- Examples

UNIT IV: ELEMENTARY RIGID BODY DYNAMICS (12 Hours)

The Equation of Motion-Angular Momentum and Kinetic Energy-Moment of inertia-Parallel Axis Theorem- Perpendicular Axis Theorem- Examples-Rotation about fixed axis: Time Dependence of Motion- Examples- Rolling without slipping (three methods)-Torque about Center of Mass-Examples.

UNIT V: SPECIAL RELATIVITY (12 Hours)

Constancy of Speed of light-Michelson-Morley Experiment-Invariance of 'c' - Basic assumptions- Lorentz Transformation- Length Contraction-Examples- Time Dilation of Moving Clocks-Examples-Velocity Transformation- Velocity Addition-Variation of Mass with Velocity-Aberration of light-Longitudinal Doppler Effect

Book for study:

1.Mechanics (in SI units) - (Berkley Physics course-volume 1), Charles Kittel, Walter D knight etc, Tata McGraw Hill publication, 2017,second edition.

Books for reference:

1. Newtonian Mechanics ,A.P.French, Viva Books Private, (2011).
- 2.Introduction to mechanics , Kleppner and Kolenkow, McGraw Hill Publishers(Special Indian edition), first edition (2010)
- 3.https://nptel.ac.in/content/storage2/nptel_data3/html/mhrd/ict/text/115101011/lec1.pdf
- 4.<https://nptel.ac.in/courses/115101011/>

MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	S	M	M
CO3	M	S	S	S	M
CO4	S	M	M	M	S
CO5	S	S	M	S	M

KEY: S – Strong, M – Medium, L – Low

CORE PAPER VI

Practical - II

(At the end of Fourth semester - Any Fifteen Experiments) Credits:4

1. Young's Modulus-Cantilever-Depression-(Static method-Scale and Telescope).
 2. Young's Modulus –Uniform bending – Pin &Microscope.
 3. Rigidity Modulus-Static Torsion (Scale and Telescope)
 4. Compound Pendulum-g and k
 5. Sonometer-A.C. Frequency-Steel and Brass wires.
 6. Melde's string- Frequency, Relative Density of a solid and liquid.
 7. Thermal conductivity of a bad conductor-Lee's disc method.
 8. Spectrometer-Grating N and λ -minimum deviation method.
 9. Spectrometer- μ of a glass prism -i-d Curve
 10. Airwedge-Thickness of a wire.
 11. Deflection Magnetometer – Tan B position
 12. m and BH -Deflection Magnetometer-Tan C position and vibration magnetometer
 13. Carey Foster Bridge - Temperature coefficient of resistance of a coil.
 14. Potentiometer – Specific resistance of the given wire.
 15. Potentiometer-Ammeter calibration.
 16. Potentiometer- Emf of thermocouple.
 17. Figure of merit of galvanometer (Mirror or Table Galvanometer).
 18. Surface tension – Capillary rise method.
- Specific heat of capacity – Joule's calorimeter

ALLIED CHEMISTRY – II (60 Hours) 4 Credits

(For Maths and Physics Students)

SUBJECT CODE: TBTAD

LEARNING OBJECTIVES

- Learning basic concepts of electrochemistry
- Learning fundamentals of coordination chemistry as well as application of coordination complexes in qualitative analysis
- Introduction to biomolecules such as carbohydrates and amino acids
- Introduction to analytical techniques

Unit I: COORDINATION CHEMISTRY

Definition of terms - Classification of Ligands - Nomenclature - Chelation - EDTA and its application – Werner's Theory - Effective Atomic Number - Pauling's theory- Postulates – Hybridisation, Geometry and magnetic properties of $[\text{Ni}(\text{CN})_4]^{-2}$, $[\text{NiCl}_4]^{-2}$, $[\text{Fe}(\text{CN})_6]^{-4}$, $[\text{Co}(\text{NH}_3)_6]^{+3}$ and $[\text{CoF}_6]^{-3}$ - Biological Role of haemoglobin and Chlorophyll (elementary idea only) - Applications of coordination compounds in qualitative analysis like separation of

copper and cadmium ions; Nickel and cobalt ion; Identification of metal ions like Cu, Fe and Ni.

Unit II: BIOMOLECULES

Classification, preparation and reactions of glucose and fructose. Discussion of open chain structure. Interconversion of glucose to fructose and vice versa - Preparation and properties of sucrose. Structure of starch, cellulose and derivatives of cellulose - Diabetes - causes and control :measures RNA and DNA (elementary idea only) - Amino acids: classification, preparation and properties of alanine -preparation of dipeptide using Bergman method.

Unit III: PHASE DIAGRAM

Phase rule: Definition of terms, application of phase rule to water system - reduced phase rule and its application to Pb-Ag system. Freezing mixture - Completely miscible and partially miscible liquid systems - upper and lower critical solution temperatures.

Unit IV: ELECTROCHEMISTRY

Galvanic cells – emf - standard electrode potential - reference electrodes (hydrogen and calomel electrode only) -electrochemical series and its applications - Electroplating process - Nickel and Chrome plating - Different type of cells - primary cell, Secondary cell and fuel cells – elementary idea only, Corrosion and methods of prevention, .Conductometric titrations - hydrolysis of salts. Derivation of K_h - Definition of pH and its determination by using glass electrodes. Buffer solution - Henderson's equation. Applications of pH and buffer in biological processes and industries.

Unit V: ANALYTICAL CHEMISTRY

Introduction to Qualitative and Quantitative Analysis - Principle of volumetric analysis - Separation techniques - extraction - distillation - crystallization— Chromatographic separations - Principles and applications of column , paper, thin layer, gas-liquid and ion-exchange.

BOOKS FOR REFERENCE

1. Gopalan R. and Sundaram S., Allied Chemistry, Sultan Chand & Sons Publishers, New Delhi 2nd ed
2. Soni P.L. and Mohan Katyal, Text Book of Inorganic Chemistry, Sultan Chand and Company Pvt. Ltd, New Delhi, 20th ed.
2. Bahl B.S. and AunBahl, A text book of Organic Chemistry 21st ed., S.Chand and Company Pvt. Ltd
3. 4 Puri B.R., Sharma L.R and Pathania M.S, Text book of Physical Chemistry, Vishal Publishing Co., New Delhi, 2010
4. 5 Jainudeen M.D, Text book of Chemical Kinetics and Photochemistry.
5. 6 Dara S.S., Text book of Environmental chemistry and Pollution Control, S.Chand and Co., New Delhi, 2006
6. 7 Gopalan R., Subramanian P.S. and Rangarajan K, Elements of analytical chemistry, Sultan chand&Sons Publishers, New Delhi, 1991.
- 7.

LEARNING OUTCOMES

- Learnt definitions of ligands, coordination number; hybridisation and geometry of coordination complexes. Gained elementary idea about naturally occurring complexes such as haemoglobin and chlorophyll

- Introduced to biomolecules such as carbohydrates (glucose, starch and cellulose) and amino acids (alanine)
- Learnt about batteries, electrochemical cells, electrodes and EMF
- Learnt principles of volumetric analysis, separation and purification techniques such as chromatography. Learnt about separation and identification of aminoacids through thin layer chromatography

SUBJECT: ALLIED CHEMISTRY II

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	S	S
CO2	S	S	S	M	M
CO3	M	S	S	S	M
CO4	S	M	M	S	S
CO5	S	S	M	S	S

KEY: S – Strong, M – Medium, L – Low

ALLIED PHYSICS –PRACTICALS

(At the end of even Semester - Any Fifteen Experiments) Credits:4

1. Young's Modulus by Non-uniform bending using Pin and Microscope
2. Young's Modulus by Non-uniform bending using Optic lever–Scale and telescope
3. Rigidity modulus by Static torsion method.
4. Rigidity modulus by Torsional oscillations without mass
5. Surface tension and Interfacial Surface tension–Drop Weight method
6. Comparison of Viscosities of two liquids–Burette method
7. Specific heat Capacity of a liquid–Half time correction
8. Sonometer–Determination of a.c frequency
9. Newton's rings-Radius of curvature
10. Air wedge–Thickness of a wire.
11. Spectrometer–Grating–Wavelength of Mercury lines–Minimum deviation method
12. Potentiometer–Voltmeter Calibration
13. P.O. Box–Specific resistance
14. B.G.–Figure of Merit (table galvanometer)
15. Construction of AND, OR, NOT gates–using diodes and Transistor
16. Zener Diode–Characteristics
17. NAND gate as a universal gate

ENVIRONMENTAL STUDIES PROGRAMME
ABILITY ENHANCEMENT COMPULSORY COURSES

(AECC- Environmental Studies)

Syllabus with effect from the academic year 2018-2019

(i.e. for batch of candidates admitted to the course from the academic year 2017-18)

Credits: 2

II Year / III/IV Sem.

Unit 1: Introduction to Environmental Studies

- Multidisciplinary nature of environmental studies;
- Scope and importance; concept of sustainability and sustainable development.

Unit 2 : Ecosystem (2 lectures)

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem:

Food chains, food webs and ecological succession, Case studies of the following ecosystem:

- a) Forest ecosystem
- b) Grassland ecosystem
- c) Desert ecosystem
- d) Aquatic ecosystem (ponds, stream, lakes, rivers, ocean, estuaries)

Unit 3: Natural Resources : Renewable and Non – renewable Resources (6 lectures)

- Land resources and land use change: Land degradation, soil erosion and desertification.
- Deforestation : Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water : Use and over –exploitation of surface and ground water, floods, droughts, conflicts over water (international and inter-state).
- Energy resources : Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Unit 4: Biodiversity and Conservation (8 lectures)

- Levels of biological diversity: genetics, species and ecosystem diversity, Biogeographic zones of India: Biodiversity patterns and global biodiversity hot spots
- India as a mega- biodiversity nation, Endangered and endemic species of India.
- Threats to biodiversity: Habitat loss, poaching of wildlife, man- wildlife conflicts, biological invasions; Conservations of biodiversity: In-situ and Ex-situ Conservation of biodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

Unit 5: Environmental Pollution (8 lectures)

- Environmental pollution: types, causes, effects and controls: Air, Water, soil and noise Pollution.
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste
- Pollution case studies.

Unit 6: Environmental Policies & Practices (8 lecturers)

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
- Environment Laws: Environment Protection Act, Air (Prevention & Control of Pollution) Act; Water (Prevention and Control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
- Nature reserves, tribal populations and rights, and human Wildlife conflicts in Indian context.

Unit 7: Human Communities and the Environment (7 lectures)

- Human population growth, impacts on environment, human health and welfare.
- Resettlement and rehabilitation of projects affected persons; case studies.
- Disaster management: floods, earthquake, cyclone and landslides.
- Environmental movements : Chipko, Silent Valley, Bishnois of Rajasthan.
- Environmental ethics : Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies(e.g. CNG Vehicles in Delhi)

Unit 8 : Field Work (6 lectures)

- Visit to an area to document environmental assets: river / forest/ flora/ fauna etc.
- Visit to a local polluted site – Urban / Rural/ Industrial/ Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystem- pond, river, Delhi Ridge etc.
(Equal to 5 Lectures)

Suggested Readings:

1. Carson , R. 2002.Silent Spring, Houghton Mifflin Harcourt.
2. Gadgil , M.,& Guha, R. 1993.This Fissured Land: An Ecological History of India. Univ.of California Press.
3. Gleeson, B. and Low, N.(eds.)1999. Global Ethics and Environment, London, Routledge.
4. Gleick,P.H.1993.Water Crisis. Pacific Institute for Studies in Dev.,Environment & Security. Stockholm Env.Institute, Oxford Univ.Press.
5. Groom, Martha J., Gary K.Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates,2006.
6. Grumbine,R.Edward, and Pandit,M.K2013.Threats from India's Himalayas dams .Science,339:36-37
7. McCully,P.1996.Rivers no more :the environmental effects of dams(pp.29-64).Zed books.
8. McNeill,John R.2000.Something New Under the Sun: An Environmental History of the Twentieth Century.
9. Odum,E.P.,Odum, H.T.& Andrees,J.1971.Fundamental of Ecology. Philadelphia Saunders.
10. Pepper,I.L.,Gerba,C.P & Brusseau,M.L.2011.Environmental and Pollution Science. Academic Press

TSSSED - ESSENTIALS OF SPOKEN & PRESENTATION SKILL - LEVEL II

Subject: Essentials of Spoken & Presentation Skill - level I

Subject Code: TSSSED

Class: II B.Sc.

Semester: EVEN (IV)

LEARNING OBJECTIVES:

Hours: 30

The main objectives of this course are

- to help the students understand the role of kinesics and other paralinguistic elements in enriching their presentation skills
- to improve their skills in teamwork and group discussions
- to equip them with skills needed to face interviews and make effective presentations

SYLLABUS:

UNIT 1:

- Body Language - Kinesics
- Proxemics
- Para linguistic
- Chronemics
- Nuances of Speech Delivery
- Personality Development: Building self-esteem

UNIT II:

- Team work and participating in group discussions
- Team building and Team work
- Team briefing
- Role of Team leader
- Conflict resolution
- Methodology of Group discussions
- Role Functions in Group Discussion
- Types of Non-functional behaviour
- Improving group performance
- Participating in Mock group discussions

UNIT III:

- Interviews
- Types of Interviews
- preparing for interviews
- facing interviews
- reviewing performance
- participating in mock interviews

UNIT IV:

- Business Presentations
- Preparing successful presentations
- thinking about audience
- making effective use of visual aid
- Delivering presentation
- using prompts
- dealing with questions and interruptions
- Mock presentations

LEARNING OUTCOME:

After completing this course the students would have

- learnt the importance of paralinguistic elements in enhancing their presentation
- learnt to work as a team, conduct and participate in group discussions face interviews and face presentations effectively.

FIFTH SEMESTER

CORE PAPER VII - ELECTRICITY AND ELECTROMAGNETISM

Course Objective:

To give the students a firm understanding of the basics of Electricity and Magnetism.

To familiarize the fundamentals of electromagnetic theory and applications of electromagnetic induction

Learning Outcomes:

After the successful completion of this paper, students will be able to:

- Demonstrate Gauss law, Coulomb's law for the electric field and apply it to systems of point charges as well as line, surface and volume distribution of charges
- Understand the principle of capacitors and dielectric properties
- Explain Faraday and Lenz's laws to articulate the relation between electric and magnetic fields
- Use Ballistic Galvanometer with the state of art.
- Apply Maxwell's equations to arrive at different optical constants

Lecture: 60 Hours

Tutorial: 15 Hours

Credits:4

Unit 1 : Chemical Effects of Electric Current:

Faraday's laws of Electrolysis - ionic velocities and mobilities. Calculation and experimental determination of ionic mobilities - transport number. Thermoelectricity- Peltier effect - Experimental determination of Peltier coefficient - Thomson coefficient – experimental determination of Thomson coefficient - application of thermodynamics to a thermocouple and connected relations - thermoelectric diagram and uses.

Unit 2 : DC Circuits:

Growth and decay of current in a circuit containing resistance and inductance - growth and decay of charge in a circuit containing resistance and capacitor - growth and decay of charge in an LCR circuit - condition for the discharge to be oscillatory - frequency of oscillation - network analysis - Thevenin and Norton's Theorems.

Unit 3: AC Circuits:

AC Voltage and current - Power factor and current values in and AC circuit containing LCR circuit - series and Parallel resonant circuits - AC motors - single phase, three phase – star and delta connections - electric fuses - circuit breakers.

Unit 4 : Magnetic Effect of Electric Current:

Biot and Savart's law - magnetic field intensity due to a solenoid carrying current - effect of iron core in a solenoid - Helmholtz galvanometer - moving coil ballistic galvanometer – theory - damping correction - determination of the absolute capacity of a condenser using B.G.

Unit 5 : Electromagnetic Induction and Its Applications:

Faraday's laws of electromagnetic induction - inductor and inductance - determination of self inductance of a coil using Anderson method - mutual inductance - experimental determination of absolute mutual inductance - coefficient of coupling - Earth inductor - uses of earth inductor - measurement of horizontal component of the earth's magnetic field - measurement of vertical component of earth's magnetic field - calibration of B.G. - Induction coil and its uses.

Books for Study :

1. Electricity & Magnetism by M.Narayanamurthy & N.Nagarathnam, NPC pub., Revised edition.
2. Electricity and Magnetism by Brijlal and Subrahmanyam; S.Chand & Co., New Delhi, (2000).
3. Electricity & Magnetism by D.Chattopadhyay and P.C. Rakshit, Books and Allied (P) Ltd.(2001).
4. Fundamentals of electricity and magnetism by B.D. Dugal and C.L. Chhabra, Shobanlal Nagin, S. Chand & Co., 5th edition, New Delhi(2005).
5. Electricity and Magnetism by R. Murugesan, S.Chand & Co., New Delhi, (2008).

Books for Reference:

- 1.Electricity & Magnetism by K.K.Tewari, S.Chand & Co., New Delhi, .(2002).
- 2.Introduction to Electrodynamics by D.J.Griffiths, Printice Hall of India Pvt. Ltd., 3rd Edition, New Delhi (2003).
3. Fundamentals of Physics, D.Halliday, R.Resnick and J.walker, Wiley, 6th Edition, New York (2001).

MAPPING – COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	S
CO2	S	M	M	M	S
CO3	S	S	S	S	M
CO4	M	M	M	M	S
CO5	M	S	S	S	S

KEY: S – Strong, M – Medium, L – Low

CORE PAPER 8- NUCLEAR PHYSICS AND PARTICLE PHYSICS

Course Objectives:

To impart knowledge about basic nuclear physics properties and nuclear models for understanding of related reaction dynamics.

Learningoutcomes: Students will have achieved the ability to:

1. explain the ground state properties of the nucleus for study of the nuclear structure behavior.
2. explain the deuteron behavior at ground and excited states.
3. apply deuteron physics and the Nucleon-Nucleon scattering for explaining the nuclear forces.
4. demonstration of the shell model and collective model descriptions.
5. applyvarious aspects of nuclear reactions in view of compound nuclear dynamics.

Unit 1 : General Properties of Nuclei

Nuclear size, charge, mass-determination of nuclear radius-mirror nucleus method-mass defect and binding energy-packing fraction - nuclear spin - magnetic dipole moment - electric quadrupole

moment-nuclear models-liquid drop model-Weizacker semi empirical mass formula-shell model and magic numbers-collective model-nuclear forces-meson theory of nuclear force (qualitative).

Unit 2 : Radioactivity

Natural radioactivity-law of disintegration-half life and mean life period-units of radioactivity-transient and secular equilibrium-radiocarbon dating-age of earth - alpha rays-characteristics-Geiger Nuttal law - α -ray spectra-Gamow's theory of α -decay (qualitative study)-beta rays-characteristics-beta ray spectra-neutrino hypothesis-violation of parity conservation-experimental verification with Co^{60} -gamma rays and internal conversion-nuclear isomerism.

Unit 3 : Radiation Detectors and Particle Accelerators

Ionisation chamber-G.M.Counter-quenching and resolving time-scintillation counter-photo multiplier tube – thermoluminescence -thermoluminescence dosimetry (TLD) - Linear accelerator-cyclotron-synchrocyclotron, betatron.

Unit 4 : Nuclear Reactions

Conservation laws-nuclear reaction Kinematics-Q-value-threshold energy - artificial radioactivity-radioisotopes and its uses-classification of neutrons-nuclear fission-chain reaction - critical mass and size-nuclear reactor-breeder reactor - transuranic elements-nuclear fusion-thermonuclear reactions-sources of stellar energy.

Unit 5 : Elementary Particles

Classification of elementary particles fundamental interaction-elementary particle quantum numbers - isospin and strangeness - conservation laws and symmetry-basic ideas about quark-quark model.

Books for study

1. Atomic and Nuclear Physics by N. Subrahmanyam and Brijlal, S Chand & Co., New Delhi(1996).
2. Nuclear Physics by Tayal D.C., Himalaya Publishing House, Mumbai(2006).
3. Nuclear Physics by R.C.Sharma, K.Nath & Co., Meerut (2000)
4. Nuclear Physics by Irving Kaplan, Narosa Publishing house, New Delhi.

Books for Reference

1. Nuclear Physics by R.R.Roy and B.P.Nigam, New Age International (P) Ltd., New Delhi(1997).
2. Fundamentals of Elementary Particle Physics by Longo, Mc Graw-Hill.
3. Nuclei and Particles by Serge., W.A. Benjamin, USA
4. Elements of Nuclear Physics by ML Pandya and RPS Yadav, Kedarnath Ram Nath, Meerut

MAPPING – COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	M	S	M	S	S
CO3	S	S	S	S	S
CO4	M	S	M	M	S
CO5	S	M	S	S	M

KEY: S – Strong, M – Medium, L – Low

CORE PAPER 9 - SOLID STATE PHYSICS

Course Objectives:

- To understand the fundamental concepts of crystal structure.
- To analyze the crystal structure using X-ray diffraction methods.
- To acquire knowledge on the basics of magnetic phenomena on materials and various types of magnetization.
- To learn the properties of superconducting materials.

Learning Outcomes:

- Helps as pre-requisite for understanding materials science, nano science, etc.
- Gives relationship between structure and properties of the solid state systems.
- To understand the importance of superconducting materials in engineering applications.
- To understand the different types of bonding in solid substances.

To understand the magnetic and dielectric properties of crystalline structures

Unit 1 : Crystal Structure

Crystal lattice – primitive and unit cell – seven classes of crystal – Bravais Lattice – Miller Indices – Structure of crystals – simple cubic, hexagonal close packed structure, face centred cubic structure, body centred cubic structure – Sodium chloride structure, Zinc Blende structure, Diamond structure.

Unit 2 : Defects in Solids

X ray diffraction – Bragg's law in one dimension – Experimental methods – Laue Method, powder crystal method and rotating crystal method.

Defects in solids - Point defects - Frenkel and Schottky defects - Equilibrium concentrations - Line defects - Edge dislocation and screw dislocation - Surface defects - Grain boundary - Effects of Crystal imperfections.

Unit 3: Chemical Bonds and Crystallography

Interatomic forces - Different types of chemical bonds - Ionic bond - Cohesive energy of ionic Crystals and Madelung constant - Covalent bond - Metallic bond - Van der Waal's bond - Hydrogen bond. Superconductivity - General properties - Type I and II Superconductors - Meissner effect - BCS theory - applications of super conductors.

Unit 4 : Dielectric Properties

Dielectric materials - Polarization, susceptibility and dielectric constant - Local field or internal field - Clausius - Mossotti relation - Sources of polarizability - Electronic polarizability - Ionic polarizability - Orientational polarizability - Frequency and temperature effects on polarization - Dielectric breakdown – Properties of different types of insulating materials.

Unit 5 : Magnetic Properties

Different types of magnetic materials - classical theory of diamagnetism (Langevin theory) - Langevin theory of paramagnetism - Weiss theory of paramagnetism - Heisenberg

interpretation on internal field and quantum theory of ferromagnetism - Antiferromagnetism - Hard and soft magnetic materials.

Books for Study

1. Materials Science by M.Arumugam, Anuradha Agencies Publishers.(2002)
2. Solid State Physics by R L Singhal, Kedarnath Ram Nath & Co., Meerut (2003)
3. Introduction to Solid State Physics by Kittel, Willey Eastern Ltd(2003).
4. Materials Science and Engineering by V. Raghavan, Prentice Hall of India Private Limited, New Delhi(2004).

Books for Reference

1. Solid State Physics by S.O.Pillai, New Age International (P) Ltd.,(2002).
2. Solid State Physics by A. J.Dekker, Macmillan India(1985).
3. Solid State Physics by HC Gupta, Vikas Publishing House Pvt. Ltd., New Delhi (2001).

MAPPING – COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	M	S	S	S
CO3	S	S	S	S	M
CO4	S	S	S	S	S
CO5	M	S	S	S	S

KEY: S – Strong, M – Medium, L – Low

CORE PAPER 10 - BASIC ELECTRONICS

Course Objectives:

To study the characteristics and application of various semiconductor devices.

To study the basics of electronic Instrumentation.

Learning Outcomes:

On completion of the course the students will be able to

Handle basic electronic devices like diode and transistor

Construct amplifiers of different specification

Apply Barkhausen criteria to oscillators

Understand the different types of multivibrators

Get an idea about Instrumentation

Unit 1 : Semiconductor

Bandgap - forbidden energy gap - valence and conduction bands, pure semiconductor - Law of mass action, Impurity in semiconductors - energy band diagram and fermi level - PN junction barrier voltage across the junction.

Unit 2 : Transistor Amplifier

Transistor – different modes of operations – CB mode & CE mode - Two port representation of a transistor - h parameter - AC equivalent circuit using h parameters - analysis of an amplifier using h parameters common emitter only - expression for current gain, voltage gain, input impedance, output impedance and power gain - RC coupled amplifier - frequency response - analysis of low, mid and high frequency regions - classification of amplifiers - class A power amplifier – push pull, class B power amplifier - emitter follower.

Unit 3 : Feedback oscillators

Feedback in amplifiers - effect of negative feedback - concept of feedback – Barkhuesen condition - oscillators - phase shift and Wien's bridge oscillators - expression for frequency of oscillation and condition for oscillation in each case.

Unit 4 : Wave shaping circuits and multivibrators

Clipping and clamping circuits - biased clipper - integrating and differentiating circuits - RC time constant - Multivibrators - astable, monostable and bistable multivibrator - using transistors.

Unit 5 : Special semiconductor devices and applications

Field effect transistor (FET) - characteristics - FET amplifier - Unijunction transistor (UJT) - characteristics - saw tooth generator - VVR action - relaxation oscillator - frequency of oscillation - SCR characteristics - SCR as a switch - SCR rectifier.

Books for Study

1. Hand Book of Electronics by Gupta and Kumar - Pragati Prakashan – Meerut(2002).
2. Principles of Electronics by V.K. Mehta, Rohit Mehta S. Chand & Co.(2006).
3. Electronics by M. Arul Thalapathi, Comptek Publishers(2005).
4. Elements of Electronics by M.K.Bagde and Singh S.P., S. Chand & Co., New Delhi(1990).
5. Applied Electronics by A. Subramanyam – National Publishing Co.(1997)

Books for Reference

1. Electronic Devices by Mittal.G.K., G.K. Publishers Pvt. Ltd., (1993).
2. Basic Electronics by B.L. Theraja, S. Chand & Co., (2008).
3. Solid State Electronics by Ambrose and Vincent Devaraj, Meera Publication.
4. Applied Electronics by R.S. Sedha, S. Chand & Co.(1990).

Web Site

<http://www.dear.haward.edu/courses/es154>.

http://www.phys.ualberta.ca/~gingrich/phys395/notes/phy_395.html.

MAPPING – COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	S	S	S
CO3	S	M	S	M	S
CO4	S	S	M	S	S
CO5	S	S	M	S	M

KEY: S – Strong, M – Medium, L – Low

SEMESTER – V ELECTIVE 1 NUMERICAL METHODS

Course Objectives: To study the computational techniques involved in different mathematical manipulation.

Learning Outcomes:

On completion of the course the students will be able to

- Solve simultaneous equations using method of triangularisation
- Find the inverse of a matrix using Gauss Jordan Method
- Solve Algebraic, Transcendental and Differential Equation using different methods
- To fit a curve for the given data using principles of least squares
- Integrate the functions using different rules like Simpsons 1/3 rule

Unit 1 : Simultaneous Linear Algebraic Equations

Method of triangularisation - Gauss elimination method - Inverse of a matrix - Gauss - Jordan method

Unit 2 : Numerical Solution of Algebraic, Transcendental and Differential Equation

Bisection method – Regula falsi method - Newton - Raphson method - - Horner's method - Solution of ordinary differential equation - Euler's method.

Unit 3 : Interpolation

Finite differences – operators $\Delta, \nabla, \delta, E, D$ – relation between operators –linear interpolation – interpolation with equal intervals – Newton forward interpolation formula – Newton backward interpolation formula.

Unit 4 : Curve Fitting

Principles of least squares - fitting a straight line - linear regression - fitting an exponential curve.

Unit 5 : Numerical Integration

Trapezoidal Rule - Simpson's 1/3 rule and 3/8 rule - Applications - Weddle's rule

Books for Study

1. Numerical methods - M.K.Venkatraman, National Publishing Company, (1990).
2. Numerical methods by V. Rajaraman, Prentice - Hall India Pvt. Ltd., (2003).
3. Numerical methods by P. Kandasamy, K. Thilagavathy and K. Gunavathy, S. Chand & Co. (2002).

Books for References

1. Numerical methods for Scientific and Engineering computation by Jain Iyenger and Jain, New Age International (P) Ltd.,(2004).
2. Numerical methods by S.S.Sastry, Prentice Hall of India Pvt. Ltd., New Delhi(2003).

Web Site

<http://www.sst.ph.ic.ac.uk/angur/lectures/compphys/compphys.html>.

[http://www.library.cornell.edu/nn/\(Numerical receptier online book in C & Fortran\).](http://www.library.cornell.edu/nn/(Numerical%20receptier%20online%20book%20in%20C%20&%20Fortran))

MAPPING – COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	M	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	M	S
CO5	M	S	S	S	M

KEY: S – Strong, M – Medium, L – Low

SEMESTER - VI

CORE PAPER 11 - RELATIVITY AND QUANTUM MECHANICS

Course Objective:

To introduce to the undergraduate students the development and formulation of Quantum Mechanics, its underlying Mathematical and Physical principles through exactly solvable problems.

Learning Outcomes:

On completion of the course the students will be able to

- Know the inadequacies of classical mechanics in explaining microscopic phenomena
- Introduce with the concept of matter waves and their existence proved by experimental procedure and uncertainty principle in physical measurements
- Formulate quantum mechanics through Schrodinger equation and associated different operators

Unit 1 : Relativity

Frames of reference - Galilean transformation - Michelson - Morley experiment - Postulates of special theory of relativity - Lorentz transformation - length Contraction - time dilation - Relativity of simultaneity - addition of velocities - variation of mass with velocity – Mass energy relation - Elementary ideas of general relativity.

Unit 2 : Wave Nature of Matter

Phase and group velocity - wave packet - expression of De Broglie's wave length - Davisson and Germer's experiment - G.P.Thompson's experiment - Electron microscope - Heisenberg's uncertainty principle and its consequences.

Unit 3 : Schrodinger Equation

Inadequacy of classical mechanics - Basic postulates of quantum mechanics - Schrodinger equation - Properties of wave function - Probability interpretation of wave function - linear operators - self adjoint operators - expectation value - eigenvalues and eigenfunctions - commutativity and compatibility.

Unit 4 : Angular Momentum in Quantum Mechanics

Orbital angular momentum operators and their commutation relations - separation of three dimensional Schrodinger equation into radial and angular parts - Elementary ideas of spin angular momentum of an electron - Pauli matrices.

Unit 5 : Solutions of Schrodinger Equation

Free particle solution - Particle in a box - Potential well of finite depth (one dimension) - linear harmonic oscillator - rigid rotator and hydrogen atom.

Books for Study

1. A Text book of Quantum mechanics by P.M.Mathews and S.Venkatesan, Tata McGraw - Hill, New Delhi(2005).

2. Quantum Mechanics by V.K.Thankappan, New Age International (P) Ltd. Publishers, New Delhi(2003).
3. Quantum mechanics by K.K.Chopra and G.C. Agrawal, Krishna Prakasam Media (P) Ltd., Meerut First Edition(1998).
4. Modern Physics by R. Murugesan and Kiruthiga Sivaprasath, S. Chand & Co.,(2008).

Books for Reference

1. Mechanics and Relativity by Brijlal Subramanyam, S.Chand & Co., New Delhi, . (1990).
2. Concepts of modern physics by A.Beiser. Tata McGraw - Hill, 5th edition, New Delhi(1997).
3. Introduction to quantum mechanics by Pauling and Wilson, McGraw – Hill.
4. Quantum mechanics by A.Ghatak and Loganathan, Macmillan India Pvt. Ltd.

MAPPING – COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	M	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	M	S	S	S	S

KEY: S – Strong, M – Medium, L – Low

CORE PAPER 12 - MATHEMATICAL METHODS IN PHYSICS

Course Objective :

To familiarize students with essential mathematical methods for solving advanced problems in theoretical physics.

Learning Outcomes :

Upon completion of the course, the student should be able:

- To use advanced mathematical methods and theories on various mathematical and physics problems.
- To develop the skill of problem-solving ability.
- Use Matrices to solve simultaneous equations
- Solve quantum mechanical problems using special functions and polynomials.
- Apply Fourier series to simple circuits.
- To understand electromagnetic theory with Vector Calculus

Unit 1 : Matrices and Special Functions

Characteristic equation of a matrix - Eigenvalues and Eigenvectors - Hermitian and Unitary matrices - Properties of their eigenvalues and eigenvectors - Diagonalisation of matrices. Special functions - Gamma and Beta functions - Series solutions of Legendre, Bessel and Hermite equations - Orthogonality properties of Legendre and Hermite Polynomials and Bessel functions.

Unit 2 : Elementary Complex Analysis

Functions of a Complex variable - Continuity and differentiability - single and multivalued functions - Analytic function - Cauchy - Riemann conditions (necessity and sufficiency). Cauchy - Riemann Conditions in the Polar (r, θ) coordinates.

Unit 3 : Vector Analysis

Scalar and Vector fields - Gradient, Divergence and Curl - Equations of motion in the vector notation - equations of motion (components) in cartesian coordinates and spherical polar coordinates - equation of motion in the polar coordinates.

Unit 4 : Classical Mechanics

Generalised coordinates - configuration space - Lagrange's equation - simple applications : to find equations of motion given a lagrangian; central potential and conservation of angular momentum - Hamilton function and Hamilton's equations - harmonic oscillator.

Unit 5 : Statistical Physics

Quantum statistics of identical particles - Maxwell - Boltzmann, Bose - Einstein and Fermi - Dirac statistics - Derivation of Planck's radiation formula from Bose - Einstein statistics - Degenerate Fermi gas.

Books for Study

1. Mathematical Physics by Sathya Prakash, Sultan Chand and Sons, New Delhi (1996)
2. Classical Mechanics by J.C. Upadhyaya, Himalaya Publishing House, Mumbai(2003).
3. Introduction to Statistical Mechanics by S.K. Sinha Narosa Publication(2007).
4. Heat Thermodynamics and Statistical Physics by Brijlal N.Subrahmanyam, P.S. Hemne S.Chand & Co., New Delhi.(2007).

Books for Reference

1. Mathematical Physics by B.D. Gupta, Vikas Publishing House Pvt. Ltd., New Delhi(1996).
2. Advanced Engineering Mathematics by E.Kreyszig, Eighth Edition, Wiley Publishers, New York(1989).
3. Classical Mechanics by H.Goldstein, Special Indian student edition, Narosa Publishing House, New Delhi(1985)

Web Site

[http://phy.syr.edu/~trodden/courses/math methods.](http://phy.syr.edu/~trodden/courses/math%20methods)

[http://www.mpipks_dresden.mpg.de/~jochen/methoden/outline/html.](http://www.mpipks_dresden.mpg.de/~jochen/methoden/outline/html)

MAPPING – COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	S	S	S
CO3	S	M	S	S	S
CO4	S	S	S	S	S
CO5	S	S	M	S	M

KEY: S – Strong, M – Medium, L – Low

SEMESTER – VI ELECTIVE 2 INTEGRATED ELECTRONICS

Course Objectives:

To study the different number systems associated with digital computation

To introduce the counters and registers.

To have in-depth knowledge in arithmetic operations of an operational amplifier.

Learning Outcomes:

On completion of the course the students will have:

- Through knowledge on different number systems
- The skill to simplify the logics using Karnaugh map and Boolean algebra
- Detailed knowledge in storing and retrieving a data through mux and demux
- The skill to customize the counters to the need through serial and parallel counters

Unit 1 : Fundamental Digital Electronics

Number systems – binary – hexadecimal – Binary addition – subtraction (1's and 2's compliment method) – multiplication - division - BCD – Conversion – simplification of logic circuits - using (i) Boolean algebra, (ii) Karnaugh map – Demorgan's theorems - NAND and NOR as universal building blocks.

Unit 2 : Combinational Logic Circuits

Half adder, full adder, half subtractor and full subtractor – 4 bit adder/subtractor - decoder, encoder - multiplexer - demultiplexer.

Unit 3 : Sequential Logic Circuits

R.S flip flop, D flip flop and JK flip flops - JK Master Slave flip flop - synchronous and ripple counters - BCD counter – Up/Down counters - shift registers - serial and parallel registers - ring and twisted ring counter.

Unit 4 : OP-AMP Basic Applications

Characteristics parameters – differential gain – CMRR – Slew rate – bandwidth - applications – inverter, non-inverter, integrator, differentiator, summing, difference and averaging amplifier - solving simultaneous equations - comparator - square wave generator - Wien's bridge oscillator - Schmitt trigger

Unit 5 : Timer, DAC/ADC

Timer 555 - Internal block diagram and working - astable multivibrator - schmitt trigger.

D/A converter - binary weighted method - A/D converter - successive approximation method.

Books for Study

1. Digital Principles and Application by Malvino Leach, Tata McGraw Hill, 4th Edition(1992).
2. Digital Fundamentals by Thomas L. Floyd, Universal Book Stall, New Delhi(1998).
3. Introduction to Integrated Electronics by V.Vijayendran, S. Viswanathan (Printers and Publishers) Pvt. Ltd., Chennai(2005).
4. OP - AMPs and Linear Integrated Circuits by Ramakant A. Gayakwad, Prentice Hall of India(1994).

Books for Reference

1. Digital Electronics by Practice Using Integrated Circuits - R.P.Jain - Tata McGraw Hill(1996).
2. Linear Integrated Circuits by D. Roy Choudhury and Shail Jain - New Age International (P) Ltd.(2003).
3. Electronics - Analog and Digital by I.J. Nagrath - Prentice - Hall of India, New Delhi(1999).
4. Integrated Electronics by J.Millman and C.Halkias, Tata McGraw Hill, New Delhi (2001)

MAPPING – COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	S
CO2	S	S	S	S	M
CO3	S	S	M	S	S
CO4	M	S	S	S	S
CO5	S	S	S	M	S

KEY: S – Strong, M – Medium, L – Low

ELECTIVE 3 MICROPROCESSOR FUNDAMENTALS

Course Objective:

To study the architecture of the microprocessor 8085 and its applications

Learning Outcome :

At end of the course, students will be able to:

- Describe the general architecture of a microcomputer system and architecture & organization of 8085 Microprocessor and understand the difference between 8085 and advanced microprocessor
- Understand and realize the Interfacing of memory & various I/O devices with 8085 microprocessor
- Understand and classify the instruction set of 8085 microprocessor and distinguish the use of different instructions and apply it in assembly language programming.
- Understand the architecture and operation of Programmable Interface Devices and realize the programming & interfacing of it with 8085 microprocessor

Unit 1 : Architecture

Architecture of 8085 – registers, flags, ALU, address and data bus, demultiplexing address/data bus – control and status signals – control bus, Programmer’s model of 8085 – Pin out diagram – Functions of different pins.

Unit 2 : Programming Techniques

Instruction set of 8085 – data transfer, arithmetic, logic, branching and machine control group of instructions – addressing modes – register indirect, direct, immediate and implied addressing modes.

Assembly language & machine language – programming techniques: addition, subtraction, multiplication, division, ascending, descending order, largest and smallest (single byte)

UNIT 3 : Interfacing memory to 8085

Memory interfacing – Interfacing 2kx8 ROM and RAM, Timing diagram of 8085 (MOV R_d, R_s – MVI R_d,data(8)) .

Unit 4 : Interfacing I/O Ports to 8085

Interfacing input port and output port to 8085 – Programmable peripheral interface 8255 – flashing LEDs.

Unit 5 : Interrupts

Interrupts in 8085 - hardware and software interrupts – RIM, SIM instructions – priorities – simple polled and interrupt controlled data transfer.

Books of Study

- Microprocessor Architecture programming and application with 8085 / 8080A. by R.S.Gaonkar, Wiley Eastern Ltd.(1992).
- Fundamental of microprocessor 8085 by V. Vijayendran, S.Viswanathan Publishers, Chennai(2003).
- Fundamentals of Microprocessors and microcomputers by B.Ram - Dhanpat RAI publication.

Reference

- Introduction to microprocessor by Aditya Mathur - Tata Mc.Graw Hill Publishing Company Ltd.(1987).
- Microprocessor and digital system by Douglas V. Hall - 2nd Edition - McGraw Hill Company(1983).

MAPPING – COURSE OBJECTIVES WITH PROGRAMME OUTCOME

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	M
CO3	S	M	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	M	S

KEY: S – Strong, M – Medium, L – Low

CORE PAPER XIV

Practical – III (General)

(At the end of Sixth Semester - Any Fifteen Experiments) Credits:4

1. Young's modulus of the material of the beam- Non uniform Bending - Koenig's method.
2. Young's modulus of the material of the beam- Uniform Bending - Koenig's method.
3. Newton's rings - R_1 , R_2 and μ of convex lens.
4. Spectrometer - ($i - i'$) curve - Refractive Index.
5. Spectrometer - Small angled prism - Normal incidence and emergence. Determination of the refractive index of the material of prism.
6. Spectrometer – Dispersive power of a prism.
7. Spectrometer – Dispersive power of a grating.
8. Spectrometer - Cauchy's constant.
9. Bifilar pendulum – Parallel threads – verification of two theorems.
10. Field along the axis of a circular coil - Deflection magnetometer - B_H and M .
11. Field along the axis of a circular coil - vibration magnetic needle - B_H .
12. Potentiometer - Calibration of high range voltmeter.
13. Potentiometer – conversion of galvanometer into voltmeter.
14. Potentiometer – conversion of galvanometer into ammeter.
15. Ballistic Galvanometer - Absolute capacitance of a capacitor.
16. Ballistic Galvanometer-Charge Sensitivity
17. Ballistic Galvanometer- Comparison of Mutual inductances.
18. Ballistic Galvanometer.-Comparison of Capacities
19. Determination of wavelength He-Ne Laser by diffraction.
20. Spectrometer Grating-Normal incidence method -Wavelength of Mercury Spectrum

CORE PAPER XV

Practical – IV (Basic Electronics)

(At the end of Sixth Semester - Any Fifteen Experiments) Credits:4

1. A.C. Circuit – LCR – Series resonance.
2. A.C. Circuit – LCR – Parallel resonance.
3. Bridge rectifier - Zener regulated power supply - 9V characteristics.
4. Verification of Demorgan's theorem.
5. Emitter follower.
6. FET characteristics.
7. Common Source FET amplifier.
8. UJT characteristics
9. UJT as Relaxation oscillator.
10. SCR characteristics.
11. Transistor – Astable multivibrator.
12. Transistor – Bistable multivibrator.
13. Transistor – Phase shift oscillator.
14. Transistor – Wien's bridge oscillator.
15. NAND and NOR as universal gates.
16. Half Adder & Full adder (using basic logic gates and Ex-OR gate or NAND gates only).
17. Half Subtractor & Full subtractor (using basic logic gates and Ex-OR gate or NAND gates only).
18. RC coupled single stage CE Transistor amplifier – frequency response.
19. Decode Counter using 7490
20. 4 Bit Shift Register using 7473/7476
21. 4 Bit ripple Counter using 7473/7476

CORE PAPER XVI

Practical – V (Applied Electronics)

(At the end of Sixth Semester - Any Fifteen Experiments) Credits:2

1. Microprocessor – 8085 – 8 bit Addition
2. Microprocessor – 8085 – 8 bit Subtraction
3. Microprocessor – 8085 – 8 bit Multiplication
4. Microprocessor – 8085 – 8 bit Division
5. Microprocessor – 8085 – Sorting of given set of numbers in ascending order
6. Microprocessor – 8085 – Sorting of given set of numbers in descending order
7. Microprocessor – 8085 – Finding the largest no. in a given set of numbers.
8. Microprocessor– 8085 – Finding the smallest no. in a given set of numbers.
9. Microprocessor– 8085 – reversing the elements in an array.
10. Microprocessor – 8085 – Addition of N Number of single byte numbers
11. Op amp 741 - Inverting, Non - Inverting amplifier, unity follower.
12. Op amp 741 - Summing and difference amplifier
13. Op amp 741 – Differentiator, integrator
14. OP amp 741 – Solving simultaneous equations.
15. OP amp 741 – Astable multivibrator.
16. Op amp 741 – Wien’s Bridge oscillator
17. Op amp 741 - Phase Shift oscillator
18. Op amp 741-Solving Simultaneous Equations
19. 555 - Timer - Schmitt Trigger
20. 555 - Timer - Astable operation
21. D/A Converter – 4 bit, binary weighted resistor method

ASSESSMENT PROCEDURE

All Languages, Major, Allied, Elective, Value Education, EVS and Non-Major Elective the assessment procedure is 25% of Internals (conducted by college) and 75% of External (University Examination).

The assessment procedure for Practical is 40% of Internals (conducted by college) and 60% of External (University Examination).

Professional English & Soft Skills the assessment procedure is 50% of Internals (conducted by college) and 50% of External (University Examination).

CIA ASSESSMENT SPLIT UP -THEORY

INTERNALS

ASSESSMENT PROCEDURE	RUBRICS (PARAMETER)	MARKS
Assignment	Creativity, relevance to the topic	5
Seminar	Communication Skills, Way of Presentation	5
Internal test	Students Performance in the written test	5
Model exam	Students Performance in the written test	5
Attendance	Above 95% - 5; 84% to 94% - 4; 75% to 84 % - 3; 65% to 74% -2; less than 65%-1	5
TOTAL		25

EXTERNAL

ASSESSMENT PROCEDURE	QUESTIONS	MARKS
SECTION A	10 (out of 12) x 2	20
SECTION B	5 (out of 7) x 5	25
SECTION C	3 (out of 5) x 10	30
TOTAL		75

CIA ASSESSMENT SPLIT UP -PRACTICALS

INTERNALS

ASSESSMENT PARAMETER	RUBRICS (PARAMETER)	MARKS
Number of experiments done	Promptness in understanding and doing the experiment	15
Observations	Skill in completing the experiment, calculation and result comparison	10
model practical exam	students' performance in model practical exam	10
Attendance	above 95%- 5, 85% to 94%- 4, 75% to 84% - 3, 65% to 74% - 2, less than 65%-1	5
Total		40

EXTERNALS

ASSESSMENT PARAMETER	RUBRICS (PARAMETER)	MARKS
Practical Examination	Assessment	50
Record	Neatness, clarity and presentation of observations	10
Total		60


MAHAJAKS AMI-N

HOD



PRINCIPAL