# Bachelor of Science in Mathematics
# B.Sc., Mathematics

## Programme Project Report & Detailed Syllabus

தமிழ்நாடு திறந்தநிலைப் பல்கலைக்கழகம்
Tamil Nadu Open University
School of Sciences
Department of Mathematics
Chennai - 15

# ProgrammeProject Report (PPR)

# Bachelor of Science in Mathematics


## Departmentof Mathematics School of Science

## TAMILNADUOPENUNIVERSITY

**577,AnnaSalai,Saidapet,Chennai–600015**

**TAMILNADUOPENUNIVERSITY**

**DepartmentofMathematics**
**School of Science**

## Members of theBoardofStudies(BoS)

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| 3. | **Dr.T.V.SUDHARSAN**<br>AssociateProfessorandHead,<br>Dept. of Mathematics,<br>S.I.V.E.T. College,<br>Gowrivakkam,Chennai. | Member |
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Nagar,
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ai.

9. **M. AMUDHA** Member
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, Chennai – 600 092.

**TAMILNADUOPENUNIVERSITY**

**SCHOOL OF SCIENCE**

**B.Sc.,MATHEMATICS**

**ProgrammeProjectReport (PPR)**

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1. **Programme's Mission and Objectives**: Bachelor of Science in Mathematics Programme has been designed to provide in basic knowledge in Mathematics to those students who are not having opportunity to study in regular mode and for drop-out students from rural and urban areas of Tamil Nadu. The main Objective of this Programme is to enable the students to understand the basic knowledge of pure and applied Mathematics and make them relevant to society.

2. **Relevance of the Programme with HEI's Mission and Vision:** The Programme B.Sc., (Mathematics) is offered to meet current needs of aspiring youths and adult population and also create awareness about the basic mathematic aspects to the society. This Programme aims at creating equity in education by providing opportunity to rural people for whom Higher Education is unreachable.

3. **Nature of prospective target group of Learners:** Bachelor of Science (Mathematics) is meant for students who have passed the Higher Secondary Examination. It also targets the rural population to reach their dream of obtaining Higher Education for whom the opportunity was denied due to lack of limited number of seats available in the conventional University system.

4. **Appropriateness of Programme to be conducted in ODL mode to acquire specific skills and competence:** Bachelor DegreeProgramme in Mathematics will meet out the present day needs of academic and Research, Institutions and Industries. As Programme outcome of the students may acquire basic knowledge in Algebra,Analysis,Optimisationtechniques,Statistics,andModernMathematics whichwillmotivatethestudentstogoforhigherstudies/researchinMathematics

and also acquire skills in the field of application oriented, life oriented, and competitive examinations. Their learning needs will be addressed by providing the printed copy of 'Self Learning Materials (SLM)'.

**5. InstructionalDesign:**

**Level:**Undergraduate DegreeProgramme

**Duration:3** years

**Medium:**EnglishMediumand inonlyTamilNadu.

**Instructional delivery:** The Programme is delivered through the Learner Support Centre (LSC) which is affiliated Arts and Science colleges in the State of Tamil Nadu. The faculties of the LSC act as Academic Counsellors of the Programme and handle the Counselling classes for the learners.

**MediaofInstruction**:PrintmaterialinSLM

**Procedureforadmissions,curriculumtransactionandevaluation:**

**Eligibility:** Candidates should have passed the Higher Secondary Examination(10+2 pattern) conducted by the Board of Higher Secondary Education, Government of Tamilnadu or any other examination (10+3 pattern) accepted by Syndicate, as equivalent thereto.

**Financial Assistance:** SC/ST Scholarship available as per the norms of the State Government of Tamil Nadu. Complete Admission fee waiver for the Physically challenged/ differently abled persons.

**Policy of Programme delivery**: The Academic Calendar for the Programme will be available for the learners to track down the chronological events/ happenings. The Counselling schedule will be uploaded in the TNOU website and the same will be intimated to the students through SMS.

**Evaluation System**: Examination to Bachelor's DegreeProgramme in Mathematics is designed to maintain quality of standard. Theory will be conducted by the University in the identified Examination Centres. For the Assignment students may

be permitted to write with the help of books/materials for each Course, which will be evaluated by the Evaluators appointed by the University.

**Assignment:** 1 assignment for 2 credits are to be prepared by the learners. E.g. If a Course is of Credit 6, then 3 number of Assignments are to be written by the learner to complete the continuous assessment of the course. Assignment carries 30 Marks (Average of Total no of Assignment), consists of Long Answer Questions (1000 words) for each Course.

| | | |
|---|---|---|
| Sec- A | Answeranyoneofthequestionnotexceeding1000words out of three questions. | 1 x30 = 30 Marks |

**Theory Examination:** Students shall normally be allowed to appear for theory examination by completing Practical and Assignment. The Term -End Examination shall Carry 70 marks and has PART: A, B and C and will be of duration 3 hours.

**Question Pattern for Theory Examinations:**

Max. Marks: 70 Time: 3 hours

PART - A (3 × 3 = 9 marks)
Answer any Three questions out of Five questions in 100 words
All questions carry equal marks

1. From Unit - I
2. From Unit - II
3. From Unit - III
4. From Unit - IV
5. From Unit - V

PART - B (3 × 7 = 21 marks)
Answer any Three questions out of Five questions in 200 words
All questions carry equal marks

6. From Unit - I
7. From Unit - II
8. From Unit - III
9. From Unit - IV
10. From Unit - V

PART - C (4 × 10 = 40 marks)

Answer any Four questions out of Seven questions in 500 words.

All questions carry equal marks.

11. From Unit - I
12. From Unit - II
13. From Unit - III
14. From Unit - IV
15. From Unit - V
16. From any unit
17. From any unit

**PassingMinimum**:

For Theory Examination: The candidate shall be declared to have passed the examination if the candidate secures not less than 25 marks in the University examination in each theory paper and overall 40 percent in both Term End Examination and Continuous Internal Assment (Assignment) taken together.

**Classification of Successful Candidate**: Candidates who pass all the Courses and who secure 60 per cent and above in the aggregate of marks will be placed in the First Class. Those securing 50 per cent and above but below 60 per cent in the aggregate will be placedin the Second Class.

**Requirement of laboratory and Library Resources**: The Programme will be offeredthroughtheLearnerSupportCentre (LSC)maintainedbyTamilNaduOpen University. The LSC's have the required infrastructural facilities to conduct the Counselling for the students who wish clear their doubts. A well-equipped Library is available in the University Headquarters with about 24,000 books and lot of research journals. The Learners Support Centre through which the Degree Programmeistobeofferedisalsoequippedwilla full-fledgedlibraryhavingbooks and journals related Mathematics.

**Quality Assurance Mechanism:** The Quality of the Bachelor's degree Programme in Mathematics is maintained by adopting the curriculum suggested by theUGC.As per UGC guidelines the core courses, three elective courses, three subject specific elective courses, two practical courses are included in the Programme. The Curriculum of Bachelor's DegreeProgramme in Mathematics was approved by the Board of Studies held on 24-06-2020. It is placed before forthcoming Academic Council and Syndicate of our University subsequently. As a part of Quality assurance, the curriculum for the Programme will be updated once in three years. Necessary steps will be taken to obtain feedback from the students and theAcademic Counsellors who are part of the Programme for effective delivery of the Programme.

**Programme's Objectives**

Bachelor of Science in Mathematics Programme has been designed to provide in basic knowledge in Mathematics to those students who are not having opportunity to study in regular mode and for drop-out students from rural and urban areas of Tamil Nadu. The main Objective of this Programme is to enable the students to understand the basic knowledge of pure and applied Mathematics and make them relevant to society.

**Programme Outcomes**

PO1: Science Knowledge: Apply pure and interdisciplinary science knowledge for the solution of various scientific and engineeringproblems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze scientific problems reaching validated conclusions using basic principles of sciences.

PO3: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis, and interpretation of data, and synthesis of the information to provide valid conclusions.

PO4: Modern tool usage: Create, select, and apply appropriate techniques, resources,

and modern IT tools including prediction and modeling to complex scientific activities with an understanding of thelimitations.

PO5: The science and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professionalpractice.

PO6: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the scientificpractice.

PO7: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinarysettings.

PO8: Communication: Communicate effectively on various activities with the Science community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clearinstructions.

PO9: Science projects and funding: Demonstrate knowledge for writing and managing scientific projects in various disciplines and apply these to its own work, as a member and leader in a team, manage funds for scientific projects from various funding agencies andNGOs.

PO10: Lifelong learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technologicalchange.

**Programme Specific Outcomes – B.Sc., Mathematics**

**PSO1:** Demonstrate proficiency in solving problems using logical thinking

**PSO2: U**se software to visualize mathematical concepts

PSO3: Interpret problems both physically and geometrically

PSO4: Use software to solve mathematical and Statistical problems

PSO5: Demonstrate understanding of probability, statistical distributions and its applications to sampling theory and statistical tools in-depth at the Allied level

PSO6: Acquire wide range of knowledge from General Electives chosen from different disciplines

PSO7: Application of knowledge to real-lifeproblems.

**Programme Learning Outcomes**

**PLO1: Knowledge skills:** To acquire knowledge and skills in order **to demonstrate** a thorough understanding of fundamental ideas of mathematics

**PLO 2: Communication**: To develop communication skills to disseminate the knowledge gained in mathematics.

**PLO 3: Problem Solving**: To demonstrate skills that help identify and analyse scientific problems by using basic ideas of mathematics.

**PLO 4: Science and Society**: To emerge as responsible citizens devoted to the welfare of nation by developing and serving the society.

**PLO 5: Life-Long Learning skills**: To develop attentiveness for lifelong learning and to be become accustomed to self-learning.

**PLO 6: Modern Tool Usage**: To make us of modern techniques and tools for solving practical problems.

**PLO 7: Project Management:** To propose research projects based on fundamental concepts in mathematics

**PLO 8: Environment and Sustainability:** To identify the challenges related to the environment and recommend pragmatic solutions to uphold community development.

**Mapping**

| Course Code / Programme Learning Outcomes | BMSS-11 | BMSS-EL1 | BMSS-21 | BMSS-EL2 | BMSS-31 | BMSS-32 | BMSS-41 | BMSS-42 | BMSS-A4 | BMSS -51 | BMSS -52 | BMSS -53 | BMSS–EL1 | BMSS -61 | BMSS -62 | BMSS -63 | BMSS–EL3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Knowledge skill | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Communication | ✓ | | ✓ | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Problem Solving | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Science and Society | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Life-Long Learning | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Modern Tool Usage | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Project Management | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Environment and Sustainability | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

**Structure of B.Sc., Mathematics Programme:**

| *S. No* | Course Code | Course Title | Category | Credits | Marks Distribution | | |
|---|---|---|---|---|---|---|---|
| | | | | | CIA* | TEE** | Total |
| **I Year - Semester – I** | | | | | | | |
| *1* | BFTMS-11 | Tamil | Language | 4 | 30 | 70 | 100 |
| *2* | BFEGS-11 | Foundation in English | Language | 4 | 30 | 70 | 100 |
| *3* | BMSS-11 | Algebra | CC | 5 | 30 | 70 | 100 |
| *4* | BMSSE1 | Trigonometry | DSE | 5 | 30 | 70 | 100 |
| *5* | BPHYSA11 | Allied Physics – 1 | GE | 4 | | | |
| | | **I Year - Semester – II** | | | | | |
| *6* | BFTMS-21 | Tamil | Language | 4 | 30 | 70 | 100 |
| *7* | BFEGS-21 | Foundation in English | Language | 4 | 30 | 70 | 100 |
| *8* | BMSS-21 | Differential Calculus | CC | 5 | 30 | 70 | 100 |
| *9* | BMSSE21 | Analytical Geometry | DSE | 5 | 30 | 70 | 100 |
| *10* | BPHYSA22 | Allied Physics – 2 | GE | 4 | 30 | 70 | 100 |
| | | **II Year - Semester – III** | | | | | |
| *11* | BFTMS-31 | Tamil | Language | 4 | 30 | 70 | 100 |
| *12* | BFEGS-31 | Foundation in English | Language | 4 | 30 | 70 | 100 |
| *13* | BMSS-31 | Integral Calculus | CC | 5 | 30 | 70 | 100 |
| *14* | BMSS-32 | Differential Equations | SEC | 5 | 30 | 70 | 100 |
| *15* | BMSSA31 | Computer Fundamentals and PC Software | GE | 4 | 30 | 70 | 100 |
| | | **II Year - Semester – IV** | | | | | |
| *16* | BFTMS-41 | Tamil | Language | 4 | 30 | 70 | 100 |
| *17* | BFEGS-41 | Foundation in | AECC | 4 | 30 | 70 | 100 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | English | | | | | |
| *18* | BMSS-41 | Transform Techniques | CC | 5 | 30 | 70 | 100 |
| *19* | BMSS-42 | Algebraic Structure | SEC | 5 | 30 | 70 | 100 |
| *20* | BMSSA41 | Programming in C | GE | 4 | 30 | 70 | 100 |
| *21* | CCE | Environmental Studies | AECC | 2 | 30 | 70 | 100 |
| | | **III Year - Semester – V** | | | | | |
| *22* | BMSS -51 | Real Analysis – I | CC | 5 | 30 | 70 | 100 |
| *23* | BMSS -52 | Linear Algebra | CC | 5 | 30 | 70 | 100 |
| *24* | BMSS -53 | Discrete Mathematics | SEC | 5 | 30 | 70 | 100 |
| *25* | BMSSE51 | Mathematical Statistics | DSE | 5 | 30 | 70 | 100 |
| *26* | BMSSNE51 | Basics of Psychology | NE | 2 | 30 | 70 | 100 |
| | | **III Year - Semester – VI** | | | | | |
| *27* | BMSS -61 | Real Analysis – II | CC | 5 | 30 | 70 | 100 |
| *28* | BMSS -62 | Mechanics | CC | 5 | 30 | 70 | 100 |
| *29* | BMSS-63 | Complex Analysis | SEC | 5 | 30 | 70 | 100 |
| *30* | BMSSE61 | Operations Research | DSE | 5 | 30 | 70 | 100 |
| *31* | BMSSNE 61 | Public Relations | NE | 2 | 30 | 70 | 100 |
| Total- [(I+II+III) Year] | | | | **134** | **930** | **2170** | **3100** |

***** *Continuous Internal Assessment (CIA)*
*#Term End Examination (TEE)*
* Continuous Internal Assessment (CIA)

# Term End Examination (TEE), CC- Core Courses

GE- Generic Electives,

DSE- Discipline Specific Electives SEC- Skill Enhanced Courses

AECC- Ability Enhancement Compulsory Courses

**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

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**B.Sc., Physics - Syllabus – I year – I Semester (Distance Mode)**

| | | |
|---|---|---|
| ***பாடப்பெயர்*** **(Course Title)** | : | ***தமிழ் – I*** **(Tamil – 1)** |
| ***பாடக்குறியீடு*** **(Course Code)** | : | **BFTMS-11** |
| ***பாடகற்றல்அளவெண்*** **:** **(Course Credits)** | | *4* |

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***பாடநோக்கங்கள்***

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1. *தமிழ்இலக்கியங்களைஅறிமுகநோக்கில்எடுத்துரைத்தல்*
2. *மொழித்திறன், மொழியறிவு, இலக்கியப்பொதுஅறிவுபெறும்வகையில்விவரித்தல்*

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***பாடத்தினைப்படிப்பதால்விளையும்பயன்கள்***

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1. *தமிழிலுள்ளசமயஇலக்கியங்கள், சிற்றிலக்கியங்கள், மரபுக்கவிதை, புதுக்கவிதை,உரைநடைஇலக்கியங்கள், மு.வ.வின்உரைநடைச்சிறப்புகள், பாரதிதாசனின்அமைதிநாடகச்சிறப்புகள்பற்றி மாணவர்கள்விரிவாகஎடுத்துரைப்பார்கள்.*

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***பிரிவு – 1*** ***பன்னிருதிருமுறைகள்***

*தமிழில்சமயஇலக்கியங்கள் – சமயஇலக்கியத்தோற்றம், சமணமும்பௌத்தமும், சைவசமயவளர்ச்சி, பன்னிருதிருமுறைபட்டியல் – திருஞானசம்பந்தர்தேவாரம்பாடல்சிறப்புகள். – (திருநாவுக்கரசரின்மாசில்வீணையும், நம்கடம்பனைப்பெற்றவள், சுந்தரர் – பித்தாபிறைசூடி, பொன்னார்மேனியனே, மாணிக்கவாசகர் – வானாகிமண்ணாகி, பால்நினைந்துஊட்டும், திருமூலரின்ஒன்றேகுலமும்ஒருவனேதேவனும், அன்பும்சிவமும்இரண்டென்பர், காரைக்காலம்மையார் – இன்றுநமக்கெளிதேமாலுக்கும், அறிவானும்தானேஅறிவிப்பான் .*

*பிரிவு – 2* **நாலாயிரத்திவ்யப்பிரபந்தம்**

முதல்மூன்றுஆழ்வார்கள் – பொய்கையாழ்வார்பாடல் – வையம்தகளியாவார்கடலே, பூத்தாழ்வார்பாடல் – அன்பேதகளியாஆர்வமே – பேயாழ்வார் – திருக்கண்டேன்பொன்மேனிகெண்டேன், திருமழிசைஆழ்வார்பாடல் – அன்பாய்ஆரமுதம்ஆவாய், நம்மாழ்வார் – இவையும்அவையும்உவையும், மதுரகவியாழ்வார் – நன்மையால்மிக்கநான்மறை, குலசேகராழ்வார் – செல்வத்துஅரம்பையர்கள், பெரியாழ்வார் – மாணிக்கம்கட்டிவயிரம்இடைகட்டி – ஆண்டாள் – மத்தளம்கொட்டவரிசங்கம், தொண்டரடிப்பொடியாழ்வார் – பச்சைமாமலைபோல்மேனி, திருப்பாணாழ்வார் – கொண்டல்வண்ணனைக்கோவலனாய், திருமங்கையாழ்வார் – குலம்தரும், செல்வம்தந்திடும், அடியார்.

*பிரிவு – 3* **சீறாப்புராணம்( கதீசாகனவுகண்டபடலம்)**

சீறாப்புராணம் – காப்பியஅமைப்பு, கதீசாகனவுகண்டபடலம், காப்பியமுன்கதைச்சுருக்கம், படலக்கதைச்சுருக்கம் – கதீசாகனவுகண்டுஎழுதல் – கதீசாகண்டகனவு, கதீசாவின்ஏமாற்றம் – கதீசாவின்இயல்புநிலையில்மாற்றம் – ஒப்பனைதுறந்தவிரக்தி, பஞ்சணைபொருந்தாநிலை – கதீசாவின்புலம்பல் – விதவசம்பொருந்துமோஎனல், மாதுலன்வசனம்சிதையுமோஎனல், கதீசாதேம்புதல். – மெசறாவின்மடல்வருதல் – மைசறாஎழுதியபத்திரம், சித்திரவரிதொறும்முத்தமிடுதல், கடலில்தவிப்பார்க்குக்கிடைத்தமரக்கலம்.

*பிரிவு – 4* **தேம்பாவணி (காட்சிப்படலம்)**

தேம்பாவணி – காப்பியஅமைப்பு, காட்சிபடலம், காப்பியமுன்கதைச்சுருக்கம், படலக்கதைச்சுருக்கம், – கோவர்கூட்டம்வந்துகாணுதல் – குழந்தைஇயேசுவைத்தொழுதல், முல்லையார்தந்தமுல்லைமாலை, பேரின்பத்தால்உயிர்ஊஞ்சலாடல் – கோவலர்போற்றிவாழ்த்துதல் – நீவிப்போனஆட்டைமீட்கவோஉதித்தனைஎனல்,
பிணிக்குலத்தக்கதுஉதித்தபெற்றிபோற்றல்,
அன்னையையும்ஆண்டவரையும்வாழ்த்துதல் – கோவலர்செலுத்தியகாணிக்கை – இடைச்சியர்மாலைசாத்தல், இடையர்தந்தபால்காணிக்கை, குழந்தைஇயேசுவின்அருள்நோக்கு – ஓகனோடுஓங்குதாயும்வாழ்த்தினாள் – அன்பால்பீறிட்டஆனந்தக்கண்ணீர்மழை,
வேந்தரைநீக்கிஆயரைத்தெரிந்ததென்எனல்.

*பிரிவு – 5* **முத்தொள்ளாயிரம் (யானைமறம் – மருப்புஊசியாக, கொடிமதில்பாய்ந்துஇற்ற, அயிற்கதவம்பாய்ந்துழக்கி, கைக்கிளைப்பாடல்கள் – உழுதஉழுத்தஞ்சேய், நாண்ஒருபால்வாங்கநலன்ஒருபால்,
ஆய்மணிப்பைம்பூண்எனத்தொடங்கும்பாடல்கள்)**

நந்திக்கலம்பகம் (ஊசல், மறம்உறுப்பில்அமைந்தபாடல்கள்)
தமிழில்சிற்றிலக்கியங்கள் – சிற்றிலக்கியத்தோற்றம், சிற்றிலக்கியவகைகள், கலம்பகம், பிள்ளைத்தமிழ் – முத்தொள்ளாயிரம் – நூல்பெயர்விளக்கம், அமைப்பு, யானைமறம்விளக்கம், கைக்கிளைவிளக்கம், – முத்தொள்ளாயிரம் – யானைமறம்பாடல்கள் – பாண்டியன்யானைமறம் – ஒருபாடல்,

சோழன்யானைமறம் – ஒருபாடல், சேரன்யானைமறம் – ஒருபாடல் – முத்தொள்ளாயிரம் – கைக்கிளைப்பாடல்கள் – பாண்டியன்கைக்கிளை – ஒருபாடல், சோழன்கைக்கிளைஒருபாடல், சேரன்கைக்கிளைஒருபாடல், – நந்திக்கலம்பகம் – ஊசல், மறம் – கலம்பகஉறுப்புகள் 18 விளக்கம், ஊசல்உறுப்பில்அமைந்தபாடல், மறம்உறுப்பில்அமைந்தபாடல் – நந்திக்கலம்பகம், தலைவன்தலைவிகூற்று – தலைவன்கூற்றுப்பாடல், தலைவிகூற்றப்பாடல்.

**பிரிவு – 6 மீனாட்சியம்மைபிள்ளைத்தமிழ் (அம்புலிபருவம்)**

பிள்ளைத்தமிழ்விளக்கம் – பிள்ளைத்தமிழின்பத்துப்பருவங்கள், பிள்ளைத்தமிழுக்குஅம்புலி – விளக்கம், – சாமம்என்னும்வழிமுறை – சாமம்விளக்கம், சாமம்வழிமுறைப்பாடல் – தானம்என்னும்வழிமுறை – தானம்விளக்கம், தானம்வழிமுறைப்பாடல் – பேதம்என்னும்வழிமுறை – பேதம்விளக்கம், பேதம்வழிமுறைப்பாடல் – தண்டம்என்னும்வழிமுறை – தண்டம்விளக்கம், தண்டம்வழிமுறைப்பாடல்.

**பிரிவு – 7 இக்காலமரபுக்கவிதைகளும்பாட்டுஇலக்கியமும்**

மரபுக்கவிதைகளும்பாட்டுஇலக்கியமும் – மரபுக்கவிதைகள்விளக்கம், பாட்டுக்கள் – வள்ளலார், பாரதியார், பாரதிதாசன் – வள்ளலார்இராமலிங்கஅடிகள்பாடல் – ஒருமையுடன்நினதுதிருமலரடி... – பாரதியார் – யாமறிந்தமொழிகளிலே – பாரதிதாசன் – காலைஇளம்பரிதியிலே... நாமக்கல்கவிஞர், கவிமணி – ாமக்கல்கவிஞர்இராமலிங்கம்பிள்ளைபாடல் – தமிழனென்றுசொல்லடா... – கவிமணிதேசிகவிநாயகம்பிள்ளை – புலர்ந்துவிடியும்பொழுதினிலே...சுரதா, முடியரசன் – சுரதா – சுவரின்மேல்ஒட்டிக்கொண்டிருக்கும் – முடியரசன் – சாதியைத்தான்முன்வைத்துச்சான்றுகின்றார்.

கண்ணதாசன் – கேள்விபிறந்ததுஅன்று, மருதகாசி – சமரசம்உலாவும்இடமே, பட்டுக்கோட்டையார் – சின்னப்பயலேசின்னப்பயலே...

**பிரிவு – 8 புதுக்கவிதைகளும்ஐக்கூக்கவிதைகளும்**

புதுக்கவிதைகளும்ஐக்கூக்கவிதைகளும் – புதுக்கவிதைகள்விளக்கம், – நா. காமராசன் – பாற்கடல்அமுதத்தை..., அப்துல்ரகுமான்– நாற்காலியாய்இருந்தவன் ..., மீரா – மூட்டைமூட்டையாய்..., சிற்பி – அகன்றஉலகுநான்..., இன்குலாப் – பதவியூர்போகும்..., மு. மேத்தா – என்னுடையசம்பளநாளில்..., அபி – பகல்வெளியில்எங்கோ..., ஈரோடுதமிழன்பன் – நீலச்சேற்றில்..., சேசாலம் – மண்ணின்வெடிப்பை..., வைரமுத்து – அவிழ்ந்தகூந்தலைஅள்ளிமுடிக்க..., ஐக்கூக்கவிதைகள் – அப்துல்ரகுமான் – இரவெல்லாம் ..., அமுதபாரதி – எரியும்பிணங்கள், மித்ரா – பசித்தகுழந்தைகள், அறிவுமதி – மரம்வெட்டிய..., கழனியூரன் – அன்புடைமை...

**பிரிவு – 9 மு. வரதராசனாரின் "தமிழுக்குமுதல்இடம்"**

தமிழில்உரைநடைவளர்ச்சி – உரைநடையின்தோற்றம், தமிழில்கட்டுரைகள், தமிழில்மணிப்பிரவாளநடை, தமிழில்தனித்தமிழ்நடை, – மு. வரதராசனார்உரைநடை,–மொழிப்பற்றுநூல்அறிமுகம், தமிழுக்குமுதல்இடம் – கட்டுரைஉட்பொருள் – தமிழுக்குமுதல்இடம் –

தமிழ்நாட்டுக்கோயில்களில்வடமொழி,
தமிழ்இசைகருநாடகஇசையாகமாறிப்போனது, தமிழ்இசைக்குமுதல்இடம்,
ஆட்சித்துறையில்தமிழுக்குமுதல்இடம்,
ஆட்சிமொழிஎவ்வழிபிறதுறைகள்அவ்வழி,
இதழியல்துறையில்தமிழுக்குமுதல்இடம்,
ஆங்கிலப்பத்திரிகைகளும்அமாவாசைச்சாமியார்களும்.

*பிரிவு – 10* **பாரதிதாசனின் "அமைதி" நாடகம்**

தமிழில்உரைநடைநாடகவளர்ச்சி, – தமிழில்நாடகங்களின்தோற்றம், *20* ஆம்நூற்றாண்டில்தமிழ்நாடகங்களின்நிலை, முத்தமிழில்நாடகத்தமிழ்விளக்கம், மௌனமொழிஉலகப்பொதுமொழி. – பாரதிதாசன்என்னும்நாடகஆசிரியர் – புரட்சிக்கவிஞரின்நாடகப்புரட்சி, பிரெஞ்சுநாடகத்தாக்கம், அமைதியின்சிறப்பு – அமைதிநாடகக்கதைச்சுருக்கம் – அமைதி – களம்ஒன்று, களம் – இரண்டு ,களம்மூன்று, களம்நான்கு, களம்ஐந்து, களம்ஆறு, களம்ஏழு, அமைதிநாடகத்திறனாய்வு.

**பார்வைநூல்கள்:**


1. மு. வரதராசன், தமிழ்இலக்கியவரலாறு, சாகித்யஅக்காதெமி, புதுடெல்லி.
2. து. ச. விமலானந்தன், தமிழ்இலக்கியவரலாறு, மீனாட்சிபுத்தகநிலையம், மதுரை.
3. தமிழண்ணல், புதியநோக்கில்தமிழ்இலக்கியவரலாறு, மீனாட்சிபுத்தகநிலையம், மதுரை.

**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

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**B.Sc., Physics - Syllabus – I year – I Semester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **Foundation in English-I (Literature and Grammar)** |
| **COURSE CODE** | **:** | **BFEGS- 11** |
| **COURSE CREDIT** | **:** | **4** |

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**COURSE OBJECTIVES**

- To make the learners aware of the history of England
- To cultivate the creativity among the learners
- To improve the reading skills of the learners
- To enhance the vocabulary of the learners
- To make the learners read and write in English

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**Block-1 Brief History of England**

Tudor England- Stuart England -Restoration England -Revolutions -Eighteenth Century-19th Century Education- 20th Century

**Block 2 Literary Texts**

R.K. Narayan- *An Astrologer's Day* and Sarojini Naidu - *Bangle Sellers*

**Block-3 Reading Comprehension**

Definition of Comprehension- Types of Comprehension- Reading Materials- Vocabulary- Critical Reading- Effective Reading- Exercises

**Block -4 Functional Grammars and Vocabulary**

Parts of Speech- Tenses-Articles -Prepositions and Linkers –Punctuation-Common Mistakes -Polite Expression-Affixes

**Block-5 Language Skills**

Reading Skills: SQ3R Technique -Writing Skills -Dictionary Use

**References:**


1. Narayan R.K. *Short Story Collections*.
2. Sarojini Naidu. *Bangle Sellers*
3. Sinha C.A. Reading Comprehension. Prabhat Prakashan.
4. Xavier A.G. *An Introduction to the Social History of England*. Viswanathan S. Printers, Chennai. 2009.


**Web Resources:**

1. https://www.digimat.in/nptel/courses/video/109106124/L01.html
2. https://www.digimat.in/nptel/courses/video/109106138/L46.html
3. https://www.coursera.org/lecture/multimodal-literacies/9-2-learning-to-read-reading-for-meaning-HdG3O
4. https://nptel.ac.in/courses/109/107/109107172/

**COURSE OUTCOMES**

On successful completion of the Course, the learners will be able to:

- describe the history of England

- critically analyse the literary texts
- use the words correctly
- write in flawless English

**Tamil Nadu Open University**
**Department of Mathematics**
**School of Science,**
**Chennai – 15**

**B.Sc., Mathematics - Syllabus – I year – I Semester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **ALGEBRA** |
| **COURSE CODE** | **:** | **BMSS- 11** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **ALGEBRA**, the Learner shall be able to:

CO 1: Analyze and understanding the concepts of symmetric function of the roots.

CO 2: Demonstrate and identify the reciprocal equations and solve it.

CO 3: find the inverse of a matrix by using Cayley Hamilton theorem.

CO 4: Understand the concept of how to generating prime numbers.

CO 5:Enrich the knowledge about the concept of Euler's function.

## COURSE SYLLABUS

**BLOCK – I**

Polynomial equations; Imaginary and irrational roots; Relation between roots and coefficients: Symmetric functions of roots in terms of coefficients; Transformations of equations; Reciprocal equations

Chapter 6 Section 9 to 12, 15, 15.1,15.2, 15.3, 16, 16.1,16.2.

**BLOCK - II**

Increase or decrease the roots of the given equation: Removal of term: Descartes' rule of signs: Approximate solutions of roots of polynomials by Horner's method; Cardan's method of solution of a cubic polynomial. Summation of Series using Binomial, Exponential and Logarithmic series:

Chapter 6: Section 17, 19, 24, 30, 34, 34.1

Chapter 3: Section 10, Chapter 4: Section 3, 3.1, 7.

**BLOCK - III**

Symmetric; Skew Symmetric; Hermitian; Skew Hermitian; Orthogonal Matrices; Eigen values; Eigen Vectors; Cayley - Hamilton Theorem; Similar matrices; Diagonalization of a matrix.

Chapter 2, Section 6.1 to 6.3, 9.1, 9.2 , 16 , 16.1,16.2 16.3

**BLOCK – IV**

Prime number; Composite number; decomposition of a composite number as a product of primes uniquely; divisors of a positive integer n; Euler function.

Chapter 5, Section 1 to 11.

**BLOCK - V**

Congruence modulo n; highest power of a prime number p contained in n! ; Fermat's and Wilson's theorems

Chapter 5, Section 12 to 17

**Book for Study:**

Contents and treatment as in

Block – 1 and 2

Algebra Volume I by T. K. ManicavachagamPillay,T.Natarajan, K.S.Ganapathy, Viswanathan Publication 2007.

Block – 3, 4 and 5

Algebra Volume II by T. K. ManicavachagomPillay ,T.Natarajan ,K.S.Ganapathy, Viswanathan Publication 2008

**Reference Books :**

1. Algebra: by S. Arumugam (New Gama publishing house, Palayamkottai)

**Web Resource:**

https://www.youtube.com/watch?v=KFVBZp-79Ew

https://www.youtube.com/watch?v=bo7XfcMgQwU

https://www.youtube.com/watch?v=BydVprh9NgQ

https://www.youtube.com/watch?v=woqe5W1q_1M

https://www.youtube.com/watch?v=Bp4ZD98eFUc

https://www.youtube.com/watch?v=u8J3XRUOmFo

https://www.youtube.com/watch?v=43vfdZ-0GZc

https://www.doubtnut.com/question-answer/every-composite-number-can-be-expressed-as-a-product-of-primes-and-this-factorisation-is-unique-exce-647244439

https://www.youtube.com/watch?v=JjHUnjyP3jE

https://www.youtube.com/watch?v=4pcLc81sHOA

https://www.youtube.com/watch?v=2tCM2Ts1wE4

https://www.youtube.com/watch?v=2FkYBIDm9tY

## COURSE LEARNING OUTCOMES

After completion of the **ALGEBRA**, the Learner will be able to:

CLO 1: Understand the relationship between the roots and coefficients.

CLO 2: Enable to solve the polynomial equation by using Horner's Method.

CLO 3: Exhibit competence in calculating Eigen values and Eigen vectorsand thereby diagonalizing squarematrices.

CLO 4: Find the number of divisors and sum of divisors of a given number.

CLO 5: Find the integral part of a real number.

**Tamil Nadu Open University**
**Department of Mathematics**
**School of Science,**
**Chennai – 15**

**B.Sc., Mathematics - Syllabus – I year – I Semester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **TRIGONOMETRY** |
| **COURSE CODE** | **:** | **BMSSE-11** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **TRIGONOMETRY**, the Learner shall be able to:

CO 1: To impart knowledge of expansion of trigonometric functions.

CO 2: Expand $\sin n\theta$ and $\cos n\theta$ in powers of $\sin\theta$ and $\cos\theta$.

CO 3: Derive the formula for hyperbolic functions.

CO 4: To impart knowledge about the concept of logarithms of a complex number.

CO 5: Find the solution using difference method for the trigonometric series.

## COURSE SYLLABUS

**BLOCK - I**

Expansions of powers of sin q, cos q - Expansions of cos nq, sin nq , cos mq sin nq

Chapter 2, Section 2.1, 2.1.1, 2.1.2,2.1.3

**BLOCK– II**

Expansions of sin nq, cos nq, tan nq - Expansions of tan (q1+q2 +……..+qn) - Expansions of sin x, Cos x, tan x in terms of x-Sum of roots of trigonometric equations – Formation of equation with trigonometric roots.

Chapter 3, Section 3.1 to 3.6

**BLOCK– III**

Hyperbolic functions-Relation between circular and hyperbolic functions - Formulas in hyperbolic functions – Inverse hyperbolic functions

Chapter 4, Section 4.1 to 4.7

**BLOCK– IV**

Inverse function of exponential functions – Values of Log (u+iv) - Complex index.

Chapter 5, Section 5.1 to 5.3

**BLOCK- V**

Sums of trigonometrical series – Applications of binomial, exponential, , logarithmic and Gregory's series - Difference method.

Chapter 6, Section 6.1 to 6.6.3

Content and treatment as in Trigonometry by P. Duraipandian and KayalalPachaiyappa, Muhil Publishers.

**Reference Books:**

1. Trigonometry by T.K. Manickavachagam Pillay

**Web Resource:**

**https://www.youtube.com/watch?v=YFoPPYjszdA**

**https://www.youtube.com/watch?v=qQ9YPA-aTC4**

**https://www.youtube.com/watch?v=43QNY-edoys**

**https://www.youtube.com/watch?v=_VZ-_Me65l4**

**https://www.youtube.com/watch?v=Z1BlcU1d6Fg**

**https://www.youtube.com/watch?v=XVM24Zonfzs**

https://www.youtube.com/watch?v=4LbUULXgijg

https://www.youtube.com/watch?v=s_MY2ByjvUs

https://www.youtube.com/watch?v=pkn3-6M3820

https://www.youtube.com/watch?v=pkn3-6M3820

https://www.youtube.com/watch?v=BydVprh9NgQ

https://www.youtube.com/watch?v=woqe5W1q_1M

## COURSE LEARNING OUTCOMES

After completion of the **TRIGONOMETRY**, the Learner will be able to:

CLO 1: Develop the clear idea about the expansion of powers of trigonometric functions in terms of multiples of angles.

CLO 2: Learn to form an equation with trigonometric roots.

CLO 3: To gain the knowledge of the different expansions of circular functions and relation between circular and hyperbolic functions.

CLO 4: The theoretical knowledge gained to find the solution for the problem related to logarithm of a complex quantity.

CLO 5: Analysis and identify the series which comes under geometric progression or exponential series or logarithmic series or binomial series.

**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

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**Allied Course Offered by the Department of Physics to Students of Mathematics and Chemistry**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **ALLIED PHYSICS-1** |
| **COURSE CODE** | **:** | **BPHYSA- 11** |
| **COURSE CREDIT** | **:** | **4** |

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## COURSE OBJECTIVES

While studying the **ALLIED PHYSICS - I**, the Learner shall be able to:

CO 1: Describe the basics of Waves and Oscillations and their application

CO 2: Discuss the fundamentals of Properties of matter and their day to day Applications

CO 3: Explain the concept of thermal physics

CO 4: apply and analyze the basics of Electricity and Magnetism

CO 5: Demonstrate the working principle of Geometrical optical instruments

## COURSE SYLLABUS

**BLOCK I: Waves and Oscillations**

Simple harmonic motion – composition of two simple harmonic motion at right angles (periods in the ratio 1:1) – Lissajou's figures – uses. laws of transverse vibrations of strings – Melde's string – transverse and longitudinal modes -Sonometer-determination of a.c frequency using sonometer (steel and brass wires). Ultrasonics – production – application and uses – reverberation – factors for good acoustics of hall and auditorium.

**BLOCK II: Properties of matter**

Elasticity : Elastic constants – bending of beam – Young's modulus by non- uniform bending.

Energy stored in a stretched wire – torsion in a wire – determination of rigidity modulus by torsional pendulum – static torsion. Viscosity: Coefficient of viscosity – Poissuelle's formula – comparison of viscosities - burette method – Stoke's law – terminal velocity – viscosity of highly viscous liquid – lubrication. Surface tension: Molecular theory of surface tension – excess of pressure inside a drop and bubble – variation of surface tension with temperature – Jaeger's method.

**BLOCK III : Thermal Physics**

Joule-Kelvin effect – Joule-Thomson porous plug experiment – theory and application. - liquefaction of gasses – Linde's process – Helium I and II – adiabatic demagnetization. Thermodynamic equilibrium – laws of thermodynamics – entropy change of entropy in reversible and irreversible processes.

**BLOCK IV: Electricity and Magnetism**

Capacitor – energy of a charged capacitor - loss of energy due to sharing of charges – Magnetic field due to a current carrying conductor – Biot Savart's Law – Field along the axis of the coil carrying current. AC current:peak, average and RMS values of ac current and voltage – power factor and current values in an ac circuit. Circuit control and protective devices -switch and its types – fuses circuit breaker and relays.

**BLOCK V: Geometrical optics**

Refraction – Refractive index by microscopy – air cell – refraction at grazing incidence and grazing emergence in prisms – Dispersion-combination of two small angled prisms to produce dispersion without deviation and deviation without dispersion – direct vision prism – constant deviation prism – defects of images – coma – distortion. Lens:spherical and chromatic aberration in lenses.

**Books for study**


1. Allied Physics by R. Murugesan, S.Chand& Co, New Delhi(2008).
2. Waves and Oscillations by Brijlal and N. Subramanyam, Vikas Publishing house,New Delhi.
3. Properties of Matter by Brij Lal and N.Subramaniam, S. Chand & Co., New Delhi(1994).
4. Heat and Thermodynamics by J.B.Rajam and C.L.Arora, S.Chand& Co., 8th edition, New Delhi(1976).
5. Optics and Spectroscopy by R. Murugesan, S.Chand& Co, New Delhi, (2005).


**Books for Reference**


1. Fundamentals of Physics by Resnick Halliday and Walker, John Willey and Sons, Asia Pvt.Ltd., 6th edition, Singapore.
2. Text book of Sound by V.R.Khanna and R.S.Bedi, Kedharnaath Publish & Co, 1st edition, Meerut (1998).
3. Electricity and Magnetism by N.S. Khare and S.S. Srivastava, Atma Ram & Sons, 10th Edition, New Delhi (1983).
4. Optics by D.R. Khanna and H.R. Gulati, S. Chand & Co., New Delhi (1979).


**Web Resources**

1. Simple harmonic motion - https://www.youtube.com/watch?v=pujd7oFvO-8
2. Composition of two SHM at right angles - https://www.youtube.com/watch?v=-tcWmw2Ktok
3. Lissajous figure - https://www.youtube.com/watch?v=xrejP8ZG9Hs
4. Law of transverse vibration of string - https://www.youtube.com/watch?v=bVLiJ9qMH2o
5. Melde's experiment - https://www.youtube.com/watch?v=fqhek1wT5-s

6. Production of ultrasonics - https://www.youtube.com/watch?v=Wbnic_2Yr9U
7. Magnetostriction method - https://www.youtube.com/watch?v=8c2ZXnobKhs
8. Piezoelectric effect - https://www.youtube.com/watch?v=mD1Vyh9FMq0
9. Inverse piezoelectric effect - https://www.youtube.com/watch?v=pnvpsl3bzwQ
10. Application of ultrasonic - https://www.youtube.com/watch?v=T_ibVBBAxwI
11. Reverberation - https://www.youtube.com/watch?v=kL6AyX0FXRs
12. Reverberation time - https://www.youtube.com/watch?v=94NzKCse4N0
13. Sabines formula - https://www.youtube.com/watch?v=EGUrtKe9seM
14. Factors affecting acoustics of building - https://www.youtube.com/watch?v=slCLMbE_6vo
15. Stress and strain - https://www.youtube.com/watch?v=3sgcb7ImNFw
16. Hooke's law - https://www.youtube.com/watch?v=BGQKjmgRjQs
17. Different moduli of elasticity - https://www.youtube.com/watch?v=TMP0degeWvg
18. Poisson's ratio - https://www.youtube.com/watch?v=I4UkkQEUUMI
19. Energy stored in stretched wire - https://www.youtube.com/watch?v=pBSfQ2HjZVQ
20. Bending of beams - https://www.youtube.com/watch?v=1WwpzH02ujs
21. Theory of non uniform bending - https://www.youtube.com/watch?v=WN9k_lRTQQw
22. Determination of young's modulus - https://www.youtube.com/watch?v=x4AI3bWk61w
23. Torsion of a wire - https://www.youtube.com/watch?v=mhRH96SA7M4
24. Determination of rigidity modulus - https://www.youtube.com/watch?v=wWW9rRWqbTc
25. Coefficient of viscosity - https://www.youtube.com/watch?v=97a_ZOUtNo8
26. Streamline flow - https://www.youtube.com/watch?v=nDBhCFS7ggw
27. Turbulent flow - https://www.youtube.com/watch?v=1C1jP4ksiRw
28. Reynolds number - https://www.youtube.com/watch?v=FdpPabyn6Ig
29. Poiseuilles law - https://www.youtube.com/watch?v=jHg2G77P40c
30. Stokes law - https://www.youtube.com/watch?v=ybEMFkPaXeQ
31. Molecular theory of surface tension - https://www.youtube.com/watch?v=gP4_Y0lAjkM
32. Excess pressure inside a liquid drop - https://www.youtube.com/watch?v=A3kvpLOtzsc
33. Jaegar's method - https://www.youtube.com/watch?v=hDXoCYSeut4
34. Kinetic theory and its postulates - https://www.youtube.com/watch?v=o3f_VJ87Df0

35. Vanderwaal's equation of state - https://www.youtube.com/watch?v=XcJtXTTZiGc
36. Derivation of critical constant - https://www.youtube.com/watch?v=tJABZMr6JpM
37. Joule – Kelvin effect - https://www.youtube.com/watch?v=y8fAdT97ahA
38. Porous plug experiment - https://www.youtube.com/watch?v=xuCcqtm1OVc
39. Linde's process - https://www.youtube.com/watch?v=HmGDnaKZxxU
40. Adiabatic demagnetization - https://www.youtube.com/watch?v=fLrCtXwhDMU
41. Helium I and II - https://www.youtube.com/watch?v=lJiFxyKpXBU
42. Zeroth law of thermodynamics - https://www.youtube.com/watch?v=10LJ1yqRx6U
43. First law of thermodynamics - https://www.youtube.com/watch?v=f4Qzpq-0cs0
44. Reversible and irreversible process - https://www.youtube.com/watch?v=hpur62rjYuw
45. Third law of thermodynamics - https://www.youtube.com/watch?v=L3HECVXhLZI
46. Carnot engine - https://www.youtube.com/watch?v=1havV-LB0dA
47. Entropy in carnot cycle - https://www.youtube.com/watch?v=-dcVMGNfCpk
48. Capacitance of a conductor - https://www.youtube.com/watch?v=3c7XrhZaUk8
49. Energy of a charged capacitor - https://www.youtube.com/watch?v=2TOU50Wz4o8
50. Energy loss due to sharing of capacitors - https://www.youtube.com/watch?v=Tp6A98i3uJ0
51. Maxwell's screw rule - https://www.youtube.com/watch?v=gg45fXtpWeE
52. Biot savart's law - https://www.youtube.com/watch?v=DjYn5_6K4hY
53. Emf due to rotation of coil - https://www.youtube.com/watch?v=wPIucuBFHeA
54. Rms, effective value - https://www.youtube.com/watch?v=-nITJzYEsd8
55. Mean, average value of A.C - https://www.youtube.com/watch?v=QBQBdSwh8k4
56. Power in A.C circuit - https://www.youtube.com/watch?v=tK9AwJPq9jI
57. Wattless current - https://www.youtube.com/watch?v=yakLG6Pu6dg
58. Circuit breaker and isolators - https://www.youtube.com/watch?v=8QLVvyNfEgc
59. Relay coil - https://www.youtube.com/watch?v=n9renPKEtUc
60. Refraction - https://www.youtube.com/watch?v=v5SuSB_93FM
61. Refractive index - https://www.youtube.com/watch?v=4heHz65oVsI
62. Critical angle - https://www.youtube.com/watch?v=5bkiQob8ikc
63. Application of refraction of light - https://www.youtube.com/watch?v=0TtFwGH55EI
64. Refraction through a prism - https://www.youtube.com/watch?v=-1Zes_RGP5I
65. Deviation without dispersion - https://www.youtube.com/watch?v=_M4aXmx9cvI
66. Direct vision spectroscope - https://www.youtube.com/watch?v=64C7e3bATgQ

67. Constant deviation prism - https://www.youtube.com/watch?v=lHJJc4r_z20
68. Comatic aberration - https://www.youtube.com/watch?v=8wlJJd4J7_k
69. Spherical aberration - https://www.youtube.com/watch?v=hQ4jJrXZS84

**COURSE OUTCOMES**

After completion of the **ALLIED PHYSICS-I**, the Learner will be able to:

CLO 1: Demonstrate conceptual understanding of the fundamental Physics principles.

CLO 2: Explain the concept of elasticity and identify the materials suitable for a application

CLO 3: Apply analyze the laws of Thermodynamics and their practical applications

CLO 4: Demonstrate the working principle of Field along the axis of the coil carrying current using – Biot Savart's Law

CLO 5: Construct and demonstrate combination of two small angled prisms to produce dispersion without deviation and deviation without dispersion

**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

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**B.Sc., Physics - Syllabus – I year – II Semester (Distance Mode)**

| | | |
|---|---|---|
| ***பாடப்பெயர்*** **(Course Title)** | : | **தமிழ்(Tamil )** |
| ***பாடக்குறியீடு*** **(Course Code)** | : | **BFTMS-21** |
| ***பாடகற்றல்அளவெண்*** **(Course Credits)** | : | **4** |

***பாடநோக்கங்கள்***

5. தமிழ்இலக்கியங்களைஅறிமுகநோக்கில்எடுத்துரைத்தல்
6. மொழித்திறன், மொழியறிவு, இலக்கியப்பொதுஅறிவுபெறும்வகையில்விவரித்தல்

***பாடத்தினைப்படிப்பதால்விளையும்பயன்கள்***

1. தமிழ்உரைநடைபற்றியும், ஜெயகாந்தனின்சிறுகதைகள்பற்றியும்எடுத்துரைப்பர்.
2. தமிழ்பற்றியும்அலுவலகத்தொடர்புமடல்கள்எழுதுவதுஎப்படிஎன்பதுபற்றியும், மொழியைதிறம்படஎவ்வாறுபயன்டுத்துவதுஎன்பதுபற்றியும்எடுத்துரைப்பர்.

***பிரிவு – 1*** **ஜெயகாந்தனின் "நான்இருக்கிறேன்" – சிறுகதை**

*தமிழ்உரைநடையில்சிறுகதைவளர்ச்சி – தமிழில்கதைஇலக்கியத்தோற்றம், தமிழ்ச்சிறுகதைகளின்தோற்றமும்வளர்ச்சியும், சிறுகதைஇலக்கணம் – தமிழ்ச்சிறுகதைகளில்ஜெயகாந்தன் – ஜெயகாந்தன்சிறுகுறிப்பு – கதைஅரங்கம்அறிமும், நான்இருக்கிறேன்கதைச்சுருக்கம் – நான்இருக்கிறேன்சிறுகதை – வியாதிக்காரன்அனுபவங்கள், சாகக்கற்றுக்கொடுத்தநொண்டி, வாழக்கற்றுக்கொடுத்தவியாதிக்காரன், நான்இருக்கிறேன்அம்மா, – நான்இருக்கிறேன் – சிறுகததைத்திறனாய்வு.*

***பிரிவு – 2*** **வா.செ.குழந்தைசாமியின்அறிவியல்தமிழ்ஆக்கம்இற்றைநிலை**

*அறிவியல்தமிழ் – இயற்றுதல்அறிந்தோம்புனைதல்இல்லை – தமிழில்அறிவியல்இலக்கியம்படைப்போம் – வா.செ. குழந்தைசாமி– அறிமுகம் –*

அறிவியல்தமிழ் – எந்தத்துறைகளைக்குறிக்கும் – அறிவியல்தமிழைஉள்ளடக்கியது – தோற்றம் – கலைச்சொல்லாக்கப்பணி – விடுதலைக்குமுன் – விடுதலைக்குப்பின் – பாடநூல்நிறுவனத்தின்பங்கு – பதிப்பகங்களின்பங்கு – பல்கலைக்கழகங்களின்பங்கு – இதழ்களின்பங்கு – இலங்கைத்தமிழரின்பங்கு – கருதவேண்டியவை.

***பிரிவு – 3*** ***சமயஇலக்கியக்காலம் (கி.பி.700 – கி.பி 1100)***

தமிழில்சமயஇலக்கியங்கள் – சமணஇலக்கியத்தோற்றம் – பௌத்தஇலக்கியத்தோற்றம் – தமிழில்பௌத்தஇலக்கியங்கள் – வைணவஇலக்கியங்கள் – சைவஇலக்கியத்தோற்றம் – தமிழில்சைவஇலக்கியங்கள் – வைணவஇலக்கியத்தோற்றம் – தமிழில்வைணவஇலக்கியங்கள் – தமிழில்இசுலாமியஇலக்கியங்கள் – தமிழில்கிறிஸ்தவஇலக்கியங்கள்.

***பிரிவு – 4*** ***சிற்றிலக்கியக்காலம் (கி.பி. 700 – கி.பி. 1400)***

சிற்றிலக்கியத்தோற்றம் – சிற்றிலக்கியவகைகள் – இலக்கணநூல்கள் – உலா – கலம்பகம் – பரணி – பிள்ளைத்தமிழ் – கோவை – தூது.

***பிரிவு – 5*** ***உரையாசிரியர்கள்காலம் (கி.பி. 1200 கிபி. 1800)***

உரைநூல்களின்தோற்றம் – பயன்கள் – உரைவகைகள் – நக்கீரர் – இளம்பூரணர் – பேராசிரியர் – சேனாவரையர் – நச்சினார்க்கினியர் – கல்லாடர் – தெய்வச்சிலையார்போன்றோர் – அடியார்க்குநல்லார் – பரிமேலழகர் – பிரபந்தஉரையாசிரியர்கள் – நன்னூல்உரையாசிரியர்கள் .

***பிரிவு – 6*** ***புத்திலக்கியக்காலம் (கி.பி. 1800 – கிபி 2000)***

தமிழில்புதினம் – தமிழில்சிறுகதை – தமிழில்புதுக்கவிதைகள் – தமிழில்உரைநடைநாடகங்கள் – புதினங்கள் – சிறுகதைகள் – இலக்கியங்கள் – மரபுக்கவிதைஇலக்கியங்கள் – புதுக்கவிதைஇலக்கியங்கள் – தமிழில்ஐக்கூக்கவிதைகள்.

***பிரிவு – 7*** ***கருத்துப்பரிமாற்றமொழித்திறன்***

கருத்துவிளக்கக்கட்டுரைகள் – செய்திக்கட்டுரைகள் – சொற்பொழிவு – குழுவிவாதங்கள் – நண்பர்களுடன்உரையாடும்திறன் – கணினித்தமிழ் – கட்டுரை – பெண்ணியம் – தலைப்பு – தேர்ந்தெடுக்கும்முறை – தகவல்கள்சேகரிக்கும்முறை – தகவல்திரட்டல் – நகைச்சுவைத்திறன் – அவைஅறிதல் – உச்சரிப்புக்கவனம் – குழுவிவாதஅமைப்பும்குறிக்கோளும் – உரையாடலில் – சுயபுராணம்தவிர்த்தல் – உடன்படவைக்கும்நாகரிகஉத்தி .

***பிரிவு – 8*** ***அலுவலகத்தொடர்புமடல்கள்***

நட்புறவுமடல்கள் – வேண்டுதல்மடல்கள் – குறைதெரிவிக்கும் / புகார்மடல்கள் – கருத்துமடல்கள் – விண்ணப்பமடல்கள் – அலுவலகத்தொடர்புமடல்கள் – விண்ணப்பமடலின்படிநிலைகள் – தன்குறிப்புவிவரங்கள் – விண்ணப்பமடலின்வடிவமைப்பு – விண்ணப்பமடல்எழுதும்முறை – குறிப்பு – வரைவு – கடிதம் – குறிப்புமடல் – அலுவலகஆணை – நேர்முகக்கடிதம்.

***பிரிவு – 9*** ***எழுத்து – சொல்பிழைகளும்திருத்தமும்***

ஒலிமயக்கம்தரும்எழுத்துக்கள் – ர,றஒலிமயக்கம் – ந, ன,ணஒலிமயக்கம் – ல,ள,ழ,ஒலிமயக்கம் – சொல்முதலில்வரும்எழுத்துமரபுகள் – சொல்இடையில்வரும்எழுத்துமரபுகள் – சொற்களின்சந்திப்புமரபுகள் – வேற்றுமைப்புணர்ச்சியும்அல்வழிப்புணர்ச்சியும் – உயிர்முன்உயிர்புணர்தல் – குற்றியலுகரப்புணர்ச்சி – வல்லினஒற்றுமிகும்இடங்களும்மிகாஇடங்களும்.

*பிரிவு – 10* **இலாக்கியஅறிவுவினாவிடை**

*பாடப்பகுதிதொடர்பானவை – பொதுவானதமிழ்இலக்கியம்தொடர்பானவை.*

**பார்வைநூல்கள்:**


1. மு. வரதராசன், தமிழ்இலக்கியவரலாறு, சாகித்யஅக்காதெமி, புதுடெல்லி.
2. து. ச. விமலானந்தன், தமிழ்இலக்கியவரலாறு, மீனாட்சிபுத்தகநிலையம், மதுரை.
3. தமிழண்ணல், புதியநோக்கில்தமிழ்இலக்கியவரலாறு, மீனாட்சிபுத்தகநிலையம், மதுரை.
4. தமிழண்ணல், இனியதமிழ்மொழியின்இயல்புகள் –1,2,3 பகுதிகள், மீனாட்சிபுத்தகநிலையம், மதுரை.
5. முத்து – கண்ணப்பன்.தி..தமிழில்தவறுகளைத்தவிப்போம், பாரிநிலையம், 184, பிராட்வே, சென்னை.
6. கீ. இராமலிங்கனார், தமிழில்எழுதுவோம், கழகவெளியீடு, சென்னை.
7. செ. முத்துவீராசாமிநாயுடு, ஆவணங்களும்பதிவுமுறைகளும், கழகவெளியீடு, சென்னை.
8. டாக்டர்சு. பாலசுப்பிரமணியன், தகவல்தொடர்புக்கல்வி, மாநிலப்பள்ளிசாராக்கல்விக்குருவூலம், சென்னை.
9. எஸ். கலைவாணி, இதழியல்உத்திகள், பராசக்திவெளியீடு, குற்றாலம்.
10. டாக்டர் அ. சாந்தா, டாக்டர்வீ. மோகன், மக்கள்ஊடகத்தொடர்பியல்புதியபரிமாணங்கள், மீடியாபப்ளிகேஷன்ஸ், மதுரை.
11. பி.எஸ். ஆச்சார்யா, உயர்வுதரும்உரையாடல்கலை, நர்மதாபதிப்பகம், சென்னை.
12. மு. முத்துக்காளத்தி, பேசுவதுஎப்படி, கண்ணம்மாள்பதிப்பகம், பாரிநிலையம், சென்னை.


**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

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**B.Sc., Physics - Syllabus – I year – IISemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **Foundation in English-II (Literature and Use of English)** |
| **COURSE CODE** | **:** | **BFEG- 02** |
| **COURSE CREDIT** | **:** | **4** |

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## COURSE OBJECTIVES

- To cultivate the creativity among the learners
- To improve the reading skills of the learners
- To enhance the vocabulary of the learners
- To develop pronunciation skills
- To imbibe the use of internet for developing language skills

## COURSE OUTCOMES

On successful completion of the Course, the learners will be able to:

- critically evaluate the literary texts
- read the passages effectively
- speak with good accent
- communicate through online

**Block-1 Literary Texts**

Rabindranath Tagore's *Sacrifice* and John Donne's *The Sun Rising*

**Block- 2 Reading Comprehension**

Reading passages-Preparing a glossary from passage- reading the meaning- respond to questions

**Block- 3 Vocabulary and Grammar**

Synonyms and Antonyms- Homophones-Making of Nouns-Making of Adjectives-Compound Words-Phrases and Idioms-Words often confused-Spelling- Tenses

**Block-4 Pronunciation and Spoken English**

Importance of English-Pronunciation: An Exposition-Speech Sounds-Sounds and Spelling: The Relationship-Attributes of Good Speech-Dialogue Situations/ Situational Dialogues

**Block-5 The Internet English**

Email-Chat Groups-Virtual Words-The Web-Commentary

**References:**

1. *Balasubramanian T. English* Phonetics for Indian *Students* - A Workbook. 2016.
2. Daniel Jones. *Cambridge English Pronouncing Dictionary*. Cambridge University Press, 2011.
3. Tagore, Rabindranath. *Sacrifice and Other Plays*.Niyogi Books, 2012.

**Web Resources:**

1. https://www.poetryfoundation.org/podcasts/75363/the-sun-rising
2. https://nptel.ac.in/courses/109/103/109103135/
3. https://nptel.ac.in/content/storage2/courses/109106085/downloads/03-%20Phonetics%20and%20Phonology-%20week%203.pdf
4. https://nptel.ac.in/courses/109/106/109106085/
5. https://nptel.ac.in/courses/109/107/109107172/

**Tamil Nadu Open University**
**Department of Mathematics**
**School of Science,**
**Chennai – 15**

**B.Sc., Mathematics - Syllabus – I year – IISemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **DIFFERENTIALCALCULUS** |
| **COURSE CODE** | **:** | **BMSS- 21** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **DIFFERENTIALCALCULUS**, the Learner shall be able to:

CO 1: Develop the concepts of differential calculus in-depth

CO 2: Find the partial derivatives of functions of two functions.

CO 3: Describe the concepts of envelope and find envelope of the one parameter and two parameter family of curves.

CO 4: Find the pedal equation of the curve.

CO 5: Understand the concept of asymptotes.

## COURSE SYLLABUS

**BLOCK - I**

Successive differentiation - n th derivative- standard results – trigonometrical - transformation – formation of equations using derivatives - Leibnitz's theorem and its applications

Chapter 3 section 1.1 to 1.6, 2.1 and 2.2

**BLOCK – II**

Total differential of a function – special cases – implicit functions - partial derivatives of a function of two functions - Maxima and Minima of functions of 2 variables- Lagrange's method of undetermined multipliers.

Chapter 8 section 1.3 to 1.5 and 1.7, Section 4, 4.1 and 5 .

**BLOCK – III**

Envelopes – method of finding envelopes – Curvature- circle, radius and centre of curvature-Cartesian formula for radius of curvature – coordinates of the centre of curvature – evolute-and involute - radius of curvature and centre of curvature in polar coordinates – p-r equation

Chapter 10 Section 1.1 to 1.4 and Section 2.1 to 2.7.

**BLOCK – IV**

P-r equations- angle between the radius vector and the tangent – slope of the tangent in the polar coordinates – the angle of intersection of two curves in polar coordinates- polar sub tangent and polar sub normal – the length of arc in polar coordinates.

Chapter 9 Section 4.1 to 4.6

**BLOCK – V**

Asymptotes parallel to the axes – special cases – another method for finding asymptotes -asymptotes by inspection – intersection of a curve with an asymptote.

Chapter 11 - Section 1 to 4, Section 5.1 , 5.2,6 and 7

Content and treatment as in Calculus Vol - 1 by S. Narayanan and T.K. Manicavachagompillay - S. Viswanathan publishers – 2006.

**Reference Books:**

1. Calculus by Thomas and Fenny ,Pearson Publication

2. Calculus by Stewart

Web Resource:

https://www.youtube.com/watch?v=JinafWKRSLU

https://www.youtube.com/watch?v=KijGLjxKlsY

https://www.youtube.com/watch?v=PEqCa0U77mc

https://www.youtube.com/watch?v=EGnI8WyYb3o

https://www.youtube.com/watch?v=vqgLQznDCBg

https://www.youtube.com/watch?v=FrD7uu6chP0

https://www.youtube.com/watch?v=qW9slRb9Fic

https://www.youtube.com/watch?v=-76__Dm9H2A

https://www.youtube.com/watch?v=_RZx377w4nc

https://www.youtube.com/watch?v=Pg0rkXba2E4

https://www.youtube.com/watch?v=IlaInBv_qKg

https://www.youtube.com/watch?v=w8Cropgt12I

https://www.youtube.com/watch?v=m8lmI6LQyWs

https://www.youtube.com/watch?v=CBrIHByAlrw

**COURSE LEARNING OUTCOMES**

After completion of the **DIFFERENTIALCALCULUS**, the Learner will be able to:

CLO 1: Enriched the knowledge how to find the derivatives using trigonometrical transformation and using Leibnitz's theorem.

CLO 2: Ability to find the maxima and minima of functions of two variables.

CLO 3: Interpret and apply the basic knowledge to find the involute and evolute of the curve.

CLO 4:Find the angle between the radius vector and the tangent.

CLO 5: Enriched with various methods like Asymptotes parallel to the axes and

asymptotes by inspection to find the asymptotes for the given curve.

**Tamil Nadu Open University**
**Department of Mathematics**
**School of Science,**
**Chennai – 15**

**B.Sc., Mathematics - Syllabus – I year – II Semester (Distance Mode)**

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|---|---|---|
| **COURSE TITLE** | **:** | **ANALYTICAL GEOMETRY** |
| **COURSE CODE** | **:** | **BMSSE21** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **ANALYTICAL GEOMETRY**, the Learner shall be able to:

CO 1: Develop an understanding of the importance of conics.
CO 2: Represent the general polar equation of a line and a circle.
CO 3: Describe about rectangular coordinate system.
CO 4: Identify the equation of Straight lines, its symmetrical form and also identifying the point on the line, direction ratio on the line.
CO 5:Develop an idea to find the various forms in which the equation of sphere can be obtained.

## COURSE SYLLABUS

**BLOCK– I**

Chord of contact – polar and pole,- conjugate points and conjugate lines – chord with (x1,y1) as its midpoint – diameters – conjugate diameters of an ellipse.- semi diameters- conjugatediameters of hyperbola.

Chapter – 7 Sections 7.1 to 7.3 , Chapter – 8 Section 8.1 to 8.5

**BLOCK – II**

Co-normal points, co-normal points as the intersection of the conic and a certain R.H. concyclic points – Polar coordinates, general polar equation of straight line – polar equation of a circle on $A_1$ $A_2$ as diameter, equation of a straight line, circle, conic – equation of chord , tangent, normal. Equations of the asymptotes of a hyperbola.

Chapter – 9 Sec 9.1 to 9.3 , Chapter – 10 Sec 10.1 to 10.8.

**BLOCK - III**

Introduction – System of Planes - Length of the perpendicular – orthogonal projection.

Chapter 2 Sec 2.1 to 2.10.

**BLOCK - IV**

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

Chapter 3 Sec 3.1 to 3.8

**BLOCK – V**

Equation of a sphere; general equation ; section of a sphere by a plane - equation of the circle ; tangent plane ; radical plane ; coaxial system of spheres; orthogonal spheres.

Chapter 6 Sec 6.1 to 6.9

Contents and treatment as in

1. Analytical Geometry of 2D by P.Durai Pandian- Muhil publishers for Unit – 1 and 2

2. Analytical Solid Geometry of 3D by Shanthi Narayan and Dr.P.K. Mittal for Unit – 3 to 5

**Reference Books:**

1. Analytical Geometry of Two Dimension by T. K. Manikavachakam Pillai and S. Narayanan.

2. Analytical Geometry of Three Dimension by T. K. Manikavachakam Pillai and S. Narayanan

Web Resource:

https://www.youtube.com/watch?v=yL7mnc4ohUU

https://www.youtube.com/watch?v=zUW-Wd0PwE0

https://www.youtube.com/watch?v=pyAI1Ce_Fuk

https://www.youtube.com/watch?v=pyAI1Ce_Fuk

https://www.youtube.com/watch?v=Ex-BnsZFlkI

https://www.youtube.com/watch?v=rnvCG_BZcL4

https://www.youtube.com/watch?v=5LxByNCzOkY

https://www.youtube.com/watch?v=1hmoAxxNYpQ

https://www.youtube.com/watch?v=HC5YikQxwZA

https://www.youtube.com/watch?v=duFRYId7kNU

https://www.youtube.com/watch?v=HMzqbf8muls

https://www.youtube.com/watch?v=Q4-xjTFszIw

https://www.youtube.com/watch?v=YqosF6buvUs

**COURSE LEARNING OUTCOMES**

After completion of the **ANALYTICALGEOMETRY**, the Learner will be able to:

CLO 1: Familiarized with conjugate diameters of an ellipse and hypberola.

CLO2: To impart the knowledge of asymptotes, find the equations of asymptotes of a hyperbola.

CLO 3: Gaining the knowledge of direction cosines and direction ratios to find the equation of plane and straight line.

CLO 4: Learn about the concept of Condition of coplanarity, shortest distance between the lines and length of perpendicular of the line.

CLO 5: Further extend their knowledge with respect to tangent line to the sphere, tangent

plane to the sphere, equation of sphere through the given circle and about orthogonal spheres and its conditions

**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

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**Allied Course Offered by the Department of Physics to Students of Mathematics and Chemistr**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **ALLIED PHYSICS-II** |
| **COURSE CODE** | **:** | **BPHYSA-22** |
| **COURSE CREDIT** | **:** | **4** |

## COURSE OBJECTIVES

While studying the **ALLIED PHYSICS - II**, the Learner shall be able to:

CO 1: Discuss the fundamental properties of light

CO 2: Describe the structure of atom with various atom models

CO 3: Interpret the overview of nucleus, its types, constituent particles, binding energy and the nuclear process of radioactivity.

CO 4: Explain the basics of Elements of relativity and quantum mechanics

CO 5: Discuss the fundamental of Electronics and their applications.

**COURSE SYLLABUS**

**BLOCK I : Physical Optics**

Velocity of light – Michelson's method. Interference: Colours of thin films –air wedge – determination of diameter of a thin wire by air wedge – test for optical flatness – Diffraction – Fresnel's explanation of rectilinear propagation of light – theory of transmission grating – Normal incidence. Polarization – double refraction - optical activity – polarimeter.

**BLOCK II : Atomic Physics**

Atom model – vector atom model – electron, spin, quantum numbers – Pauli's exclusion principle – Electronic configuration of elements and periodic classification of elements – various quantum numbers – Magnetic dipole moment of electron due to orbital and spin motion – Bohr magneton – spatial quantisation – Stern and Gerlach experiment.

**BLOCK III : Nuclear Physics**

Nuclear model – liquid drop model – magic numbers - shell model – Nuclear energy – mass defect – binding energy. Radiation detectors – ionization chambers – GM Counter – Fission Controlled and Uncontrolled chain reaction – nuclear reactor – Thermonuclear reactions – stellar energy.

**BLOCK IV: Elements of relativity and quantum mechanics**

Postulates of theory of relativity – Lorentz transformation equations – derivation – length contraction – Time dilation-Mass energy equivalence – uncertainty principle –

Postulates of wave mechanics – Schrodinger's equation – application to a particle in a box.

**BLOCK V: Electronics**

Basic Electronics: Zener diode – voltage regulator – LED – Transistor RC coupled amplifier – feedback principle – condition for oscillation – phase shift oscillator – Wein's bridge oscillator.

Digital Electronics: NAND and NOR gates – Universal building blocks. Boolean algebra – Demorgan's theorem – verification – elementary ideas of ICs – SSI ,MSI, LSI and VLSI – Half adder, Full adder, Half Subtractor and Full subtractor.

**Books for study**


1. Allied Physics by R. Murugesan, S.Chand& Co, New Delhi(2008).
2. Allied Physics by K. Thangaraj and D. Jayaraman, Popular Book Depot, Chennai(2004).
3. Text book of Optics by Brijlal and N. Subramanyam, S.Chand& Co, New Delhi(2002).
4. Modern Physics by R. Murugesan, S.Chand& Co, New Delhi (2005).
5. Applied Electronics by A. Subramaniyam, National Publishing Co., 2nd Edition, Chennai(2001).


**Books for Reference**


1. Fundamentals of Physics by Resnick Halliday and Walker, John Willey and Sons, Asia Pvt.Ltd., 6th Edition, Singapore.
2. Optics by D.R. Khanna and H.R. Gulati, S. Chand & Co., New
3. Delhi (1979).
4. Concepts of Modern Physics by A.Beiser, Tata McGraw Hill Publication, New Delhi(1997).
5. Digital Fundamentals by Thomas L.Floyd, Universal Book Stall – New Delhi (1998).


**Web Resources**

1. https://ncert.nic.in/ncerts/l/leph201.pdf
2. https://books.google.co.in/
3. https://rb.gy/orlmk8

4. https://www.analog.com/
5. http://www.ee.surrey.ac.uk/
6. https://digitalcommons.unl.edu/
7. https://www.khanacademy.org/
8. https://open.umn.edu

## COURSE LEARNING OUTCOMES

After completion of the **ALLIED PHYSICS-II**, the Learner will be able to:

CLO 1: Demonstrate and determine the optical activity of materials using the properties of light (Polarization)

CLO 2: Classify the elements on the basics of electronic configuration and periodic classification of elements

CO 3: Identify different types of nuclides. Estimate binding energy of the nucleons from mass defect and. Calculate the nuclear energy released during nuclear fission andnuclear fusion. Point out the harmful effects of nuclear reactor.

CO 4: Explain the Postulates of wave mechanics and discuss the Schrodinger's equation and their application.

CLO 5: Design and demonstrate the Zener diode as a voltage regulator and design logic circuits for simplified Boolean expressions

**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

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**B.Sc., Physics - Syllabus – I year- II Semester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **ENVIRONMENTAL STUDIES** |
| **COURSE CODE** | **:** | **CCES** |
| **COURSE CREDIT** | **:** | **2** |

## COURSE OBJECTIVES

While studying the **ENVIRONMENTAL STUDIES**, the Learner shall be able to:

- To help students to gain the fundamental knowledge of the environment
- To create in students an awareness of current environmental issues
- To inculcate in students an eco-sensitive, eco-conscious and eco-friendly attitude.

## COURSE OUTCOMES

After completion of the **ENVIRONMENTAL STUDIES**, the Learner will be able to:

- Articulate the interdisciplinary context of environmental issues
- Adopt sustainable alternatives that integrate science, humanities and social perspectives
- Appreciate the importance of biodiversity and a balanced ecosystem
- Calculate one's carbon print

**Block : 1**

The Multi-disciplinary nature of environmental studies - Definition, scope and importance - Need for public awareness.

**Block :2**

Natural Resources - Renewable and non- renewable resources - Natural resources and associated problems.

a. Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

b. Water resources: Use and over – utilization of surface and ground water, floods, drought, conflicts over water, dams – benefits and problems.

c. Mineral resources**:** Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

d. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity case studies.

e. Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.

f. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Role of an individual in conservation of natural resources - Equitable use of resources for sustainable lifestyles.

**Block :3**

Ecosystems - Concept of an ecosystem - Structure and function of an ecosystem - Producers, consumers and decomposers - Energy flow in the ecosystem - Ecological succession - Food chains, food webs and ecological pyramids - Introduction, types, characteristic features, structure and function of the following ecosystem:-

a. Forest ecosystem

b. Grassland ecosystem

c. Desert ecosystem

d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

**Block :4**

Biodiversity and its conservation - Introduction – Definition : genetic, species and ecosystem diversity - Biogeographical classification of India - Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values - Biodiversity at global, National and local levels - India as a mega – diversity nation - Hot-spots of biodiversity - Threats to biodiversity : habitat loss, poaching of wildlife, man wildlife conflicts - Endangered and endemic species of India - Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

**Block :5**

Environmental Pollution - Definition - Causes, effects and control measures of : Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards - Solid waste Management - Causes, effects and control measures of urban and industrial wastes. - Role of an individual in prevention of pollution - Pollution case studies - Diaster management: floods, earthquake, cyclone and landslides.

**Block :6**

Social issues and the Environment - From Unsustainable to Sustainable development - Urban problems related to energy - Water conservation, rain water harvesting, watershed management - Resettlement and rehabilitation of people; its problems and concerns. Case studies - Environmental ethics: Issues and possible solutions - Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies - Wasteland reclamation - Consumerism and waste products - Environment Protection Act - Air (Prevention and Control of Pollution) Act - Water

(Prevention and control of Pollution) Act - Wildlife Protection Act - Forest Conservation Act - Issues involved in enforcement of environmental legislation - Public awareness.

**Block :7**

Human Population and the Environment - Population growth, variation among nations - Population explosion - Family Welfare Programme - Environment and human health - Human Rights - Value Education - HIV / AIDS - Women and Child Welfare - Role of Information Technology in Environment and human health - Case Studies.

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**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

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**B.Sc., Physics - Syllabus – II year – III Semester (Distance Mode)**

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| ***பாடப்பெயர்*** **(Course Title)** | : | ***தமிழ் –Tamil*** |
| ***பாடக்குறியீடு*** **(Course Code)** | : | *BFTMS–31* |
| ***பாடகற்றல்அளவெண்*** : (*Course Credits*) | | *4* |

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***பாடநோக்கங்கள்***

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*6.* *தமிழிலுள்ளசங்கஇலக்கியம், காப்பியஇலக்கியம், நீதிஇலக்கியம்குறித்துஅறிமுகநிலையில்மாணவர்களுக்குஅறிமுகம்செய்வதோடு, தமிழ்இலக்கியவரலாறுகுறித்தும்அறிமுகம்செய்தல*

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***பாடத்தினைப்படிப்பதால்விளையும்பயன்கள்***

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*7.* *தமிழிலுள்ளசங்கஇலக்கியம், காப்பியஇலக்கியம், நீதிஇலக்கியம்குறித்துஅறிமுகநிலையில்மாணவர்களுக்குஅறிமுகம்செய்வதோடு, தமிழ்இலக்கியவரலாறுகுறித்தும்எடுத்துரைப்பார்கள். அறிமுகம்செய்தல்.*

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***பிரிவு – 1*** ***எட்டுத்தொகை – புறநானூறு***

*எட்டுத்தொகை அறிமுகம் – புறநானூறு – அதியமான் நெடுமானஞ்சியை ஔவையார் பாடியது(புறம். 91) – வேள் பாரியைக் கபிலர் பாடியது (புறம். 107) – வையாவிக் கோப்பெரும்பேகனைப் பரணர் பாடியது (புறம். 142) – பாண்டியன் ஆரியப்படை கடந்த நெடுஞ்செழியன் பாடல் (புறம். 183) – சேரமான் கணைக்கால் இரும்பொறை பாடல் (புறம். 74) – பொன்முடியார் பாடல் (புறம். 312) – ஔவையார் பாடல் (புறம். 91) – பெருங்கோப்பெண்டு பாடல் (புறம். 248)– கணியன் பூங்குன்றனார் பாடல் (புறம். 192) – நரிவெருஉத்தலையார் பாடல் (புறம். 195) – தொடித்தலை விழுத்தண்டினார் பாடல் (புறம். 243) – பூதப்பாண்டியன் மனைவி பெருங்கோப்பெண்டு பாடல் (புறம். 248)*

***பிரிவு – 2*** ***நற்றிணை, குறுந்தொகை***

அகத்திணை பாடல்கள் – அன்பின் ஐந்திணை – நற்றிணை – குறுந்தொகை – பாடப்பகுதி – நற்றிணையில் குறிஞ்சி (1) – முல்லை (142) – மருதம் (210) – நெய்தல் (172) – பாலை (284) – குறுந்தொகையில் குறிஞ்சி (40) – முல்லை (167) – மருதம் (8) – நெய்தல் (290) – பாலை(135).

**பிரிவு – 3 கலித்தொகை**

கலித்தொகை – ஐந்திணை பாடிய புலவர்கள் – பாலைக்கலி (9)– பாலைபாடிய பெருங்கடுங்கோ – குறிஞ்சிக்கலி கபிலர் பாடல்(51) – நெய்தல்கலி நல்லந்துவனார் பாடல் (133).

**பிரிவு – 4 பத்துப்பாட்டு – நெடுநல்வாடை**

பத்துப்பாட்டு அறிமுகம் – நெடுநல்வாடை – இரண்டு களம் கொண்ட நாடகம் போன்றது – நெடுநல்வாடை – அகமா புறமா? – வாடைக்கால வருணனை – அரண்மனைத் தோற்றம் – அந்தப்புர அமைப்பு – அரசியின் இல்லமும் படுக்கையும் – புனையா ஓவியம் கடுப்ப அரசி – தோழியர், செவிலியர் அரசியை ஆற்றுதல் – உரோகிணியை நினைத்து அரசியின் பெருமுச்சு – பாசறையில் அரசன் – முன்னோன் முறைமுறை காட்டல் – நள்ளென் யாமத்தும் பள்ளிக்கொள்ளான் – நெடியவாடை – பிரிவுத்துயர்ப்படும் அரசிக்கு – பாசறையில் பணிகொட்டும் இரவிலும் தூங்காமல் புண்பட்ட வீரரைப் பார்க்கவந்த அரசனுக்கு நெடுநல்வாடை பெயர்ப்பொருத்தம்.

**பிரிவு – 5 திருக்குறள்**

பதினென்கீழ்க்கணக்கு – அறிமுகம் – திருக்குறள் – முப்பால் – பாடப்பகுதி – தீமையிலாத சொல்லுதல் வாய்மை – நெஞ்சமும் வாய்மையும் – வாய்மை எல்லா அறமும் தரும் – அகம் தூய்மை – முயற்சிப்பது சிறப்பு – முயற்சியில்லாதவனது நன்மை – வறுமைக்குக் காரணம் – முயற்சி விடற்பாலது அன்று – தலைவியின் குறிப்பினைத் தலைவன் அறிதல் – நாணமும் மகிழ்ச்சியும் அறிதல் – அயலவர்போல் சொல்லினும் குறிப்பறிதல் – அவள் நகைப்பின் நன்மைக் குறிப்பு – தோழி தனக்குள்ளே சொன்னது.

**பிரிவு – 6 நாலடியார், பழமொழி நானூறு**

செல்வம் சகடக்கால் போல வரும் – பெண் கல்வி – கல்வி அழகே அழகு – கல்வி கரையில கற்பவர் நாள்சில – நாய் அனையார் கேண்மை – கால்கால்நோய் காட்டுவர் பொதுமகளிர் – குலவிச்சை கல்லாமல் பாகம்படும் – நாய் பெற்ற தெங்கம் பழம் – நுணலும் தன் வாயால் கெடும் – நிறைகுடம் நீர்த்ஞும்பல் இல் – இறைத்தோறும் ஊறும் கிணறு

**பிரிவு – 7 ஏலாதி, திரிகடுகம், ஆசாரக்கோவை**

அன்புடையார்க்கு உள்ள ஆறு குணம் – எழுத்தின் வனப்பே வனப்பு – யாருக்கெல்லாம் ஈதல் வேண்டும்? திரிகடுகம் போலும் மருந்து – இம்மூன்றும் நன்மை பயத்தல் இல – இவர் மூவர் பெய் எனப் பெய்யும் மழை – முந்தையோர் கண்ட முறை – என்றும் அசையாத உள்ளத்தவர் – திறத்துளி வாழ்தும் என்பார் – பேதைகள் அல்லார் புகாஅர்.

**பிரிவு – 8 இன்னா நாற்பது, இனியவை நாற்பது**

*கடனுடையார் காணப் புகல் – உணர்வார் உணராக்கடை – யாம் என்பவரொடு நட்பு – இளமையுள் மூப்புப் புகல் – தொன்மை உடையார் கெடல் – எனைமாண்பும் தான் இனிது – ஈதல் எத்துணையும் ஆற்ற இனிது – திறம்தெரிந்து வாழ்தல் இனிது – அறிந்துஉரைத்தல் ஆற்ற இனிது – கற்றலின் காழ் இனியது இல்.*

***பிரிவு – 9 சிலப்பதிகாரம் – கனாத்திறம் உரைத்த காதை***

*சிலப்பதிகாரம் – அமைப்பியல் விளக்கம் – காப்பியக் கதைச் சூழல் – காதையின் கதைச்சுருக்கம் – அகனகர் வருணனை – மாலதி பாலளிக்கப் பாலகன் சோர்தல் – பாசண்டச் சாத்தற்குப் பாடு கிடந்த மாலதி – இடுபிணம் தின்னும் இடாகினிப் பேய் – பாசண்டச் சாத்தனின் அருளுதவி – தேவந்தி கதை – கண்ணகி தான்கண்ட கனவுரைத்தல் – பீடு அன்று – கோவலன் வருகை – சிலம்புள கொண்ம்.*

***பிரிவு – 10 மணிமேகலை – ஆபுத்திரன் திறம் அறிவித்த காதை***

*மணிமேகலை கர்ப்பிய அமைப்பு – முன்கதைச் சுருக்கம் – கதை நிகழும் சூழல் – காதையின் கதைச்சுருக்கம் – அபஞ்சிகன் மனைவி சாலி ஈன்ற குழவி – ஆ பாலுட்டி வளர்த்தல் – ஆ மகன் அல்லன் என் மகன் – ஆபுத்திரன் கல்வி கற்றல் – புலைசூழ வேள்வி – நள்ளிருளில் கொண்டு நடக்குவன் – நீ மகன் அல்லாய் நிகழ்ந்ததை உரையாய் – இதனொடு வந்த செற்றம் என்னை – சிறியை நீ, அவ ஆமகன் அதற்கு ஒத்தனை – ஆவொடு வந்த அழிகுலம் உண்டோ?.*

***பார்வைநூல்கள்:***


8. புறநானூறுமூலமும்உரையும், (இரண்டுதொகுதிகள்) ஔவைசு. துரைசாமிப்பிள்ளைஉரை, கழகவெளியீடு, சென்னை.
9. ற்றிணைமூலமும்உரையும், (இரண்டுதொகுதிகள்) ஔவைசு. துரைசாமிப்பிள்ளைஉரை, அருணாபப்ளிகேஷன்ஸ், 13–1 உஸ்மான்சாலை, சென்னை.
10. குறுந்தொகைமூலமும்உரையும், டாக்டர்உ.வே. சாமிநாதையர்உரை, கவீர்அறக்கட்டளை, சென்னை.
11. கலித்தொகைமூலமும்உரையும், பெருமழைப்புலவர்பொ.வே. சோமசுந்தரனார்உரை, கழகவெளியீடு, சென்னை.
12. நெடுநல்வாடைமூலமும்உரையும், பெருமழைப்புலவர்பொ.வே. சோமசுந்தரனார்உரை, கழகவெளியீடு, சென்னை.
13. திருக்குறள் – பரிமேலழகர்உரையுடன், ஸ்ரீகாசிமடம், திருப்பனந்தாள்.
14. பதினென்கீழ்க்கணக்கு, நியூசெஞ்சுரிபுக்ஹவுஸ்பிரைவேட்லிமிடெட், சென்னை.
15. மு. வரதராசன், தமிழ்இலக்கியவரலாறு, சாகித்யஅக்காதெமி, புதுடெல்லி,
16. து. ச. விமலானந்தன், தமிழ்இலக்கியவரலாறு, மீனாட்சிபுத்தகநிலையம், மதுரை.
17. தமிழண்ணல், புதியநோக்கில்தமிழ்இலக்கியவரலாறு, மீனாட்சிபுத்தகநிலையம், மதுரை.



**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **Foundation in English-III (Soft Skills)** |
| **COURSE CODE** | **:** | **BFEGS- 31** |
| **COURSE CREDIT** | **:** | **4** |

## COURSE OBJECTIVES

- To cultivate the positive mind
- To improve body language
- To develop interview skills
- To prepare a comprehensive CV
- To enhance interpersonal skills

## COURSE OUTCOMES

On successful completion of the Course, the learners will be able to:

- approach the life positively
- communicate in good manner
- join in a team in working place
- develop an impressive CV
- express managerial skills

**Block-1 Introduction to Soft Skills**

Soft Skills: An Introduction – Definition and Significance of Soft Skills; Process, Importance and Measurment of Soft Skill Development- Self-Discovery: Discovering the Self; Setting Goals; Beliefs, Values, Attitude, Virtue. 3. Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels.

**Block-2 Body Language & Etiquettes**

Non-Verbal Communication: Importance and Elements; Body Language- Social and Business.

**Block-3 Group Discussion& Interview Skills**

Interviewer and Interviewee - in-depth perspectives- Before, During and After the Interview- Tips for Success- Meaning, Types and Models, Group and Ethical Decision-Making, Problems and Dilemmas in application of these skills

**Block-4 Preparation of Curriculum Vitae' (CV)**

Definition of CV and its purposes- CV versus Resume- Rules- Covering Letter

**Block-5 Emotional Intelligence Skills**

Meaning, History, Features, Components, Intrapersonal and Management Excellence; Strategies to enhance Emotional Intelligence.

**References:**


1. Dhanavel S.P. *English and Soft Skills.* Orient Blackswan India, 2010.
2. Ghosh B.N. (Ed.) *Managing Soft Skills for Personality Development*. McGraw Hill India, 2012.


**Web Resources:**

1. https://onlinecourses.nptel.ac.in/noc19_hs33/preview
2. https://nptel.ac.in/courses/109/107/109107121/

**Tamil Nadu Open University**
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**Chennai – 15**

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**B.Sc., Mathematics - Syllabus – IIyear – IIISemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **INTEGRAL CALCULUS** |
| **COURSE CODE** | **:** | **BMSS- 31** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **INTEGRALCALCULUS**, the Learner shall be able to:

CO 1: Discuss concepts ofthe reduction formulae.

CO 2: Understand the concepts of double and triple integration

CO 3: Impart the knowledge of definition of beta and gamma integrals with their properties.

CO 4: Recognize and explain both scalar and vector point functions and their derivatives.

CO 5: Learn concept about integral theorems.

## COURSE SYLLABUS

**BLOCK – I**

Reduction formulae - Types $\int x^n e^{ax} dx$, $\int x^n \cos ax\, dx$, $\int x^n \sin ax\, dx$, $\int cos^n x dx$, $\int sin^n x dx$, $\int sin^m x cos^n x dx$, $\int tan^n x dx$, $\int cot^n x dx$, $\int sec^n x dx$, $\int cosec^n x dx$, $\int x^n (log x)^m dx$. Bernoulli's formula.

Chapter 1 Section 13, 13.1 to 13.10,14,15.1

**BLOCK – II**

Multiple Integrals- definition of the double integrals- evaluation of the double integrals- double integrals in polar coordinates – triple integrals – applications of multiple integrals – volumes of solids of revolution – areas of curved surfaces – change of variables – Jocobians

Chapter 5 Section 1, 2.1, 2.2, 3.1, 4, 6.1, 6.2, 6.3, 7

Chapter 6 Section 1.1, 1.2, 2.1 to 2.4

**BLOCK – III**

Beta and Gamma functions- indefinite integral – definitions – convergence of G (n) – recurrence formula of G functions – properties of b-function- relation between b and G functions.

Chapter 7 Sections 1.1 to 1.4 , 2.1 to 2.3, 3, 4, 5.

**BLOCK – IV**

Introduction, Gradient, divergence, curl, directional derivative, unit normal to a surface.

Solenoidal and irrotational. Laplacian Differential Operator.

Chapter 2 Sections 2.3 - 2.8

**BLOCK - V**

Line, surface and volume integrals; Theorems of Gauss, Stokes and Green. (Without proof) Problems.

Chapter 3 Sections 3.1-3.8 and Chapter 4 Sections 4.1- 4.8
Content and treatment as in

1. Calculus Vol- II by S. Narayanan and T.K. Manicavachagampillay - S. Viswanathan, publishers – 2007 for Unit 1 , Unit 2 , Unit 3
2. **C**ontent and treatment as in Vector Analysis by P.Duraipandian and Laxmi Duraipandian. Emerald Publishers. For Unit 4 , Unit 5

**Reference Books:**

1. Integral Calculus and differential equations : Dipak Chatterjee (TATA McGraw HillPublishing company Ltd.)

2. Vector Algebra and Analysis by Narayanan and T.K.Manickvachagam Pillay S. ViswanathanPublishers.

2. Vector Analysis: Murray Spiegel (Schaum Publishing Company, New York)

Web Resource:

https://www.youtube.com/watch?v=LMcj8o0ERNE

https://www.youtube.com/watch?v=DW4rItB20h4

https://www.youtube.com/watch?v=LMcj8o0ERNE

https://www.youtube.com/watch?v=UubU3U2C8WM

https://www.youtube.com/watch?v=hhFzJvaY__U

https://www.youtube.com/watch?v=yyo798JxN3c

https://www.youtube.com/watch?v=IaG-24IhULY

https://www.youtube.com/watch?v=ALrjjzJ_qkU

https://www.youtube.com/watch?v=k3-kF2tPCU8

https://www.youtube.com/watch?v=NNT7lrS0s8U

https://www.youtube.com/watch?v=hQiNLzrXLPw

https://www.youtube.com/watch?v=AMcfXPzEQ5w

## COURSE LEARNING OUTCOMES

After completion of the **INTEGRALCALCULUS**, the Learner will be able to:

CLO 1: Develop the idea of integration by parts need to be applied more than once and how to evaluate the integrals.

CLO 2: Enriched the knowledge of multiple integral to find the area and volume by using double and triple integrals.

CLO 3: Represent the relation between beta and gamma functions.

CLO 4: Demonstrate the concepts of gradient, curl and divergent. Analyze their physical and geometrical meaning and applications.

CLO 5: Enriched the knowledge of vector integration and interpret the relationship between line, surface, volume integrals and applied to evaluate some certain integrals.

**Tamil Nadu Open University**
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**B.Sc., Mathematics - Syllabus – IIyear – IIISemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **DIFFERENTIALEQUATIONS** |
| **COURSE CODE** | **:** | **BMSS- 32** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **DIFFERENTIALEQUATIONS**, the Learner shall be able to:

CO 1: Develop skills to understand the different methods of first order differential but of higher degree differential equations.

CO 2: Recognize the second order differential equations with constant coefficients and solve them.

CO 3: Solve second order differential equations with variable coefficients.

CO 4:Solve simultaneous differential equations.

CO 5: Analysis and identify the different types of partial differential equation and solve the equations which arises in engineering fields.

## COURSE SYLLABUS

**Block I**

Differential equation of first order – formation – variable separable – Homogeneous – Linear – Bernouille – Equations solvable for x,y,p – Clairaut's form – Exact equation of first order.

**Block II**

Differential equation of second order – Differential equation with constant coefficients – various types of particular integral.

**Block III**

Linear Differential equation with variable coefficients – equations reducible to linear homogeneous equations – variation of parameters. Method of undetermined co-efficient,

**Block IV**

Simultaneous differential equation of the form $dx/P = dy/Q = dz/R$ – Exactness, $n^{th}$ order exact differential equation – Condition of exactness for a $n^{th}$ order linear equation.

**Block V**

Partial differential equations of the first order – classification of integrals – derivations of Partial differential equation – Lagrange's method of solving – Charpit's method - the linear equations – standard forms – Equations reducible to the standard forms.

**Reference Books**

1. S. Narayanan and T.K. Manickavasagam Pillai, Differential Equations & its

Applications, S. Viswanathan Publishers Pvt Ltd, 2003.

2. P. Kandasamy and K. Thilagavathi, Mathematics for B.Sc., Volume III, S. Chand & Co, New Delhi, 2004.
3. S.Arumugam and A.Issac, Differential Equations with Applications, New Gamma Publishing House, 2002.
4. S.Narayanan&T.K.Manicavasagampillai, Calculus Vol- III, S.Viswanathan Pvt Ltd, 1991.

Web Resource:

https://www.youtube.com/watch?v=SI1Tdh3Pjm8
https://www.youtube.com/watch?v=GBmwbaeD6GQ
https://www.youtube.com/watch?v=ZEJVyybsiT4
https://www.youtube.com/watch?v=Qd72VS-V-_U
https://www.youtube.com/watch?v=94iovfwI0tg
https://www.youtube.com/watch?v=x72cdGU7WpE
https://www.youtube.com/watch?v=wk6A9lnfZCY
https://www.youtube.com/watch?v=fdXBBiaHZPQ
https://www.youtube.com/watch?v=ygjGytmzXRs
https://www.youtube.com/watch?v=iNHzSQBEVto
https://www.youtube.com/watch?v=7-ahJTa8WgU
https://www.youtube.com/watch?v=U58LykHWj3A
https://www.youtube.com/watch?v=ly4S0oi3Yz8

**COURSE LEARNING OUTCOMES**

After completion of the **DIFFERENTIALEQUATIONS**, the Learner will be able to:

CLO 1:Offer solutions for first order higher degree differential equations.

CLO 2: Find the solutions of second order differential equations with constant coefficients.

CLO 3: Analyze and apply the variation of parameters and method of undetermined coefficients to solve the differential equations.

CLO 4: Demonstrate the condition of exactness for nth order differential equation.

CLO 5: Solve Lagrange's equation and Charpit's method.

**Tamil Nadu Open University**
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**B.Sc., Mathematics - Syllabus – IIyear – IIISemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **COMPUTER FUNDAMENTALS AND PC SOFTWARE** |
| **COURSE CODE** | **:** | **BMSSA31** |
| **COURSE CREDIT** | **:** | **4** |

## COURSE OBJECTIVES

While studying the **COMPUTER FUNDAMENTALS AND PC SOFTWARE**, the Learner shall be able to:

- To understand the fundamentals of computer in scientific computing
- To enhance the abilities of students to solve problems with the aid of computer
- To enrich the abilities of students to use PC software.

## COURSE SYLLABUS

**BLOCK – I**

Computer Fundamentals: Hardware & Software: Introduction – Structure of aComputer – IC Technology – Classifications – Applications. Peripheral devices and Technologies: Memory – Types of memories – Input devices – Output devices – I/O interfaces – Parallel Processing – Pipelining – Vector processing – RISC system. Software Concepts and Terminology: Types of Software – System software and Applications software – Computer languages: Machine – Assembly – High Level – 4GL – Fundamentals of Programming languages. Operating System Concepts: Definition Evolution of Operating System – Types of Operating Systems: Batch – Multiprogramming – Network – Distributed Operating System.

**BLOCK II**

Data communication: Fundamentals – Data Communication codes – Speed ofcommunication – Channels – Types of Transmission: Analog – Digital – Parallel and Serial Transmission – Data Communication Modes: Synchronous and Asynchronous – Modes of communications: Simplex-Half-Duplex-Full Duplex – Elements of Communication Hardware: Sender / Receiver Hardware – Devices – Channels. Computer Networks and Recent Trends: Network concepts – Types of networks – LAN – WAN – Applications of Networks: E-mail – EDI – Trends: Internet – BITNET – ISDN – NICNET – CompuServe. Computer Security: Definition – Breaches of Security – Measures: Physical – Software – Network – Password – Role of Cryptography – Crypt analysis – Computer Virus: Definition – Classification – Protection and Cure.

**BLOCK III**

Graphical User Interface – Concepts – MS-Windows – Elements of Windows-Working with windows – Working with dialog Box – Managing System in Windows: System settings – Backup – Disk Drive Utilities – Add/Remove applications – Windows for Multi User – Windows Explorer: Working with Files - Working with Folders – Recycle Bin – Program and Accessories – Running User programs – Use – Writing and Drawing. Communication through network: E-mal – Internet – Multimedia: Types of media – Tools.

**BLOCK IV**

PC Software: MS-Word – Getting Started – Working with Text – Common Features – Find and Replace – Editing – Proofing tools. Text Formatting: Character – paragraph – templates. Page Formatting: Page Setup – Margins – Header – Footer – Numbering. Working with Tables – Mail Merge – Macros – Printing a document – protecting a document.

**BLOCK V**

PowerPoint: Basic concepts – Presentation – Working with tools.

**Reference Books**


1. Mano M.Morris, Computer System Architecture and Organisation,McGraw Hill, 1983.
2. William Stalling, Data and Computer Communication, Seventhedition, Prentice Hall of India, 2003.
3. Levin and Young, The complete reference windows 98.
4. Laura Acklain et.al., Microsoft Office 97 professional essentials.


Web Resource:

https://www.youtube.com/watch?v=RddPeX9ReQw

https://www.youtube.com/watch?v=Ij71sDmmKpc

https://www.youtube.com/watch?v=s-tk8el8JoU

https://www.youtube.com/watch?v=3zJ_ohCjFOs

https://www.youtube.com/watch?v=Gek5-Wr3N-w

https://www.youtube.com/watch?v=hNa_nN6j_D4

https://www.youtube.com/watch?v=KRugpc50JNI

https://www.youtube.com/watch?v=9uA2iu-rw8A

https://www.youtube.com/watch?v=fUkh3yWm3d4

https://www.youtube.com/watch?v=KyKy94yHe38

https://www.youtube.com/watch?v=Sh0bWWfjt1s

https://www.youtube.com/watch?v=XF34-Wu6qWU

https://www.youtube.com/watch?v=lbc1HX8Jccw

https://www.youtube.com/watch?v=rvh_c_K3UU0

## COURSE LEARNING OUTCOMES

After completion of the **COMPUTER FUNDAMENTALS AND PC SOFTWARE**, the Learner will be able to:

- understand the basic principles of computers and PC software
- acquire knowledge of developing content using MS word and Power point
- efficiently use the techniques, skills, and computational skills to solve real time numerical problems

**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

**B.Sc., Physics - Syllabus – II year – IVSemester (Distance Mode)**

| | | |
|---|---|---|
| பாடப்பெயர் **(Course Title)** | : | தமிழ் (TAMIL) |
| பாடக்குறியீடு **(Course Code)** | : | BFTMS–41 |
| பாடகற்றல்அளவெண் : (Course Credits) | | 4 |

***பாடநோக்கங்கள்***

3. தமிழிலுள்ளசங்கஇலக்கியம், காப்பியஇலக்கியம், நீதிஇலக்கியம்குறித்துஅறிமுகநிலையில்மாணவர்களுக்குஅறிமுகம்செய்வதோடு, தமிழ்இலக்கியவரலாறுகுறித்தும்அறிமுகம்செய்தல்.

***பாடத்தினைப்படிப்பதால்விளையும்பயன்கள்***

4. தமிழிலுள்ளசங்கஇலக்கியம், காப்பியஇலக்கியம், நீதிஇலக்கியம்குறித்துஅறிமுகநிலையில்மாணவர்களுக்குஅறிமுகம்செய்வதோடு, தமிழ்இலக்கியவரலாறுகுறித்தும்எடுத்துரைப்பார்கள்.
5. மரபுத்தொடர்கள், இணைமொழிகள்பற்றியும்எடுத்துரைப்பதோடு, ஓரங்கநாடகம், ஐக்கூகவிதைபடைக்கும்முனைப்பினையும்பெறுவார்கள்.

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***பிரிவு – 1*** ***சீவகசிந்தாமாணி – குணமாலையார் இலம்பகம்***

சீவகசிந்தாமணி – காப்பிய அமைப்பு – முன்கதைச்சுருக்கம் – இலம்பகத்தின் கதைச்சுருக்கம் – கண்ணப் பூசல் – குணமாலையும் சுரமஞ்சரியும் பொழிலாடல் – சுரமஞ்சரி சூளுரை – கண்ணப்பொடியுடன் தோழியர் – மீன்சூழ் மாமதிபோல் சீவகன் – தோழியார் வேண்டல் – சீவகன் தீர்ப்புரை – வாரம் பட்டுழித் தீயவும் நல்லவாம் – வண்டுகளின் தீர்ப்பு – இடியுண்ட நாகம்போல் சுரமஞ்சரி – குணமாலையின் இனிய பண்பு.

***பிரிவு – 2*** ***கம்பராமாயணம் – நகர்நீங்கு படலம்***

கம்பராமாயணம் – முன்கதைச்சுருக்கம் – படலத்தின் கதைச் சுருக்கம் – மகளிர் அவலம் – விலங்குகளின் அவலம் – பிற மக்களின் அவலம் – மரவுரியில் இராமன் – மனத்துயரில் சீதை – வருவென் ஈண்டு வருந்தலை நீ – தீய வெஞ்சொல் செவிசுடத் தேபுவாள் – என்னை என்னை இருத்தி என்றாய் – நின் பிரிவினுஞ் சுடுமோ பெருங்காடு – சீதையும் மரவுரி தரித்தல் – எல்லையற்ற இடர் தருவாய் என்றான்.

***பிரிவு – 3*** ***சங்ககாலம் (கி.மு. 300 – கி.பி. 100)***

முச்சங்க வரலாறு – சங்கம் இருந்ததா? இல்லையா? ஒரு சங்கம் இருந்ததற்கான சான்றுகள் – எட்டுத்தொகை நூல்கள் – பத்துப்பாட்டு நூல்கள் – சங்க காலம் ஒரு பொற்காலம்

***பிரிவு – 4*** ***பதினெண் கீழ்க்கணக்குக் காலம் (கி.பி. 100 – கி.பி. 600)***

களப்பிரர் காலம் – தமிழக வரலாற்றின் இருண்ட காலம் – அகத்திணை நூல்கள் – புறத்திணை நூல்களில் போர் பற்றியது – அறநூல்கள்

***பிரிவு – 5*** ***காப்பிய காலம் (கி.பி. 200 – கி.பி. 1100)***

தமிழின் முதல் காப்பியம் – இரட்டைக் காப்பியங்கள் – ஐம்பெருங்காப்பியங்கள் – ஐஞ்சிறுங்காப்பியங்கள் – தமிழின் பிற காப்பியங்கள்.

***பிரிவு – 6*** ***தமிழ் இலக்கியத்தில் சமணர், பௌத்தர் செல்வாக்கு***

தமிழகத்தில் சமணர் செல்வாக்கு – தமிழகத்தில் பௌத்தர் செல்வாக்கு

***பிரிவு – 7*** ***மரபுத் தொடர்கள், இணைமொழிகள்***

எதிர்மறைக் குறிப்புத் தொடர் – இடக்கரடக்கல் – மங்கலவழக்குத் தொடர் – வசைமொழித் தொடர் – சுவைதரும் வெளிப்பாட்டுத் தொடர் – பிற மரபுத்தொடர்கள் – ஒருபொருள் இணைமொழிகள் – எதிர்நிலை இணைமொழிகள் – பிற இணைமொழிகள் – வட்டார இணைமொழிகள் – கிகர கீகார மொழிகள்.

***பிரிவு – 8*** ***சொற்பொழிவுத்திறன் பயிற்சி***

இலக்கியச் சொற்பொழிவு – சமயச் சொற்பொழிவு – அரசியல் சொற்பொழிவு – பிற சொற்பொழிவுகள் – குறிப்புகள் சேகரித்தல் – கேளாரும் வேட்ப மொழியும் திறன் – நகைச்சுவைத் திறன் – ஈர்ப்புத் திறன் – அவிநயமும் உச்சரிப்பும்

***பிரிவு – 9*** ***ஓரங்க நாடகம் படைக்கும் முயற்சி***

ஓரங்க நாடகம் எழுதும் படிநிலைகள் – நாடகக் கதையை முடிவுசெய்தல் – களம் பிரித்தலும் நிகழ்வுக் குறிப்பும் – உரையாடல் எழுதுதல் – நாடகப் பிரதியைச் செப்பனிடுதல் – நடிகர்கள் தேர்வு – ஒத்திகை முறைகள் – நாடக இயக்கம் – திட்டமிடுதலும் நிகழ்த்தலும் .

***பிரிவு – 10*** ***ஐக்கூக் கவிதை புனையும் பயிற்சி***

ஈற்றடி இலக்கணம் – உள்ளடக்கப் பாடுபொருள் இலக்கணம் – வெளிப்பாட்டு உத்தி – இயற்கையைப் பாடும் ஐக்கூ – வாழ்வியல் ஐக்கூ – காதல் ஐக்கூ – சென்ரியூ –எள்ளல் அல்லது நகைச்சுவை ஐக்கூ

***பார்வைநூல்கள்:***


6. மு. வரதராசன், தமிழ்இலக்கியவரலாறு, சாகித்யஅக்காதெமி, புதுடெல்லி,
7. து. ச. விமலானந்தன், தமிழ்இலக்கியவரலாறு, மீனாட்சிபுத்தகநிலையம், மதுரை.
8. தமிழண்ணல், புதியநோக்கில்தமிழ்இலக்கியவரலாறு, மீனாட்சிபுத்தகநிலையம், மதுரை.
9. பி.எஸ். ஆச்சார்யா, உயர்வுதரும்உரையாடல்கலை, நர்மதாபதிப்பகம், சென்னை.
10. மு. முத்துக்காளத்தி, பேசுவதுஎப்படி, கண்ணம்மாள்பதிப்பகம், பாரிநிலையம், சென்னை.
11. பரட்டை, நடிக்கநாடகம்எழுதுவதுஎப்படி? வைகறைப்பதிப்பகம், திண்டுக்கல். *1998*
12. சே. இராமாணுஜம், நாடகப்படைப்பாக்கம்அடித்தளங்கள், எட்டாம்உலகத்தமிழ்மாநாடுபதிப்புச்சூழல்நிதிவெளியீடு, தமிழ்ப்பல்கலைக்கழகம், தஞ்சாவூர், *1994*.
13. சுஜாதா, ஹைக்கூஒருஅறிமுகம், பாரதிபதிப்பகம், *108* உஸ்மான்சாலை, தி. நகர், சென்னை, *1991*.
14. மேஜர்கதிர்மகாதேவன், ஐக்கூநூறு, ஒப்பிலக்கியத்துறை, மதுரைகாமராசர்பல்கலைக்கழகம், மதுரை, *1994*.
15. நெல்லைசு. முத்து, தமிழில்ஹைக்கூ, அன்னம்வெளியீடு, சிவன்கோயில்தெரு, சிவகங்கை, *1994*.

திரு. பட்டாபிசீத்தாரமான், ஹைக்கூவடிவக்கவிதைகள், காவ்யா,
சென்னை.

**Tamil Nadu Open University**

**Department of Physics**

**School of Science,**

**Chennai – 15**

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**B.Sc., Physics - Syllabus – II year – IVSemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **Foundation in English (Writing Skills)** |
| **COURSE CODE** | **:** | **BFEGS- 41** |
| **COURSE CREDIT** | **:** | **4** |

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## COURSE OBJECTIVES

- Train the learners to write the academic essays
- To make them learn different steps of writing
- To develop the learners' creativity

- To distinguish between fact and opinion, cause and effect, problem and solution, similarities and differences, general and specific ideas, and relevant and irrelevant information.
- To convey information through written language
- To involve in note- taking, gathering information, drafting, free-writing, revising, proofreading, and editing when engaged in writing.

## COURSE OUTCOMES

On successful completion of the Course, the learners will be able to:

- write without mistakes
- draft formal and informal letters
- take notes for writing purpose
- explain the tables/ pictures in words
- edit the written matters

**BLOCK-01 Basic Writing Skills**

Learn the basic paragraph structure: main idea, supporting sentences, use of examples, conclusion- Use basic sentence structures to write a paragraph; use cohesive devices to connect sentences in a paragraph; use transitional devices for cohesion and for contrast paragraph internally and between paragraphs (The above structures and devices to be consciously used in all writing tasks)- Understand and use text structures in paragraphs: sequencing, comparing and contrasting, relating cause and effect, problems and problem solving

**BLOCK-02 Informal and Formal Communication**

Write informal letters, applications, and official letters of request and denial- Write official e-mails, memos and notices

**BLOCK-03 Note-Making and Summarising**

Prepare notes from reading texts- Take notes from spoken texts-Summarize key ideas and information in organized points developed from the notes prepared

**BLOCK-04 Study Skills (Information Transfer, Reference Skills)**

Use charts, tables, other graphics and multimedia, as appropriate for the written texts; present summary to a group

**Block- 05 Technical Editing**

Technical Editing – The Big Picture- Working Collaboratively- Organization: The Architecture of Information- Visual Design and Font Selection- Editing Methods – Then and Now- The Power of Grammar, Punctuation and Spelling- Basic Copyediting- proofreading -Ethical and Legal Issues

**References:**


1. Graham King. *Collins Improve your writing skills*
2. Norman Coe and Robin Rycroft. *Writing Skills A Problem Solving Approach*. CUP.
3. Robyn Najar and Lesley Riley. *Developing Academic Writing Skills*.Macmillan Publications.
4. Scheraga, Mona. *Practical English Writing Skills: A Complete Guide to Writing in English*


**Web Resources:**

1. https://nptel.ac.in/courses/109/107/109107172/
2. https://nptel.ac.in/courses/109/104/109104031/
3. https://onlinecourses.swayam2.ac.in/cec20_ma04/preview

**Tamil Nadu Open University**
**Department of Mathematics**
**School of Science,**
**Chennai – 15**

**B.Sc., Mathematics - Syllabus – IIyear – IVSemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **TRANSFORMTECHNIQUES** |
| **COURSE CODE** | **:** | **BMSS- 41** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **TRANSFORMTECHNIQUES**, the Learner shall be able to:

CO 1: Discuss concepts of Laplace transform and its properties.

CO 2: Learninverse Laplace transform, find inverse Laplace transforms of certain function.

CO 3: Analysis the definition of Fourier series and then expand function as a Fourier series.

CO 4: Discuss the concept of Fourier transformandhow itcanbe usedto find Fourier transform of simple functions.

CO 5: To learn the applications of Laplace transform to solve Differential Equations to solve Difference equations

## COURSE SYLLABUS

**BLOCK - I**

Introduction – Properties of Laplace transform- Laplace transform of elementary functions-Problems using properties-Laplace transform of special function, unit step function and Dirac delta function - Laplace transform of derivatives and Integrals – Evaluation of integral using Laplace Transform - Initial Value Theorem – Final Value Theorem and problems –Laplace Transform of periodic function

Chapter 2 : Section 2.1 to 2.20.

**BLOCK - II**

Introduction, Properties of inverse Laplace transform, Problems (usual types); Convolution Theorem - Inverse Laplace Transform using Convolution theorem

Chapter 3, Section 3.1 to 3.11

**BLOCK - III**

Introduction, Expansions of periodic function of period 2π ; expansion of even and odd functions; half range cosine and sine series – Fourier series of change of interval.

Chapter 1, Section 1.1 to 1.11=

**BLOCK– IV**

Introduction of Fourier transform - Properties of Fourier Transforms - Inverse Fourier transform – Problems, Fourier sine and cosine transforms and their inverse Fourier transform – Problems, Convolution theorem, Parseval's identity and problems using Parseval's identity.

Chapter 4, Section 4.1 to 4.12.

**BLOCK – V**

Applications of Laplace transform to solution of first and second order linear differential equations (constant coefficients) and simultaneous linear ordinary differential equations – Application of Laplace transform to partial differential equations. Application of Laplace Transform and Fourier transform to Initial and Boundary Value Problems.

Chapter 5, Section 5.1, 5.3, 5.7 to 5.11

Contents and treatment as in "Fourier Series and Integral Transforms" – Dr. S. Sreenath,S.Ranganatham, Dr. M.V.S.S.N.Prasad and Dr. V. Ramesh Babu. S.Chand and Company Ltd

**Reference Books:**

1. Engineering Mathematics volume 3 : M.K. Venkataraman(National Publishing Co.)

2. Engineering Mathematics volume 3 :P.Kandasamy and others(S.Chand and Co.)

3. Advanced Engineering Mathematics : Stanley Grossman and William R.Devit (Harper and Row publishers)

Web Resource:

https://www.youtube.com/watch?v=W0Qb6PMAOX8
https://www.youtube.com/watch?v=jVySTOj4kG0
https://www.youtube.com/watch?v=_oSqxcq9Qws
https://www.youtube.com/watch?v=bfWu14Ny-tc
https://www.youtube.com/watch?v=6XIX5Z3ZMHQ
https://www.youtube.com/watch?v=_GcXr2s8F0Q
https://www.youtube.com/watch?v=wpkhPx3Hdus
https://www.youtube.com/watch?v=fJClf0medbg
https://www.youtube.com/watch?v=-KCLejODwW0
https://www.youtube.com/watch?v=_Y1AzOj_HIM
https://www.youtube.com/watch?v=OyRlwz6eI2s
https://www.youtube.com/watch?v=OyRlwz6eI2s
https://www.youtube.com/watch?v=3KtUt78p9a4
https://www.youtube.com/watch?v=Jm2X81VAktI

**COURSE LEARNING OUTCOMES**

After completion of the **TRANSFORMTECHNIQUES**, the Learner will be able to:

CLO 1: Understand the different methods of finding transforms of different functions.

CLO 2: Find the inverse Laplace transform by using convolution theorem.

CLO 3: Explain odd and even functions, could expand them as a Fourier series and learn half-range series.

CLO 4: Explain the idea of Parseval's identity and use them to evaluate certain integrals.

CLO 5: Appreciate the procedure to obtain solution of differential equations involving Laplace transform.

**Tamil Nadu Open University**
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**B.Sc., Mathematics - Syllabus – IIyear – IVSemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **ALGEBRAIC STRUCTURE** |
| **COURSE CODE** | **:** | **BMSS- 42** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **ALGEBRAIC STRUCTURE**, the Learner shall be able to:

CO 1: Give an insight about binary operations, Peano's postulates and principles of induction.

CO 2: Introduce the formal structure of the subject and to equip them with the knowledge of groupoid, monoid, groups and subgroups.

CO 3: Impart knowledge about Lagrange's theorem and use it to solve the problems.

CO 4: Impart knowledge about the concepts of Ring theory

CO 5: Demonstrate the concept of field of quotients of an integral domain.

## COURSE SYLLABUS

**BLOCK- I**

Relations – Types of relations – Functions – Types of Functions, Binary Operations – Peano's Postulates – Principles of Induction – Law of Trichotomy.

**BLOCK - III**

Groupoid – Semi group – Monoid – Group Theory – Definition – examples – elementary results –equivalent definitions of group – symmetric group – sub group – examples – center – Normalizer - cyclic group.

**BLOCK - III**

Cosets – Lagrange's Theorem – normal sub groups – quotient groups – finite groups and Cayley Tables – homomorphism and isomorphism of groups – Cayley's Theorem – automorphisms – Fundamental theorem of homomorphism.

**BLOCK – IV**

Ring Theory: Definition – examples – elementary results – field – integral domain – characteristics – subring – ideals – quotient rings – maximal and prime ideals – homomorphism and isomorphism of rings.

**BLOCK - V**

Field of quotients of an integral domain, ordered integral domain, Unique factorization domain – Euclidean domain – Principal Ideal Domain and Unique Factorization Domain – Notherian and Artinian Rings.

**Reference Books :**


1. M. Murugan, A First course in Groups and Rings, Muthali Publishing House, Chennai, 2017.
2. S.Arumugam and A.Issac, Modern algebra, SCITECH Publications (India) Pvt. Ltd., Chennai, 2005.
3. Surjeet Singh and QuaziZameeruddin, Modern algebra, Vikas Publishing House Pvt Ltd, 1998.

   Web Resource:

   https://www.youtube.com/watch?v=qqcZROud9tE

https://www.youtube.com/watch?v=oHBdipFFzrY

https://www.youtube.com/watch?v=VzsAehzmjrU

https://www.youtube.com/watch?v=WgxCpmR0AmQ

https://www.youtube.com/watch?v=ihQyZ7bJcRE

https://www.youtube.com/watch?v=QTW2VXB8YkA

https://www.youtube.com/watch?v=TCcSZEL_3CQ

https://www.youtube.com/watch?v=cGC3PCW1iDQ

https://www.youtube.com/watch?v=MzS9cwY3aYc

https://www.youtube.com/watch?v=nVXnpGkILSs

https://www.youtube.com/watch?v=QCJ5zuSzGfM

https://www.youtube.com/watch?v=JX8ObC3sXuM

https://www.youtube.com/watch?v=l-vHmdTQ0LA

https://www.youtube.com/watch?v=XZZKrqZHyqM

**COURSE LEARNING OUTCOMES**

After completion of the **ALGEBRAIC STRUCTURE**, the Learner will be able to:

CLO 1: Have in-depth knowledge on relation and function

CLO 2: Learn to devise and analyze various transistor amplifier models.

CLO 3: Acquire in-depth knowledge of various theorems like Lagrange's theorem, Cayley's theorem, fundamental theorem of homomorphism etc.,

CLO 4: Learn about quotient rings, maximal and prime ideals.

CLO 5: Analyse the concept of the Euclidean domain, Principal Ideal Domain, Unique Factorization Domain,Notherian and Artinian Rings.

**Tamil Nadu Open University**
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**B.Sc., Mathematics - Syllabus – IIyear – IVSemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **PROGRAMMING IN C** |
| **COURSE CODE** | **:** | **BMSSA41** |
| **COURSE CREDIT** | **:** | **4** |

## COURSE OBJECTIVES

While studying the **PROGRAMMING IN C**, the Learner shall be able to:

CO 1: Explain the concept of library functions.

CO 2: Appreciate the basic principles of scientific and engineering programming.

CO 3: Understand parameter passing and use it.

CO 4: Define and processing array in C programming.

CO 5: Gaining the knowledge of structure and process of structure in C programming.

## COURSE SYLLABUS

**BLOCK – I**

Constants – Variables – Data types – Operators – Expressions – Library functions – Standard Input/output functions.

**BLOCK - II**

While, do-while, for, if-else, switch and go to statements – break and continue statements.

**BLOCK- III**

Defining a function – accessing a function – passing arguments to a function – Recursion - Automatic, External and Static variables.

**BLOCK – IV**

Defining and processing an array – passing arrays to a function – multi dimensional arrays. Pointer declarations – passing pointers to a function – pointers and arrays – operations on pointers – arrays of pointers – passing functions to other functions.

**BLOCK - V**

Defining a structure – Processing a structure – user–defined data type – Structure and pointers – passing structures to a function – self-referential structures – Unions – Data Files.

**REFERENCE BOOKS :**

1. Gottfried, B.S., Schaum's Outline of Theory and Problems of Programming in C, Second Edition, Tata Mc-Graw Hill Pub. Co., New Delhi (2000).

2. Kernighan, B.W. and Ritchie, D.M., The C Programming Language, Prentice-Hall of India Private Ltd., New Delhi, (1998).

3. Johnsonbaugh, R. and Kalin, M. Applications Programming in ANSI C, Third Edition, Pearson Education Asia, Delhi (2002).

4.Balagurusamy, E. Programming in ANSI C, Third Edition, Tata Mc-Graw Hill Pub. Co., New Delhi (2004).

Web Resource:

https://www.youtube.com/watch?v=OSyjOvFbAGI

https://www.youtube.com/watch?v=9QIFXyBYJQY

https://www.youtube.com/watch?v=21l11_9Osd0

https://www.youtube.com/watch?v=obJcPlAtGVM

https://www.youtube.com/watch?v=gF7wjwM9Jjs

https://www.youtube.com/watch?v=WZgSDnZvShg

https://www.youtube.com/watch?v=d3FGwPwghi0

https://www.youtube.com/watch?v=3fOPOUnkcdQ

https://www.youtube.com/watch?v=qaszuaFXRTA

https://www.youtube.com/watch?v=2wdjJNfP7Hw

https://www.youtube.com/watch?v=y4x3iyESFgs

https://www.youtube.com/watch?v=_bSmuG-sPfg

**COURSE LEARNING OUTCOMES**

After completion of the **PROGRAMMING IN C**, the Learner will be able to:

CLO 1: Recognize the constants, variables, data types and operators.

CLO 2: Learn different control structures like decision control, loop control and special cases.

CLO 3: Interpret and apply the basic knowledge of recursion, external and static variables to write a C program.

CLO 4:Demonstrate the concepts of operations on pointers, arrays of pointers and passing functions to other functions.

CLO 5: Efficiently use the techniques, skills, and computational skills to solve real time numerical problems

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**Chennai – 15**

**B.Sc., Mathematics - Syllabus – IIIyear – VSemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **REAL ANALYSIS - I** |
| **COURSE CODE** | **:** | **BMSS- 51** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **REAL ANALYSIS - I**, the Learner shall be able to:

CO 1: Give an insight aboutoperation on sets, functions and real valued functions.

CO 2: Discuss the concept of a sequence and subsequence of a real numbers.

CO 3: Describe about operations of Convergent sequence and Divergent sequence.

CO 4: Learn about the concept of series of real numbers and its properties.

CO 5:Demonstrate the concepts of metric spaces.

## COURSE SYLLABUS

**BLOCK- I**

Sets and elements; Operations on sets; functions; real valued functions; equivalence; countability ; real numbers; least upper bounds.

Chapter 1 Section 1. 1 to 1.7.

**BLOCK– II**

Definition of a sequence and subsequence; limit of a sequence; convergent sequences; divergent sequences; bounded sequences; monotone sequences;

Chapter 2 Section 2.1 to 2.6.

**BLOCK - III**

Operations on convergent sequences; operations on divergent sequences; limit superior and limit inferior; Cauchy sequences.

Chapter 2 Section 2.7 to 2.10.

**BLOCK – IV**

Convergence and divergence; series with non-negative numbers; alternating series; conditional convergence and absolute convergence; tests for absolute convergence; series whose terms form a non-increasing sequence; the class l2

Chapter 3 Section 3.1 to 3.4, 3.6, 3.7 and 3.10

**BLOCK – V**

Limit of a function on a real line;. Metric spaces; Limits in metric spaces.Function continuous at a point on the real line, reformulation, Function continuous on a metric space.

Chapter 4 Section 4.1 to 4.3 Chapter 5 Section 5.1-5.3

Contents and Treatment as in "Methods of Real Analysis" : Richard R. Goldberg (Oxford and IBH Publishing Co.)

**Reference Books** :

1. Principles of Mathematical Analysis by Walter Rudin

2. Mathematical Analysis Tom M Apostal

Web Resource:

https://www.youtube.com/watch?v=DPSK2tHOL5M

https://www.youtube.com/watch?v=icvUO26GVR8

https://www.youtube.com/watch?v=5ppfmcB7KnE

https://www.youtube.com/watch?v=tHy3TXmZpF0

https://www.youtube.com/watch?v=3tfc5MY2sn0

https://www.youtube.com/watch?v=J8uZJ9by0ys

https://www.youtube.com/watch?v=LYYGJ_5qx5M

https://www.youtube.com/watch?v=FyaserQtdUc

https://www.youtube.com/watch?v=zg9N2gAf6a4

https://www.youtube.com/watch?v=L-JqHo4-W4k

https://www.youtube.com/watch?v=ZKIl2dlHUcc

https://www.youtube.com/watch?v=2CkNeN8S258

https://www.youtube.com/watch?v=ok5hx2tTEus

**COURSE LEARNING OUTCOMES**

After completion of the **REAL ANALYSIS - I**, the Learner will be able to:

CLO 1: have in-depth knowledge on real number system that leads to the formal development of Real analysis.

CLO2:Familiarized with the concepts of Convergence and divergence of a sequence of real numbers.

CLO 3: Enriched the knowledge about limit inferior and limit superior.

CLO 4: know how to use the basic results of series of a real numbers and to determine whether the given series is convergent/divergent.

CLO 5: Describe and analyze the ideas of metric spaces and continuity functions of metric spaces.

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**B.Sc., Mathematics - Syllabus – IIIyear – VSemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **LINEAR ALGEBRA** |
| **COURSE CODE** | **:** | **BMSS- 52** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **LINEAR ALGEBRA**, the Learner shall be able to:

CO 1: To insight the fundamentals of Vector space and basis and dimension of vector base.

CO 2: Describe the concepts of dual space.

CO 3: Gaining the knowledge about the concept of inner product space.

CO 4: To determine the Eigen values and Eigen vectors.

CO 5: Explainhow to convert the given matrices into canonical forms and triangular forms.

## COURSE SYLLABUS

**BLOCK - I**

Vector spaces. Elementary basic concepts; linear independence and bases

Chapter 4 Section 4.1 and 4.2

**BLOCK - II**

Dual spaces

Chapter 4 Section 4.3

**BLOCK - III**

Inner product spaces.

Chapter 4 Section 4.4

**BLOCK - IV**

Algebra of linear transformations; characteristic roots.

Chapter 6 Section 6.1 and 6.2

**BLOCK - V**

Matrices; canonical forms; triangular forms.

Chapter 6 Section 6.3 and 6.4

Treatment and content as in "Topics in Algebra" – I. N. Herstein-Wiley Eastern Ltd.

**Reference Books:**

1. University Algebra – N. S. Gopalakrishnan – New Age International Publications, WileyEastern Ltd.

2. First course in Algebra – John B. Fraleigh, Addison Wesley.

3. Text Book of Algebra – R. Balakrishna and N. Ramabadran, Vikas publishing Co.

4. Algebra – S. Arumugam, New Gamma publishing house, Palayamkottai.

Web Resource:

https://www.youtube.com/watch?v=9WjuLvPT_2A

https://www.youtube.com/watch?v=3l3qfs2vINE

https://www.youtube.com/watch?v=OGO3HGlOQO4

https://www.youtube.com/watch?v=Sv-D_rIHyLI

https://www.youtube.com/watch?v=UUmoluM0D-M

https://www.youtube.com/watch?v=1ySJCG6hVPg

https://www.youtube.com/watch?v=2e03K_056t0

https://www.youtube.com/watch?v=XJXJk8XM0-M

https://www.youtube.com/watch?v=0kW6jXdk9Hw

https://www.youtube.com/watch?v=2s4Qxqm5YIY

https://www.youtube.com/watch?v=RJx4pdnnSS0

**COURSE LEARNING OUTCOMES**

After completion of the **LINEAR ALGEBRA**, the Learner will be able to:

CLO 1: Describe the acquired knowledge about the concepts of vector spaces and bases.

CLO 2: Discuss and interpret the concepts of dual space.

CLO 3: Construct the orthonormal basis using Gram-Schmidt orthogonalization process.

CLO 4: Understand the concept of Algebra of linear transformations and characteristic roots.

CLO 5: Represent the given square matrix into canonical forms.

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| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **DISCRETE MATHEMATICS** |
| **COURSE CODE** | **:** | **BMSS- 53** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **DISCRETE MATHEMATICS**, the Learner shall be able to:

CO 1: Develop knowledgein sets and some basic properties of integers.

CO 2: Discuss the concept of Boolean Algebra and two element Boolean Algebra.

CO 3: Learn about the concepts of logical gates.

CO 4: To have an in-depth knowledge of recurrence relations.

CO 5: Demonstrate the concepts of a complete bipartite graph.

## COURSE SYLLABUS

**BLOCK– I**

Set, some basic properties of integers, Mathematical induction, divisibility of integers,representation of positive integers

Chapter 1 - Sections 1.1 to 1.5

**BLOCK - II**

Boolean algebra, two element Boolean algebra, Disjunctive normal form, Conjunctive normalForm.

Chapter 5 - Sections 5.1 to 5.4

**BLOCK - III**

Application, Supplication of circuits, Designing of switching circuits, Logical Gates andCombinatorial circuits.

Chapter 5 - Section 5.5, 5.6.

**BLOCK – IV**

Sequence and recurrence relation, Solving recurrence relations by iteration method, Modeling of counting problems by recurrence relations, Linear (difference equations) recurrence relations with constant coefficients, Generating functions, Sum and product of two generating functions, Useful generating functions, Combinatorial problems.

Chapter 6 - Section 6.1 to 6.6.

**BLOCK – V**

Introduction, Walk, Path and cycles, Euler circuit

Chapter 7 - Sections 7.1 to 7.3

Contents and treatment as in introduction to Discrete Mathematics, 2nd edition, 2002 byM. K. Sen and B. C. Chakraborty, Books and Allied Private Ltd., Kolkata.

**Reference Books**:

1. Discrete mathematics for computer scientists and mathematicians by J. L. Mertt, Abraham Kendel and T. P. Baker prentice-hall, India.

2. Discrete mathematics for computer scientists by John Truss-Addison Wesley.

3. Elements of Discrete Mathematics, C. L. Liu, New York Mcgraw-Hill, 1977.

Web Resource:

https://www.youtube.com/watch?v=8J7Bft3BN0g

https://www.youtube.com/watch?v=CjD2KppNRxg

https://www.youtube.com/watch?v=buZeAty1axM

https://www.youtube.com/watch?v=EPJf4owqwdA

https://www.youtube.com/watch?v=lXEGw80mXx4

https://www.youtube.com/watch?v=m0di3A0JN0w

https://www.youtube.com/watch?v=e1h43CTMsBY

https://www.youtube.com/watch?v=HcH0khFGwS8

https://www.youtube.com/watch?v=Pjw8t-bGSBo

https://www.youtube.com/watch?v=cPl-Py7W_cI

https://www.youtube.com/watch?v=D2t3R7YIomY

https://www.youtube.com/watch?v=FSYwZKC77cM

https://www.youtube.com/watch?v=REfC1-igKHQ

**COURSE LEARNING OUTCOMES**

After completion of the **DISCRETE MATHEMATICS**, the Learner will be able to:

CLO 1:Acquire the knowledge of mathematical induction and use it to solve the problem.

CLO 2: Represent the Boolean expression in disjunctive normal form,

CLO 3: Represent Boolean function by way of Drawing a circuit using NAND –gates or NOR gates.

CLO 4: Gain knowledge of recurrence relations and generating function as a tool to solve many complex counting problems.

CLO 5: Acquire the knowledge of walk, path and cycle and solve the problems.

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| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **MATHEMATICAL STATISTICS** |
| **COURSE CODE** | **:** | **BMSSE 51** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **MATHEMATICAL STATISTICS**, the Learner shall be able to:

CO 1: Calculate and interpret measures of central tendency likemode, median and mean for a set of data.

CO 2: Understand the concept that the line of best fit as a tool for summarizing a linear relationship and predicting a future observed values.

CO 3: Acquire the knowledge of probability and conditional probability.

CO 4: Demonstrate the concept of null hypothesis, alternate hypothesis and level of significance.

CO 5: Develop the concept of Chi-square distribution, F-distribution, test for independence of attributes and their applications.

## COURSE SYLLABUS

**BLOCK– I**

Measures of Central Tendencies – arithmetic mean – Partition values – Mode – Geometric mean and Harmonic mean – Measures of Dispersion – Range – quartile deviation – standard deviation – Mean deviation.

**BLOCK–** II

Correlation – Rank Correlation – Regression – Correlation coefficient for a bivariate frequency distribution.

**BLOCK- III**

Probability – Conditional probability – Baye's theorem – Random Variables – Discrete random variables – Continuous random variables – Mathematical expectation –

Moment generating function (Cumulant generating function and characteristic function – not included) – Chebychev inequality.

**BLOCK- IV**

Test of significance (large samples) sampling – sampling distribution – Testing of Hypothesis – Tests for proportion – mean – standard deviations – Correlation.

**BLOCK- V**

Test of significance (small samples) based on distribution – Test for significance based on F – test distribution – Test for significance of an observed sample correlation.Test based on $\chi^2$ distribution – Test for population variance – To test the goodness of fit – Test for independence of attributes

Reference Books:


1. S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics, S. Chand Co, 2002.
2. P. Kandasamy, K. Thilagavathi and K. Gunavathi, Probability, Statistics and Queueing Theory, S. Chand & Co, New Delhi, 2007.
3. J.N. Kapoor and S.C. Saxena, Mathematical Statistics, S.Chand and Co,1996.
4. Spiegel, Statistics, Schaum's Outline series, McGraw Hill, 1994.
5. M.K. Venkatraman, A Text Book of Dynamics, Agasthiar Publications, Trichy, 2001.


Web Resource:

https://www.youtube.com/watch?v=_6zhSvP5HxY

https://www.youtube.com/watch?v=dAwRlYhEWOs

https://www.youtube.com/watch?v=n5KCnCBK8S8

https://www.youtube.com/watch?v=m2zOUZLTFOA

https://www.youtube.com/watch?v=8IupGBjyWMY

https://www.youtube.com/watch?v=zpMfwhswMFI

https://www.youtube.com/watch?v=mEhWe8oiYWQ

https://www.youtube.com/watch?v=o3EUr5jFtKo

https://www.youtube.com/watch?v=-sUU6whAjlY

https://www.youtube.com/watch?v=80YzzIm8NK8

https://www.youtube.com/watch?v=ktXwySpRrR8

https://www.youtube.com/watch?v=xhIg53kidhg

https://www.youtube.com/watch?v=bSmDdJJCP8s

https://www.youtube.com/watch?v=bU0N8ZLo_UA

**COURSE LEARNING OUTCOMES**

After completion of the **MATHEMATICAL STATISTICS**, the Learner will be able to:

CLO 1: Understand that a specific measure of central tendency isuse to describe a set of data.

CLO 2: Develop the skills to understand that the correlation is a number that measures strength of a linear association between two numerical values and it is used for linear trends between two numerical variables.

CLO 3: Demonstrate understanding of probability functions and use Baye's theorem for future events

CLO 4: Understand the basics of sampling distributions and explore the concepts of testing of hypothesis.

CLO 5: Analysis the results from two variance problems using F-distribution and independence of attributes problems using Chi-square distribution.

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|---|---|---|
| **COURSE TITLE** | **:** | **BASICS OF PSYCHOLOGY** |
| **COURSE CODE** | **:** | **BMSSNE 51** |
| **COURSE CREDIT** | **:** | **2** |

## COURSE OBJECTIVES

While studying the **BASICS OF PSYCHOLOGY**, the Learner shall be able to:

## COURSE SYLLABUS

**BLOCK- I**

Introduction – Definition psychology as Science . A brief history of Psychology – Structuralism, Functionalism, Behaviorism, Gestalt Psychology , Psychoanalytic psychology,Humanistic Psychology. Approaches to Psychology – Behavioral ,PsychodynamicApproach, cognitive Approach, Behavioral Neuroscience, Evolutionary psychology,Sociocultural approach, humanistic movement, positive psychology.

**BLOCK - II**

Methods of psychology – Introduction to the Scientific Method, Research Methods:Descriptive Research – Observation, Surveys and Interviews, Standardized tests, CaseStudies, Correlational Research, Experimental Research.

**BLOCK- III**

Sensation and Attention Sensation – Definition, Sensory receptors and brain, Thresholds –absolute threshold, difference threshold, Subliminal perception, sensory adaptation, SensoryGating, Selective Attention, Determinants of attention.

**BLOCK- IV**

Perception – definition, Perceptual constancy, Perceptual organization, Depth perception,Motion perception , Perceptual learning, Motives and perception, Perceptual expectancy,Extra Sensory perception.

**BLOCK - V**

Learning – The nature of Learning, Classical Conditioning – Principles and Applications,Operant Conditioning – Principles and Applications, Observational learning, Cognitivefactors in learning – Latent learning , Insight learning.

**REFERENCES:**


1. Santrock, J.W. (2006). Psychology Essentials (Updated 2nded.)New Delhi : Tata Mc Graw Hill.
2. Coon, D., &Mitterer, J.O.(2007). Introduction to Psychology (11thed.). New DelhiCengage Learning India Pvt Ltd.

Web Resource:

https://www.youtube.com/watch?v=vteposoHq_g

https://www.youtube.com/watch?v=brWnoXathaY

https://www.youtube.com/watch?v=eHF6dM9VHHo

https://www.youtube.com/watch?v=hFV71QPvX2I

https://www.youtube.com/watch?v=tIWPmS-g1ps

https://www.youtube.com/watch?v=hHyIDzUdEeg

https://www.youtube.com/watch?v=0jK5x_hsTvY

https://www.youtube.com/watch?v=iwNP0AeMdXE

https://www.youtube.com/watch?v=Zu3MSnzdKHg

https://www.youtube.com/watch?v=2VO10eDIyiE

https://www.youtube.com/watch?v=gOWx60zz2yc

https://www.youtube.com/watch?v=nBCWu-rfuno

**COURSE OUTCOMES**

After completion of the **BASICS OF PSYCHOLOGY**, the Learner will be able to:

- demonstrate understanding of probability functions and use Baye's theorem for future events
- compute expectations, moments, and correlation coefficients
- acquire knowledge of discrete and continuous distributions and their properties

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**B.Sc., Mathematics - Syllabus – IIIyear – VISemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **REAL ANALYSIS - II** |
| **COURSE CODE** | **:** | **BMSS- 61** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **REAL ANALYSIS -II**, the Learner shall be able to:

CO 1: Learn about the concepts of open sets and closed sets.

CO 2: Review about the continuous function and inverse function.

CO 3: Develop the concept of sets of measure zero.

CO 4: have the knowledge of real functions, limit of functions and theirproperties.

CO 5:Gain the knowledge of pointwise convergence and uniform convergence.

## COURSE SYLLABUS

**BLOCK – I**

Open sets; closed sets; Discontinuous function on R1. More about open sets; Connected sets :

Chapter 5 Section 5.4 to 5.6

Chapter 6 Section 6.1 and 6.2

**BLOCK - II**

Bounded sets and totally bounded sets: Complete metric spaces; compact metric spaces, continuous functions on a compact metric space, continuity of inverse functions, uniform continuity.

Chapter 6 Section 6.3 to 6.8.

**BLOCK - III**

Sets of measure zero, definition of the Riemann integral, existence of the Riemann integral;properties of Riemann integral.

Chapter 7 Section 7.1 to 7.4.

**BLOCK– IV**

Derivatives; Rolle 's Theorem, Law of mean, Fundamental theorems of calculus.Chapter7 Section 7.5 to 7.8

**BLOCK – V**

Taylor's theorem; Pointwise convergence of sequences of functions, uniform convergence ofsequences of functions.

Chapter 8 Section 8.5 Chapter 9 Section 9.1 and 9.2.
Content and Treatment as in "Methods of Real Analysis"- Richard R. Goldberg (Oxford and IBH Publishing Co)

**Reference Books:**

1. Principles of Mathematical Analysis By Walter Rudin

2. Mathematical Analysis By Tom M Apostal

Web Resource:

https://www.youtube.com/watch?v=RYtE09eHeqI

https://www.youtube.com/watch?v=SeAplKOMcDc

https://www.youtube.com/watch?v=eqBY1h80e0A

https://www.youtube.com/watch?v=q9d6wAwanGU

https://www.youtube.com/watch?v=46HVqx4VIlc

https://www.youtube.com/watch?v=PEKKx5bb9xA

https://www.youtube.com/watch?v=laVYCVuEOs0

https://www.youtube.com/watch?v=GeivlV-TvD4

https://www.youtube.com/watch?v=0jiVRRKmGoE

https://www.youtube.com/watch?v=LHym1ARc2cE

https://www.youtube.com/watch?v=kTvmhKPqa_w

https://www.youtube.com/watch?v=p7QSRhHHsMk

**COURSE LEARNING OUTCOMES**

After completion of the **REAL ANALYSIS - II**, the Learner will be able to:

CLO 1: Develop the basic knowledge of open sets and closed sets that causes the development of Real analysis.

CLO 2: Analyze and apply the concept of completeness and compactness to prove the theorems.

CLO 3: Enrich the knowledge of upper sum and lower sum; apply it to prove the existence of Riemann integral and its properties.

CLO 4:Analyze and apply the ideas of Rolle's Theorem and law of mean to solve the problems.

CLO 5: Demonstrate the concept of pointwise convergence and Uniform convergence. Also examine whether the given series is pointwise convergence and Uniform convergence.

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**B.Sc., Mathematics - Syllabus – IIIyear – VISemester (Distance Mode)**

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|---|---|---|
| **COURSE TITLE** | **:** | **MECHANICS** |
| **COURSE CODE** | **:** | **BMSS- 62** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **MECHANICS**, the Learner shall be able to:

CO 1: Review the basic concepts of forces and understand the equilibrium of a particle.

CO 2: Understand the concept of different forces and moments and their equilibrium with reference to a coordinate system.

CO 3: Recall the basic concepts of velocity, acceleration etc.,

CO 4: Give the basic knowledge of motion ofprojectiles and developproblem solvingskills.

CO 5:Obtain the basic knowledge of circular motion.

## COURSE SYLLABUS

**BLOCK - I**

**Forces**: Newton's laws of motion-Resultant of two forces on a particle.

**Equilibrium of aparticle**:Limiting equilibrium of a particle on an inclined plane-**Forces on a right body**:Moment of a force-General motion of a right body-Forces along the sides of a triangle

Chapter 2-Section 2.1, 2.2, Chapter-3- Section 3.1,3.2, Chapter 4-Section 4.1,4.2, 4.5.

**BLOCK – II**

**Couples-** Resultant of a several coplanar forces.
**Centre of mass:** Centre of mass-Finding mass centres.
**Virtual work**: Principle of Virtual work

Chapter 4, Sec. 4.6 – 4.7 ,Chapter-6-Section 6.1,6.2, Chapter-8-Section 8.1

**BLOCK - III**

**Kinematics**: Basic units-Velocity-Acceleration-Coplanar motion-**Work, energy and power**:

Work-Conservative field of force-**Rectilinear motion under varying force**: Simpleharmonic motion-Simple harmonic motion along a horizontal line-Simple

harmonic motion along a vertical line.

Chapter-1-Section 1.1-1.4, Chapter-11-Section 11.1,11.2, Chapter-12-Section 12.1-12.3.

**BLOCK – IV**

**Projectiles:** Forces on a projectile-Projectile projected on an inclined plane **Impact**-Impulsive force-Impact of a two spheres.

Chapter-13-Section 13.1,13.2, Chapter-14-Section 14.1-14.3.

**BLOCK - V**

**Circular motion**: Conical pendulum-Motion of a cyclist path-Circular motion on a verticalplane.

**Central orbits:** General orbits-Central orbit-**Moment of inertia**- Perpendicular and parallel axis theorems.

Chapter-15-Section 15.1-15.4, Chapter-16-Section 16.1,16.2, Chapter-17-Section 17.1.

**Text Book:** Mechanics by P.Duraipandian, LaxmiDuraipandian, Muthamizhayapragasham, S.Chand& Company Limited, 2011.

**Reference Books:**

1. Dynamics - K.ViswanathaNaik and M.S.Kasi, Emerald Publishers.

2. Dynamics - A.V.Dharmapadam, S.Viswanathan Publishers.

Web Resource:

https://www.youtube.com/watch?v=ccmA2rHzYRk

https://www.youtube.com/watch?v=w2WUJHQF6wA

https://www.youtube.com/watch?v=v4ZtcMNju58

https://www.youtube.com/watch?v=ColDxGlux3Q

https://www.youtube.com/watch?v=5To0wSUliaY

https://www.youtube.com/watch?v=n89NCdRDoL4

https://www.youtube.com/watch?v=_MR1Dp8-F8w

https://www.youtube.com/watch?v=6TQXZygxsTc

https://www.youtube.com/watch?v=TR4VBdWKEwI

https://www.youtube.com/watch?v=-HdcDk2RbNs

https://www.youtube.com/watch?v=nc_3WRP97zY

https://www.youtube.com/watch?v=FelSLO6zYSM

https://www.youtube.com/watch?v=AVnn2d4Kkps

**COURSE LEARNING OUTCOMES**

After completion of the **MECHANICS**, the Learner will be able to:

CLO 1: Learn about the application of geometric properties in equilibrium of particles.

CLO 2: Explain couples and find the equation of the line of action of the resultant.

CLO 3: have acquired wide knowledge of handling problems related to simple harmonic motion.

CLO 4: Classify the different types of impact of a two spheres and able to solve the related problems.

CLO 5: Demonstrate the concept of Moment of Inertia, understand parallel axis and perpendicular axis theorems, and apply it to find the Moment of Inertia of some simple bodies.

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| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **COMPLEX ANALYSIS** |
| **COURSE CODE** | **:** | **BMSS- 63** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **COMPLEX ANALYSIS**, the Learner shall be able to:

CO 1: Give an insight about fundamental concepts of limits. continuity and differentiability.

CO 2: Understand the concepts of linear fractional transformations..

CO 3: To impart knowledge about Liouville's theorem, maximum modulus theorem and fundamental theorem.

CO 4: Demonstrate the knowledge to expand given complex function by using Taylor's series and Laurent series.

CO 5: Analyze and classify the different types of singularities and poles.

## COURSE SYLLABUS

**BLOCK– I**

Functions of a complex variable - mappings, limits - theorems on limits, continuity,derivatives, differentiation formulae - Cauchy-Riemann equations - sufficient conditions fordifferentiability- Cauchy-Riemann equations in polar form - Analytic functions – Harmonicfunctions.

Chapter 2 Section 2.9 to 2.12, 2.14 to 2.20 and 2.22.

**BLOCK – II**

Linear functions - The transformation w = 1/z - linear fractional transformations - an implicitform - exponential and logarithmic transformations – transformation w = sin z - Preservation of angles.

Chapter 8 Section 8.68 to 8.71 and 8.73, 8.74 Chapter 9 : 9.79.

**BLOCK - III**

Complex Valued functions- contours - contour integrals - Anti derivatives - Cauchy-Goursattheorem. Cauchy integral formula - derivatives of analytic function - Liouvillie's theoremand fundamental theorem of algebra -maximum moduli of functions.

Chapter 4 Section 4.30 to 4.42.

**BLOCK – IV**

Convergence of sequences and series - Taylor's series -Laurent's series - zeros of analyticfunctions.

Chapter 5 Section 5.43 to 5.47.

**BLOCK – V**

Residues - Residue theorems- Three types of isolated singular points- Residues at poles- Zeros and poles of order 'm' - Evaluation of improper integrals – Improper integralsinvolving sines and cosines - Definite integrals involving sines and cosines – Argumentprinciple and Rouche's theorem.

Chapter 6 Section 6.53 to 6.57 and Chapter 7 Section 7.60 to 7.65.

Content and treatment as in

Complex variables and Applications (Sixth Edition) by James Ward Brown and RuelV.Churchill, Mc.Grawhill Inc.

**Reference Books:**

1. Theory and problems of Complex Variables – Murray R.Spiegel, Schaum outlineSeries

2. Complex Analysis – P.Duraipandian

3. Introduction to Complex Analysis S. Ponnuswamy ,Narosa Publishers 1993.

Web Resource:

https://www.youtube.com/watch?v=2r9NlYsBbro
https://www.youtube.com/watch?v=HT5aZUqO6Kg
https://www.youtube.com/watch?v=vVMKpLMghZs
https://www.youtube.com/watch?v=eV-Hw5CYous
https://www.youtube.com/watch?v=dHfkurBOIu0
https://www.youtube.com/watch?v=HSbW5lrCSIg
https://www.youtube.com/watch?v=2XJ05O4n5eY
https://www.youtube.com/watch?v=qTDDFMAt7j4
https://www.youtube.com/watch?v=mukqal0_E2w

https://www.youtube.com/watch?v=T2AiAQXuVoA
https://www.youtube.com/watch?v=pqlf5TQV_8o
https://www.youtube.com/watch?v=_M6-hkirtn4
https://www.youtube.com/watch?v=Q-HBhrrkzT8
https://www.youtube.com/watch?v=6a9KA2oFLO4

**COURSE LEARNING OUTCOMES**

After completion of the **COMPLEX ANALYSIS**, the Learner will be able to:

CLO 1: Aware the importance of analytic functions in applications to the field of sciences and advanced Engineering.

CLO 2: Apply conformal mapping in solving boundary value problems.

CLO 3: Apply the methods of complex analysis to evaluate certain definite integrals.

CLO 4: Find power series expansion of complex functions and the region of validity.

CLO 5: Enrich the knowledge of residues and apply it to evaluate definite integralsand improper integrals.

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|---|---|---|
| **COURSE TITLE** | **:** | **OPERATIONS RESEARCH** |
| **COURSE CODE** | **:** | **BMSSE 61** |
| **COURSE CREDIT** | **:** | **5** |

## COURSE OBJECTIVES

While studying the **OPERATIONS RESEARCH**, the Learner shall be able to:

CO 1: Explain the concept of linear programming and formulate the Linear programming problem.

CO 2: To impart the knowledge of Transportation problem and able to formulate the problem; also skilled to use different methods to find initial basic feasible solution.

CO 3: Discuss the concepts of sequencing problem and able to find the minimum total elapsed time in a sequencing problem.

CO 4: Discuss the concepts of queuing theory and steady state analysis.

CO 5: Find the different types of times and minimum time to complete the project.

## COURSE SYLLABUS

**BLOCK– I**

Linear programming: Formulation – graphical solution. Simplex method. Big-M method.Duality- primal-dual relation.

Chapter 6 Sections 6.1 – 6.13, 6.20 – 6.31

**BLOCK - II**

Transportation problem: Mathematical Formulation. Basic Feasible solution. North WestCorner rule, Least Cost Method, Vogel's approximation. Optimal Solution. UnbalancedTransportation Problems. Degeneracy in Transportation

problems.Assignment problem: Mathematical Formulation. Comparison with Transportation Model.Hungarian Method. Unbalanced Assignment problems

Chapter 9 Sections 9.1 – 9.12 ,Chapter 8 Sections 8.1 – 8.5.

**BLOCK - III**

Sequencing problem: n jobs on 2 machines – n jobs on 3 machines – two jobs on mmachines – n jobs on m machines.

Game theory : Two-person Zero-sum game with saddle point – without saddle point – dominance – solving 2 x n or m x 2 game by graphical method.

Chapter 10 Sections 10.1 – 10.6 ,Chapter 12 Sections 12.1 – 12.15.

**BLOCK – IV**

Queuing theory: Basic concepts. Steady state analysis of M / M / 1 and M / M / S modelswith finite and infinite capacities.

Chapter 5 Sections 5.1 – 5.18.

**BLOCK - V**

Network: Project Network diagram – CPM and PERT computations. (Crashing excluded)

Chapter 13 Sections 13.1 – 13.10.

Content and treatment as in

Operations Research, by R.K.Gupta , Krishna Prakashan India (p),Meerut Publications

**Reference Books :**

1. Gauss S.I. Linear programming , McGraw-Hill Book Company.

2.Gupta P.K. and Hira D.S., Problems in Operations Research ,S.Chand& Co.

4. Kanti Swaroop, Gupta P.K and Manmohan , Problems in Operations Research,Sultan Chand & Sons

5. Ravindran A., Phillips D.T. and Solberg J.J., Operations Research, John wiley&Sons.

6. Taha H.A. Operation Research, Macmillan pub. Company, New York.

7. Linear Programming, Transporation, Assignment Game by Dr.Paria, Books andAllied (p) Ltd.,1999.

8. V.Sundaresan,K.S. Ganapathy Subramaian and K.Ganesan,Resource ManagementTechniques. A.R. Publications .

Web Resource:

https://www.youtube.com/watch?v=ORn1MVC2gq4

https://www.youtube.com/watch?v=ThzORWPGWY0

https://www.youtube.com/watch?v=zdomtSkdUII

https://www.youtube.com/watch?v=D-OjaJzIu3M

https://www.youtube.com/watch?v=W2bNBHsries

https://www.youtube.com/watch?v=1JyproB2_Hc

https://www.youtube.com/watch?v=Z-YqfAA9lew

https://www.youtube.com/watch?v=4OdutS9mSZA

https://www.youtube.com/watch?v=Nrmr8mfELcY

https://www.youtube.com/watch?v=7EB5A3Iv-xk

https://www.youtube.com/watch?v=mluQ-mSlghs

https://www.youtube.com/watch?v=_lMbpyp-NvM

https://www.youtube.com/watch?v=-TDh-5n90vk

**COURSE LEARNING OUTCOMES**

After completion of the **OPERATIONS RESEARCH**, the Learner will be able to:

CLO 1: Develop the knowledge of solving managerial problems using various techniques in operations research

CLO 2: Ability to apply Hungarian algorithm to find an optimal solution for an assignment problem.

CLO 3: Gaining the knowledge of game theory and its applications.

CLO 4:have an in-depth study of queuing theory; Minimize the average queue length and average waiting time of the customers in the system.

CLO 5: Understand the methods of solving real time problems using network scheduling by PERT / CPM

**Tamil Nadu Open University**
**Department of Mathematics**
**School of Science,**
**Chennai – 15**

**B.Sc., Mathematics - Syllabus – IIIyear – VISemester (Distance Mode)**

| | | |
|---|---|---|
| **COURSE TITLE** | **:** | **PUBLIC RELATIONS** |
| **COURSE CODE** | **:** | **BMSSNE 61** |
| **COURSE CREDIT** | **:** | **2** |

## COURSE OBJECTIVES

While studying the **PUBLIC RELATIONS**, the Learner shall be able to:

- To Understand the Public relations in Indian environment.
- To analysis the Public and Public department

## COURSE SYLLABUS

**BLOCK–I: Introduction**

Meaning - Nature, Scope and Importance of Public Relations - Distinction between Publicity, Propaganda, Advertising and Public Relations

**BLOCK–II: Public Relations in Indian Environment**

Changes in Socio, Economic Political and Cultural Relations - Public Relations in Government, Non-Government Organizations, Commercial and Non-Commercial Organizations

**BLOCK- III: Public in Public Relations**

Concept of Public in Public Relations: Communities, Organizations, Suppliers and Distributors and Consumers.

**BLOCK- IV:Public Relations Department**

Public Relations Department: Public Relation Officer (PRO), Role & Responsibilities

- Press Information Bureau: Film Divisions, Publication Division.

**BLOCK - V: Challenges of Public Relations**

Public Relations Education and Training - Challenges and growth in Public Relations-

Public Opinion Leaders

**REFERENCE BOOKS :**

1. Balan.K.R. Lectures on Applied Public Relations, Sultan Chand & Sons, New Delhi,1985.

2. Ganesh, S., Introduction to Public Relations, Indian Publishers Distributors, Delhi,1999.

3. Metha.D.S. Hand Book of Public Relations in India.

4. Moore arid Frank, Public Relations - Principle, Cases and Problems, Sur Publication,New Delhi, 1987.

Web Resource:

https://www.youtube.com/watch?v=eHiggYO5hu4

https://www.youtube.com/watch?v=jjQzt7TI8Bo

https://www.youtube.com/watch?v=ogpyjHvq1-s

https://www.youtube.com/watch?v=RDLKYV6BhMU

https://www.youtube.com/watch?v=xgXxQgO0W3I

https://www.youtube.com/watch?v=Gq2sb3VnU2s

https://www.youtube.com/watch?v=SeSKjkrDPas

https://www.youtube.com/watch?v=PNxu6ypeMDk

https://www.youtube.com/watch?v=fqPUE0aFubE

https://www.youtube.com/watch?v=qN4mBHX-3Ko

https://www.youtube.com/watch?v=OtxBkWcnAns

https://www.youtube.com/watch?v=-YHfZ4Dk7Nk

**COURSE LEARNING OUTCOMES**

After completion of the **PUBLIC RELATIONS**, the Learner will be able to:

gain the knowledge of game theory and its applications

- understand the Public relation in india
- have an in-depth study of public department and challenges of public relations.

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**Department of Mathematics**
**School of Science,**
**Chennai – 15**

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|---|---|---|
| **COURSE TITLE** | **:** | **ALLIED MATEMATICS – 1** |
| **COURSE CODE** | **:** | **BMSSA 11** |
| **COURSE CREDIT** | **:** | **4** |

## COURSE OBJECTIVES

While studying the **ALLIED MATEMATICS – 1**, the Learner shall be able to:

CO 1: Acquire knowledge of solving problem in Matrices.

CO 2: Learn about the differentiation and able to find nth derivative of a certain given function.

CO 3: Represent the partial differential equation by eliminating arbitrary constants and arbitrary functions.

CO 4: Understand and find Fourier series of a given periodic trigonometric functions.

CO 5:To introduce the concept of Operational Research.

## COURSE SYLLABUS

**BLOCK–I:Properties of Matrices**

1.1 Eigenvalues and Eigenvectors

1.2 Cayley Hamilton Theorem

1.3 Similar Matrices

1.4 Diagonalization of Matrices possessing Distinct Eigenvalues

1.5 Eigenvalues for symmetric matrices

**BLOCK -II:Differential Calculus**

2.1 Higher Derivatives – $n^{th}$ derivative – Standard Results

2.2 Trigonometric Transformations

2.3 Formation of Equations Involving Derivatives

2.4 Liebnitz's formula for $n^{th}$ derivative – Problems involving Liebnitz's formula

2.5 Methods of Integration of functions of the Following Types:

$$\frac{1}{(x+p)\sqrt{ax^2+bx+c}}\ ;\ \sqrt{(x-a)(b-x)}\ ;\ \frac{1}{\sqrt{(x-a)(b-x)}}\ ;\ \sqrt{\frac{(x-a)}{(b-x)}}\ .$$

**BLOCK-III: Differential Equations**

Partial Differential Equation

Formation of Equations by Elimination of Constants and an Arbitrary Function

Definition of General, Particular, Complete and Singular Integral

Solutions of First Order Equations in their Standard Forms

Lagrange's Method of Solving of Linear Equations *Pp* □ *Qq*□ *R*

**BLOCK-IV: Fourier Series**

Definition of Fourier Series

Finding Fourier Coefficients for a given Periodic Function with Period 2 □

Odd and Even Functions

Half - Range Series

Development in sine and cosine series

**BLOCK-V:Linear Programming Problem**

Formulation of LPP
Graphical Method
Simplex Method

**BOOKS FOR STUDY**

1. Narayanan, S., Hanumantha Rao and T.K. Manicavachagam Pillai, *Ancillary Mathematics – Volume - I*. Madras.:Viswanathan, S, 2012.

Chapter 3: Sections 3.4, 3.5

Chapter 6: Sections 6.1

2 Narayanan S., R. HanumanthaRao,T.K.Manicavachgam Pillay, and P. Kandaswamy.

*3 Ancillary Mathematics* – Volume – II. Madras.: Viswanathan, S, 1995 Reprint 2011.

Chapter 1 : Sections 8 (cases 5-9)

Chapter 2 : Sections 1 - 5

Chapter 6 : Sections 1-3, 5, 6.

4. Kalavathy S, *Operations Research*, Vikas Publishing House, Noida, Fourth Edition 2013

Chapter 2 : Sections 2.1, 2.2

Chapter 3 : Sections 3.1 – 3.3

Chapter 4 : Sections 4.1, 4.2

**BOOKS FOR REFERENCE**


1. Joseph, Edwards, *An Elementary Treatise on the Differential Calculus*, London: Macmillan, 1948.
2. Manicavachagam Pillai T.K., Natarajan T. and Ganapathy K. S, *Algebra Volume I*.Madras.: Viswanathan, S., 2006.
3. Manicavachagam Pillai T.K., Natarajan T. and Ganapathy K. S, *Algebra Volume II*.Madras.: Viswanathan, S., 2004.
4. Singaravelu A., Allied *Mathematics, Chennai*: Meenakshi, 2010
5. Sundaresan V., K.S. Ganapathy Subramanian, K. Ganesan. *Resource Management Techniques*, 4th ed. Arapakkam: A.R. Publications, 2007.


Web Resource:

https://www.youtube.com/watch?v=61fj80rmULA\

https://www.youtube.com/watch?v=AsW8W7YZILs

https://www.youtube.com/watch?v=EJG6gBeVdfw

https://www.youtube.com/watch?v=mv8AWRs_Fww

https://www.youtube.com/watch?v=AS7THLj-OhI

https://www.youtube.com/watch?v=LT_10p_eu88

https://www.youtube.com/watch?v=d6ama9rgFTY

https://www.youtube.com/watch?v=wmCIrpLBFds

https://www.youtube.com/watch?v=1BjOvv6G3dA

https://www.youtube.com/watch?v=TS9V9OfBggI

https://www.youtube.com/watch?v=zaPGRX3s9fk

https://www.youtube.com/watch?v=8IRrgDoV8Eo

https://www.youtube.com/watch?v=ku1KSgBfzs4

https://www.youtube.com/watch?v=qQFAvPF2OSI

**COURSE LEARNING OUTCOMES**

After completion of the **ALLIED MATEMATICS – 1**, the Learner will be able to:

CLO 1: Familiarized about Eigen values and Eigen vectors and able to diagonalize the matrix for distinct Eigen values.

CLO2:Recall the concept of differentiation and nth derivatives; and solve the simple related problems.

CLO 3: Classify the different forms of first order partial differential equation and able to solve the problems of Physics.

CLO 4: Represent the given function in terms of sine and cosine terms in Fourier series.

CLO 5: Familiarize with the basics of Linear Programming Problem.

**Tamil Nadu Open University**
**Department of Mathematics**
**School of Science,**
**Chennai – 15**

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|---|---|---|
| **COURSE TITLE** | **:** | **ALLIED MATEMATICS – II** |
| **COURSE CODE** | **:** | **BMSSA 22** |
| **COURSE CREDIT** | **:** | **4** |

## COURSE LEARNING OBJECTIVES

While studying the **ALLIED MATEMATICS – II,** the Learner shall be able to:

CO 1: Discuss concepts beta and gamma integrals.

CO 2: To introduce problem solving skills using Numerical Methods.

CO 3: Demonstrate the concept of change of order of integration for two variables.

CO 4: To impart the knowledge of Laplace transform and its properties.

CO 5: To teach statistical tools using correlation.

## COURSE SYLLABUS

**BLOCK- I: Beta, Gamma Integrals**

1.1 Definitions of Beta and Gamma Integrals

1.2 Recurrence Formula for Gamma Functions

1.3 Properties of Beta Functions

1.4 Relation between Beta and Gamma Functions

**BLOCK -II: Numerical Differentiation and Integration**

2.1 Finite Differences- Forward and Backward

2.2 Derivatives using Newton's Forward Difference Formula

2.3 Derivatives using Newton's Backward Difference Formula

2.4 Numerical Integration using Trapezoidal Rule

2.5 Numerical Integration using Simpsons rule

**BLOCK -III: Multiple Integrals**

3.1 Definitions of Double and Triple Integrals

3.2 Change of Order of Integration for Two Variables

3.3 Double Integrals and Triple Integrals in Cartesian Coordinates

**BLOCK- IV: Laplace Transform**

4.1 Definition and Transform of f '(t) & f ''(t)

4.2 Laplace Transform of Functions e-at, cos at, sin at, and tn where 'n' is a Positive Integer

4.3 First Shifting Theorem - Laplace Transform of $e^{-at}$ cos bt, $e^{-at}$ sin bt and $e^{-at}t^n$

4.4 Inverse Laplace Transform

4.5 Solving Second Order Differential Equations with Constant Coefficients using Laplace Transform

**BLOCK -V: Statistics**

5.1 Correlation

5.2 Scatter diagram and its uses

5.3 Karl Pearson's Coefficient of Correlation

5.4 Correlation coefficient for a Bivariate Frequency Distribution

5.5 Probable error of correlation coefficient

5.6 Spearman's rank correlation coefficient

5.7 Merits and demerits of rank correlation coefficient

**BOOKS FOR STUDY**

1. Narayanan S. and Manicavachagam Pillay T.K., Calculus-Vol II. Chennai: S.Viswanathan, 2012.

Chapter 7 Sec. 2.1, 2.3, 3 - 5

2. Narayanan S., R. HanumanthaRao,T.K. Manicavachgam Pillay, and P. Kandaswamy.,

Ancillary Mathematics – Volume – II. Madras.: Viswanathan, S, 1995 Reprint 2011.

Chapter 3 Sec 1 - 3

Chapter 7 Sec 1 – 6

3. R. S. N. Pillai and V. Bagavathi, Statistics, S. Chand & company Ltd, New Delhi, 2007. Chapter 12: Page No: 363 – 395.

4. Sastry S.S., Introductory Methods of Numerical Analysi., Prentice – Hall of India Private Limited :New Delhi(2000).

Chapter 3 : Sections 3.3, 3.3.1, 3.3.2

Chapter 5 : Sections 5.1, 5.2(Numerical differentiation only), 5.4, 5.4.1, 5.4.2, 5.4.3

**BOOKS FOR REFERENCE**


1. Gupta B.D., Numerical Analysis. Delhi:.Konark Publishers pvt.Ltd. , 1999
2. S. C. Gupta and V. K. Kapoor, Fundamentals of Mathematical Statistics, Sultan Chand & Sons, 2007 Reprint 2014
3. Jeffrey Alan, Handbook of Mathematical formulas and Integrals, United States: Academic, 2004.
4. Narayanan S. & T.K. Manicavachagam Pillay, Calculus-Vol I, Madras: S. Viswanathan, 1997.
5. Vedamurthy, V.N., N. Ch. S. N. Iyengar. Numerical Methods. Delhi : Vikas Publishing House, 1998.

Web Resource:

https://www.youtube.com/watch?v=9_m36W3cK74

https://www.youtube.com/watch?v=JeFGc6SpyRg

https://www.youtube.com/watch?v=GdUNs6r57Ik

https://www.youtube.com/watch?v=OMc7nI1CzKE

https://www.youtube.com/watch?v=CXwE01B9m7Q

https://www.youtube.com/watch?v=7EqRRuh-5Lk

https://www.youtube.com/watch?v=ZN2PfqZ4ihM

https://www.youtube.com/watch?v=ZIn1rgZVPFw

https://www.youtube.com/watch?v=8FxMAeiDgws

https://www.youtube.com/watch?v=EDVJotmT584

https://www.youtube.com/watch?v=11c9cs6WpJU

https://www.youtube.com/watch?v=vv-l0vOayKM

https://www.youtube.com/watch?v=0qLKfMm45-4

**COURSE LEARNING OUTCOMES**

After completion of the **ALLIED MATEMATICS –II**, the Learner will be able to:

CLO 1: Describe the relationship between beta and gamma integrals.

CLO 2: To understand problem solving skills using Numerical methods

CLO 3: Enriched the knowledge of multiple integrals and apply it to find the volume and area of the region.

CLO 4: Analyse and apply Laplace transform techniques in appropriate Physical problems.

CLO 5: Recognize the problemsand solving it using correlation.


**தமிழ்நாடு திறந்தநிலைப் பல்கலைக்கழகம்**

**Tamilnadu Open University**

(மாநில திறந்தநிலைப் பல்கலைக்கழகம், தமிழ்நாடு அரசால் நிறுவப்பட்டது.
பல்கலைக்கழக நிதிநல்கைக் குழு & தொலைநிலைக் கல்வி மன்றத்தின் அங்கீகாரம் பெற்றது.
ஆசிய திறந்தநிலைப் பல்கலைக்கழகங்களின் கூட்டமைப்பு &
காமன்வெல்த் பல்கலைக்கழகங்களின் கூட்டமைப்பின் இணைவு பெற்றது.
எண். 577, அண்ணாசாலை, சைதாப்பேட்டை, சென்னை - 600 015

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