# Detailed Syllabus

## Mathematics-1 (15B11MA111)

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|---|---|---|---|
| **Course Code** | 15B11MA111 | **Semester** Odd | **Semester I**<br>**Session** 2024-25<br>**Month from**<br>July to Dec |
| **Course Name** | Mathematics-1 | | |
| **Credits** | 4 | **Contact Hours** | 3-1-0 |
| **Faculty (Names)** | **Coordinator(s)** | | |
| | **Teacher(s) (Alphabetically)** | | |

| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
|---|---|---|
| After pursuing the above-mentioned course, the students will be able to: | | |
| **C105.1** | Define the basics of matrices and calculus of functions of one or more variables. | Remembering (C1) |
| **C105.2** | Explain the concepts of calculus, matrices and Laplace transforms. | Understanding (C2) |
| **C105.3** | Make use of the concepts of matrices, calculus, differential equations and Laplace transforms in solving engineering problems | Applying (C3) |
| **C105.4** | Simplify and solve various problems of vector calculus, differential equations and Laplace transforms in engineering problems. | Analyzing (C4) |

| **Module No.** | **Title of the Module** | **Topics in the Module** | **No. of Lectures for the module** |
|---|---|---|---|
| 1. | Partial differentiation | Chain rule, change of variables, Taylor's series for function of two or more variables, maxima and minima of function of two variables, Jacobians. | 7 |
| 2. | Double integrals | Change of order and change of variables, Gamma and Beta functions, Applications to areas and volumes, Equations to curves and surfaces, Plots of some well known curves and surfaces. | 7 |
| 3. | Vector Differentiation | Gradient, divergence and curl, Normal and tangent to a plane surface. | 3 |
| 4. | Vector Integration | Line integrals, Green's Theorem in a plane, surface integrals, Gauss and Stokes theorems. | 7 |
| 5. | Differential Equations | Differential Equations with constant coefficients, Cauchy-Euler equations, Equations of the form y''=f(y), simple applications. | 6 |
| 6. | Laplace Transform | Laplace Transform, inverse Laplace transform, Dirac delta and unit step function, Solution of IVPs. | 6 |
| 7. | Matrices | Linear dependence and independence of rows, row echelon form, Rank, Gauss elimination method, Eigen | 6 |

| | | | |
|---|---|---|---|
| | | values and vectors, symmetric matrices, Reduction to diagonal form Quadratic forms. | |
| | | **Total number of lectures** | **42** |

**Evaluation Criteria**

| **Components** | **Maximum Marks** |
|---|---|
| T1 | 20 |
| T2 | 20 |
| End Semester Examination | 35 |
| TA | 25 (Quiz, Assignments, Tutorials, PBL) |
| **Total** | **100** |

**Project based learning:** Each student in a group of 4-5 will apply the concepts of Differential Equations and Laplace Transform to solve practical problems.

**Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

| | |
|---|---|
| **1.** | **Jain, R. K. &Iyenger, S. R. K.,** Advanced Engineering Mathematics, Alpha Science International. |
| **2.** | **Prasad, C.,** (a) Mathematics for Engineers (b) Advanced Mathematics for Engineers, Prasad Mudranalaya. |
| **3.** | **Lipschutz, S., Lipsom, M.,** Linear Algebra, Schaum Outline Series. |
| **4.** | **Thomas, G. B and Finney, R. L**., Calculus and Analytical Geometry, Pearson Education Asia (Adisson Wesley), New Delhi. |

## CO-PO and CO-PSO Mapping:

| CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **C105.1** | 2 | 2 | 1 | 1 | | | | | | | | 2 | | |
| **C105.2** | 2 | 2 | 2 | 2 | | | | | | | | 2 | | |
| **C105.3** | 3 | 3 | 3 | 2 | | | | | | | | 2 | | |
| **C105.4** | 3 | 3 | 3 | 2 | | | | | 1 | | | 2 | | |
| **Avg.** | **2.50** | **2.50** | **2.25** | **1.75** | | | | | **1** | | | **2** | | |

# PHYSICS-1 (15B11PH111)

| | | | |
|---|---|---|---|
| **Course Code** | 15B11PH111 | **Semester: ODD** | **Semester: 1st Session:** 2024 -2025<br>**Month from: July to December** |
| **Course Name** | PHYSICS-1 | | |
| **Credits** | 4 | **Contact Hours** | 3-1-0 |

| | | |
|---|---|---|
| **Faculty (Names)** | **Coordinator(s)** | |
| | **Teacher(s) (Alphabetically)** | |

| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
|---|---|---|
| **C101.1** | Recall the basic principles of physics related to optics, relativity, quantum mechanics, atomic physics. | Remembering (C1) |
| **C101.2** | Illustrate the various physical phenomena with interpretation based on the mathematical expressions involved. | Understanding (C2) |
| **C101.3** | Apply the concepts/principles to solve the problems related to wave nature of light, relativity, quantum mechanics and atomic physics. | Applying (C3) |
| **C101.4** | Analyze and examine the solution of the problems using physical and mathematical concepts involved. | Analyzing (C4) |

| **Module No.** | **Title of the Module** | **Topics in the Module** | **No. of Lectures for the module** |
|---|---|---|---|
| **1.** | Physical Optics | Analytical treatment of interference, Intensity distribution of fringe system, Fresnel's Bi-prism, Newton's rings, Michelson interferometer, Diffraction (limited to Fraunhofer class) from Single slit, double slit and Diffraction grating, Polarization, Phenomenological understanding of Birefringence, Principles of use of uni-axial crystals in practical polarizers, compensators and wave plates, Production and analysis of completely polarized light. Retardation Plate, Optical activity, Polarimeter. Resolving Power of Microscope. | 17 |
| **2.** | Relativity | Frame of references, Galilean Transformations, Michelson-Morley experiment, Lorentz transformations, Addition of velocities, Mass variation with velocity, Mass-energy relation. | 5 |
| **3.** | Atomic Structure | Origin of spectral lines, spin and orbital angular momentum, Quantum numbers, Designation of States, Atoms in magnetic field, Zeeman effect. | 4 |
| **4.** | Radiation | Black body radiation, Wein's law, Rayleigh Jeans law, Implications of Bose-Einstein statistics, Planck's law of radiation, Wein's Displacement Law. | 4 |
| **5.** | Quantum Mechanics | Wave-particle duality, Compton scattering, Matter waves, Heisenberg's uncertainty principle, Schrödinger wave equation and its applications to the free particle in a box (1D+3D), potential barrier and tunnel diode as its application | 10 |
| | | **Total number of Lectures** | **40** |

**Evaluation Criteria**

| **Components** | **Maximum Marks** |
|---|---|
| T1 | 20 |
| T2 | 20 |
| End Semester Examination | 35 |
| TA | 25 [Attendance (05M), Two Quizzes (06 M), Assignments in PBL mode (10 M), and Internal assessment (04 M)] |
| **Total** | **100** |

| **Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format) | |
|---|---|
| **1.** | A. K. Ghatak, *Optics*, Tata McGraw Hill. |
| **2.** | E. Hecht, *Optics*, Pearson Education. |
| **3.** | F. A. Jenkins and H. E. White, *Fundamentals of optics*, Tata McGraw Hill. |
| **4.** | R. S. Sirohi, *Wave Optics*, Orient and Longman. |
| **5.** | Reshnick, *Relativity*, New Age. |
| **6.** | A. Beiser, *Concepts of Modern Physics*, Mc Graw Hill International. |
| **7.** | Introduction to Quantum Mechanics by David J. Griffiths, Second Edition, Pearson. |
| **8.** | Quantum Mechanics by Ghatak and Lokanathan, 5$^{th}$ Edition, Macmillan India. |

**Project Based Learning (PBL):** The students will be given small projects (in groups) on various topics like Interference, diffraction, polarization, relativity, radiations, Quantum mechanics, to explore their applications in engineering, and technology to understand the role of physics. This will help the students to connect the concept studied in the class with their application in engineering and technology and will enhance their analytical skills.

# Physics Lab -1 (15B17PH171)

| | | | |
|---|---|---|---|
| **Course Code** | **15B17PH171** | **Semester: ODD** | **Semester: 1st Session:** 2024 -2025 |
| **Course Name** | Physics Lab-1 | | |
| **Credits** | 01 | **Contact Hours** | 0-0-2 |

| | | |
|---|---|---|
| **Faculty (Names)** | **Coordinator(s)** | |
| | **Teacher(s) (Alphabetically)** | |

| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
|---|---|---|
| **C170.1** | Recall optics and modern physics principles behind the experiments. | Remembering (C1) |
| **C170.2** | Explain the experimental setup and the principles involved behind the experiments performed. | Understanding (C2) |
| **C170.3** | Plan the experiment and set the apparatus and take measurements. | Applying (C3) |
| **C170.4** | Analyze the data obtained and calculate the error. | Analyzing (C4) |
| **C170.5** | Interpret and justify the results. | Evaluating (C5) |

| **Module No.** | **Title of the Module** | **List of Experiments** | **CO** |
|---|---|---|---|
| **1.** | Optics | **1.**To determine the wavelength of sodium light with the help of Newton's rings setup<br>**2.**To determine the wavelength of sodium light with the help of Fresnel's Bi-prism<br>**3.** To find the specific rotation of cane- sugar solution by a polarimeter at room temperature, using half-shade / Bi-quartz device.<br>**4.** To determine the dispersive power of the material of a prism with the help of a spectrometer.<br>**5.** To determine the wavelength of prominent spectral lines of mercury light by a plane transmission grating using normal incidence method | 1-5 |
| **2.** | Modern Physics | **6.** To study the Photoelectric effect and determine the value of Planck's constant.<br>**7.** Determination of Planck's constant by measuring radiation in a fixed spectral range. | 1-5 |
| **3.** | Electricity and Magnetism | **8.** To verify Stefan's law by electrical method.<br>**9.**To determine the resistance per unit length of Carey Foster's bridge wire and specific resistance of the material of the given wire using Carey Foster's bridge.<br>**10.** To study the variation of magnetic field with distance, along the axis of Helmholtz galvanometer, and to estimate the radius of the coil. | 1-5 |

**Evaluation Criteria**

| **Components** | **Maximum Marks** |
|---|---|
| Mid Term Viva (V1) | 20 |
| End Term Viva (V2) | 20 |
| D2D | 60 |

| | |
|---|---|
| **Total** | **100** |

| **Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format) | |
|---|---|
| **1.** | Dey and Dutta, *Practical Physics*, Kalyani Publication. |
| **2.** | Experiment hand-outs. |

**Project based learning**: The project based on various concepts like Interference, Diffraction, Polarization, Modern Physics and basics of electricity and magnetism will be developed by every student of the group comprises of two or three students. Additionally, by doing this each member of the group would able to learn the concept and its application to address the challenges associated with the project in the meaning full way.

# Software Development Fundamentals – I (15B11CI111)

| | | | |
|---|---|---|---|
| **Course Code** | 15B11CI111 | **Semester** ODD<br>**(specify Odd/Even)** | **Semester** I **Session:** 2024-25<br>**Month from:** July to Dec |
| **Course Name** | Software Development Fundamentals – I | | |
| **Credits** | 4 | **Contact Hours** | 3-1-0 |

| | | |
|---|---|---|
| **Faculty (Names)** | **Coordinator(s)** | |
| | **Teacher(s) (Alphabetically)** | |

| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
|---|---|---|
| **C109.1** | Explain the logic for solving problems considering various phases of software development life cycle and depicting them using algorithms and flowcharts | Understand (Level 2) |
| **C109.2** | Explain basics of C programming concepts to make decision for solving problems | Understand (Level 2) |
| **C109.3** | Demonstrate and contrast different methods for writing modular programs in C | Understand (Level 2) |
| **C109.4** | Use various C programming constructs to implement iteration, and recursion | Apply (Level 3) |
| **C109.5** | Apply and implement arrays, pointers, structures and file handling for solving real-world problems | Apply (Level 3) |

## 1. CO-PO and CO-PSO Mapping:

| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **C109.1** | **1** | **2** | **2** | | | | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **2** |
| **C109.2** | **2** | **1** | **1** | | | | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **2** |
| **C109.3** | **2** | **2** | **1** | | | | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **2** |
| **C109.4** | **2** | **1** | **2** | | | | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **2** |
| **C109.5** | **2** | **1** | **2** | | | | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **2** |
| **NBA Code: C109** | **2** | **2** | **2** | | | | **1** | **1** | **1** | **1** | **1** | **1** | **1** | **2** |

| **Module No.** | **Subtitle of the Module** | **Topics in the Module** | **No. of Lectures for the module** | **CO Mapping** |
|---|---|---|---|---|
| **1.** | Introduction | Introduction to Software Development Life Cycle, Step by step solution to simple problems, developing logic/flow- chart/pseudo code to solve problems like 2D screen saver, simple/logical games, puzzles | 6 | C109.1 |
| **2.** | Data types, operators, and Control Flow | Data, variables and constants, data types, operators – binary, unary, ternary, operator precedence, operations using different operators, if, if-else, while, do-while, for, switch-case in C Programming | 8 | C109.1, C109.2, C109.4 |
| **3.** | Array | Fundamentals of Array, Implementation of 1D/2D Array and related operations like insertion, traversal, updation, etc. in C programming using different problems | 7 | C109.3, C109.5 |
| **4.** | Pointers | Pointers in C, Dynamic memory allocation for 1D/2D array, Arithmetical operations on pointers | 5 | C109.5 |
| **5.** | Functions | Introduction to Functions and its implementation in C programming language, Functions using Pass by value, functions using pass by reference, recursive functions | 5 | C109.3, C109.4, C109.5 |

| | | | | |
|---|---|---|---|---|
| **6.** | Structures and Union | Introduction and implementation of Structures and Union in C programming, Array of Structures, Pointer to Structures and related operations like insertion, traversal, updation, etc. in C programming using different problems, Structures using function | 5 | C109.3, C109.5 |
| **7.** | File Handling | Introduction to File, creation of files in C programming language, Modes of File Handling like read, write, update; different types of files like binary file and text file and respective operations like, opening, closing, reading, writing, end of file, traversing the file, for structured and unstructured data | 6 | C109.5 |
| | | **Total number of Lectures** | **42** | |

**Evaluation Criteria**

| **Components** | **Maximum Marks** |
|---|---|
| T1 | 20 |
| T2 | 20 |
| End Semester Examination | 35 |
| TA | 25 |

(Attendance = 10, Class Test, Quiz = 05, Internal Assessment = 05, Assignments in PBL mode = 05)

**Total** **100**

**Project-BasedLearning:** In this subject, students work in a team of 3-4 people, to implement a small application/mini-project based on the learned concepts. The students will be able to apply various concepts of SDLC life-cycle, C pointers, functions, arrays, structures, union, and file handling for developing a real-life application. This will aid in their employability in the software industry.

**Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication, etc. (Textbooks, Reference Books, Journals, Reports, Websites,etc)

**Text Books:**


| | |
|---|---|
| **1.** | Paul Deitel and Harvey Deitel, "C How to Program", 9th Edition, Pearson Education, 2022, ISBN: 978-0-13-739839-3 |
| **2.** | E Balagurusamy, "Computing Fundamentals & C Programming", 2nd Edition, McGraw Hill Education, 2017, ISBN: 978-9352604166 |
| **3.** | Greg Perry and Dean Miller, "C Programming Absolute Beginner's Guide", 3rd Edition, Que Publishing, 2013, ISBN: 978-0789751980 |
| **4.** | DavidGriffiths and Dawn Griffiths, "Head First C: A Brain-Friendly Guide", O'Reilly Media, Inc., 2012, ISBN: 978-1449399917 |


**Reference Books:**


| | |
|---|---|
| **1.** | Herbert Schildt, "The Complete Reference C", 4th Edition, McGraw Hill Education, 2017, ISBN: 978-0070411838 |
| **2.** | Brian W. Kernighan and DennisRitchie, "The C Programming Language", 2nd Edition, Pearson Education India, 2015, ISBN: 978-9332549449 |
| **3.** | Behrouz A. Forouzan, Richard F. Gilberg, "Computer Science: A Structured Programming Approach Using C", 3rd Edition, Cengage Learning, 2007, ISBN: 978-8131503638 |

# Software Development Fundamental Lab-1 (24B15CS111)

| | | | |
|---|---|---|---|
| **Course Code** | **24B15CS111** | **Semester** Odd | **Semester: 1st Session: 2024 -2025**<br>**Month from: July – Dec** |
| **Course Name** | Software Development Fundamental Lab-1 | | |
| **Credits** | 1 | **Contact Hours** | 0-0-2 |

| | | |
|---|---|---|
| **Faculty (Names)** | **Coordinator(s)** | |
| | **Teacher(s) (Alphabetically)** | |

| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
|---|---|---|
| **C172.1** | Develop programs/logic for data types, expressions and conditional structure. | Apply (level 3) |
| **C172.2** | Perform programs for arrays, strings and pointers | Apply (level 3) |
| **C172.3** | Perform programs of functions and recursive functions. | Apply (level 3) |
| **C172.4** | Implement programs for structure and union. | Apply (level 3) |
| **C172.5** | Implement menu driven programs to perform basic file operations. | Apply (level 3) |

| **Module No.** | **Title of the Module** | **Topics in the Module** | **No. of Weeks** | **CO Mapping** |
|---|---|---|---|---|
| 1 | Flow chart and Logic Building | Developing logic/flow-chart/pseudo code to solve problems, simple/logical games, puzzles | 2 Weeks | C172.1 |
| 2 | Data Type, Statements, Expressions, Operators | Data, variables and constants, data types, operators – binary, unary, ternary, operator precedence, associativity | 1 Week | C172.1 |
| 3 | Control Flow | Develop C programs using conditional structure (if, if-else, nested if), and iterative control structure (do-while, while, for). Implement switch case statement. | 2 Weeks | C172.1 |
| 4 | Array and String | Array initialization, reading and writing operations with array, one dimensional, two-dimensional array, strings, and related operations like addition, multiplication, traversal, transpose etc. | 2 Weeks | C172.2 |
| 5 | Pointers | Pointers in C, Dynamic memory allocation for 1D/2D array, Arithmetical operations on pointers, recursive functions like palindrome, factorial, fibonacci series, number system etc | 2 Weeks | C172.2, C172.3 |
| 6 | Functions | User defined functions and inbuilt functions, Functions definition, declaration, calling, Pass by value, functions using pass by reference, functions with array | 1 Week | C172.2, C172.3 |

| | | | | |
|---|---|---|---|---|
| 7 | Structures and Union | Struct keyword, Structure and Union, Structure variable, dot operator, pointer to structures, arrow operator, Array of Structures, structure using functions. | 2 Weeks | C172.4, C172.2 |
| 8 | File Handling | File creation, Modes of File Handling like read, write, update; different types of files like binary file and text file and respective operations like, opening, closing, reading, writing, end of file, traversing the file for structured and unstructured data | 2 Weeks | C172.5 |
| **Total Number of Weeks** | | | 14 Weeks | |

**Project Based learning:** In this subject, students work in the team of 3-4 people, to implement a small application/mini-project based on the learned concepts. The students will be able apply various concepts of SDLC lifecycle, C pointers, functions, arrays, structures, union and file handling for developing a real life application. This will aid in their employability in software industry.

**Evaluation Criteria**

| **Components** | **Maximum Marks** |
|---|---|
| Lab Test -1 | 20 |
| Lab Test -2 | 20 |
| Day to Day | 60 |
| Evaluation 1 | 15 |
| Evaluation 2 | 15 |
| Project | 15 |
| Attendance | 15 |
| **Total** | **100** |

**Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication, etc. (Textbooks, Reference Books, Journals, Reports, Websites, etc)

**Text Books:**


| | |
|---|---|
| **1.** | Paul Deitel and Harvey Deitel, "C How to Program", 9th Edition, Pearson Education, 2022, ISBN: 978-0-13-739839-3 |
| **2.** | E Balagurusamy, "Computing Fundamentals & C Programming", 2nd Edition, McGraw Hill Education, 2017, ISBN: 978-9352604166 |
| **3.** | Greg Perry and Dean Miller, "C Programming Absolute Beginner's Guide", 3rd Edition, Que Publishing, 2013, ISBN: 978-0789751980 |
| **4.** | David Griffiths and Dawn Griffiths, "Head First C: A Brain-Friendly Guide", O'Reilly Media, Inc., 2012, ISBN: 978-1449399917 |


**Reference Books:**


| | |
|---|---|
| **1.** | Herbert Schildt, "The Complete Reference C", 4th Edition, McGraw Hill Education, 2017, ISBN: 978-0070411838 |
| **2.** | Brian W. Kernighan and Dennis Ritchie, "The C Programming Language", 2nd Edition, Pearson Education India, 2015, ISBN: 978-9332549449 |
| **3.** | Behrouz A. Forouzan, Richard F. Gilberg, "Computer Science: A Structured Programming Approach Using C", 3rd Edition, Cengage Learning, 2007, ISBN: 978-8131503638 |

# English (15B11HS112)

| | | | |
|---|---|---|---|
| **Course Code** | 15B11HS112 | **Semester**: Odd | **Semester**: I **Session** 2024-25<br>**Month:** July-December |
| **Course Name** | English | | |
| **Credits** | 2 | **Contact Hours** | 1-0-2 |
| **Faculty (Names)** | **Coordinator(s)** | | |
| | **Teacher(s) (Alphabetically)** | | |

| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
|---|---|---|
| **C114.1** | Show proficiency in basic concepts of grammar and phonetics usage. | Remembering (C1) |
| **C114.2** | Demonstrate an understanding of the basic aspects of English as a communication tool. | Understanding (C2) |
| **C114.3** | Apply grammar concepts, vocabulary skills and phonetics for effective communication and also develop effective professional writing skills. | Applying (C3) |
| **C114.4** | Analyze rhetorical devices and literature for enhancing communication skills. | Analyzing (C4) |

| **Module No.** | **Title of the Module** | **Topics in the Module** | **No. of Lectures for the module** |
|---|---|---|---|
| **1.** | English as a Communication Tool | Basic aspects of English: LSRW: Listening, Speaking, Reading, Writing<br>Non-Verbal Communication: Body Language, Voice Modulation, Posture<br>Presentation Skills<br>Phonetics: Transcription, Pronunciation | 6 |
| **2.** | Grammar & Vocabulary | Tense, Aspect, Mood and Voice<br>Vocabulary Enrichment strategies | 1 |
| **3** | Language through Literature | Forms of Literature & Rhetorical Devices<br>One act Play<br>Refund by Fritz Karinthy<br>Famous Speech<br>Swami Vivekanand's Chicago Speech | 3 |
| **4.** | Professional Application/Writing | Textual Organization<br>·Notice, Agenda and Minutes<br>·Format of Report Writing | 4 |
| | | **Total number of Lectures** | **14** |

**Syllabus of Practical:**

| **Syllabus for Reading Modules** | **No. of Hours in Lab: 7** |
|---|---|
| **Practical for Learning Comprehension Strategies of Reading:**<br>Summarizing<br>Inferencing<br>Newspaper reading and comprehension<br>Relating background knowledge<br>Distinguishing between fact and opinion<br>Finding the main idea, important facts, and supporting details | 5 Hrs |
| **Practice Quick Reading through SKY Read up-Speed Up Software or SAT/CAT/IELTS exercises.** | 2 Hrs |
| **Syllabus for Listening Modules** | No. of Hours in Lab: 7 |
| **Practical for Mastering the Skill of Listening:**<br>Listening for the Main Idea; Listening for Detail: 5 Ws and H questions; Listening in sequence: for order following Through Ted Talks<br>Listening for understanding personal & social connotations through News Brief, Interviews.<br>Listening for non-verbal connotations through Audio-Videos and Movie Clips<br>Listening for Functional Language: understanding choice of words for same situation. | 5 Hrs |
| **Practice Listening through software of Sky IELTS Listening Exercises or Podcasts** | 2 Hrs |
| **Syllabus for Speaking Modules** | **No. of Hours in Lab: 7** |
| **Activities for Vocabulary Enrichment and learning Public Speaking:**<br>Practice through JAM Session- Situational Dialogues – Greetings – Taking; Leave – Introducing Oneself and Others. Making Requests and Seeking Permissions.<br>Exposure to Structured Talks - Non-verbal Communication: Practice. Practice of Phonetics, Stress and Intonation while Making a Short Speech, Extempore and Making a Presentation | 3 Hrs |
| **Practice Speaking through software of Sky Pronounce and Sanako Pronounce** | 4 Hrs |

| **Syllabus for Writing Modules** | **No. of Hours in Lab: 7** |
|---|---|
| **Grammar Practice & Exercises:**<br><br>Jumbled Paragraphs for grammar learning<br>Picking the Out of Context sentence in a Jumbled Paragraph for proper communication.<br>Application of right grammar concepts | 2 Hrs |
| **Cohesion in Writing**<br>Practical on Different forms of writing, like persuasive writing, expository, narrative, descriptive | 2 Hr |
| **Practice of Professional Writing**<br>Notice, Agenda. Minutes<br>Memorandum and Letter Format Report Writing | 3 Hrs |
| | |

| **Evaluation Criteria** | |
|---|---|
| **Components** | **Maximum Marks** |
| Mid Term | 30 |
| End Semester Examination | 40 |
| TA | 30 (Project, Lab Assessment) |
| **Total** | **100** |

**PBL Component**: Students will be asked to form groups, with a maximum of five students per group, and will be assigned a project topic on which they will submit a project report.

Top of Form

Bottom of Form

| **Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format) | |
|---|---|
| **1.** | C.L.Bovee, J.V.Thill, M.Chaturvedi, *Business Communication Today*,9th Ed, Pearson Education, Pvt Ltd, 2021. |
| **2.** | A. Tiwari, *Communication Skills in English*. Khanna Publishers, 2022. |
| **3.** | K. M. Quintanilla and S. T. Wahl, *Business and Professional Communication*, Sage Publications Pvt India Ltd, 2011. |
| **4.** | ] S. Kumar and P. Lata, *Communication Skills*, 1st ed. Oxford University Press, 2011. |
| **5.** | R. K. Bansal and J. B. Harrison, *Spoken English for India*, Orient Longman, 2018. |
| **6.** | M. A. Yadugiri, *The Pronunciation of English: Principles and Practice*, India: Viva Books Pvt. Ltd, 2015. |
| **7.** | A. R. Rizvi, *Effective Technical Communication*, 2nd ed. Chennai, India: McGraw Hill Education Private Limited, 2018. |
| **8.** | R. Murphy, *English Grammar in Use*, 5th ed. Cambridge, UK: Cambridge University Press, 2019. |
| **9.** | K. Mohan and N. P. Singh, *Speaking English Effectively*, 2nd ed. Delhi: Macmillan Publishers India Ltd., 2011. |
| **10.** | E. Suresh Kumar and P. A. Sreehari, *A Handbook for English Language Laboratories*. New Delhi: Foundation, 2009. |
| **11.** | F. Karinthy, "The Refund," Online. Available: https://egyankosh.ac.in/bitstream/123456789/27478/1/Unit-4.pdf. |
| **12.** | Swami Vivekananda and S. Srinivasan, "Sisters & Brothers of America: Speech at World Parliament of Religions, Chicago, 1893," Creative Space Independent Publishing Platform, 2015. |

**CO-PO and CO-PSO Mapping:**

| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C114.1 | | | | | | | | | 2 | 1 | | 3 | | |
| C114.2 | | | | | | 1 | | | 2 | 3 | | 3 | | |
| C114.3 | | | | | | | | | 2 | 1 | | 3 | | |
| C114.4 | | | | | | 1 | | | 2 | 1 | | 3 | | |
| **Avg** | | | | | | 1.00 | | | 2.00 | 1.50 | | 3.00 | | |

# Workshop (18B15GE112)

| | | | |
|---|---|---|---|
| **Course Code** | 18B15GE112 | **Semester:** ODD | **Semester:** I **Session:** 2024 -25<br>**Month-:** July-Dec |
| **Course Name** | Workshop | | |
| **Credits** | 1.5 | **Contact Hours** | 0-0-3 |

| | | |
|---|---|---|
| **Faculty (Names)** | **Coordinator(s)** | |
| | **Teacher(s) (Alphabetically)** | |

| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
|---|---|---|
| **C179.1** | Tell the basic Introduction of various shops and safety measures associated with it. | Remembering Level (C1) |
| **C179.2** | Understand the working, usage and application of various Tools and Machines in various shops | Understanding Level(C2) |
| **C179.3** | Build the appropriate Work Plan for the prototype prepration in the various shops. | Applying Level (C3) |
| **C179.4** | Choose the appropriate Tools to fabricate joints utilizing work-bench tools in various shops. | Evaluating Level (C5) |
| **C179.5** | Create various prototypes in the carpentry trade, fitting trade, sheet metal and welding trade. | Creating Level (C6) |

| **Module No.** | **Title of the Module** | **List of Experiments** | **CO** |
|---|---|---|---|
| **1.** | Carpentry | Preparation of T joint as per the given specification.<br>Preparation of dovetail joint/ cross lap joint as per given specification. | **C179.2, C179.3, C179.4 C179.5** |
| **2.** | Welding Shop | To study Gas welding and Arc welding equipment and various safety measures associated with it.<br>To make butt joint and lap joint. | **C179.1, C179.2, C179.3, C179.4, C179.5** |
| **3.** | Sheet Metal Shop | To prepare a square tray using GI sheet.<br>To prepare a funnel using GI sheet. | **C179.2, C179.3, C179.4 C179.5** |
| **4.** | Fitting Shop | To prepare V- groove fit as per given specifications.<br>To prepare square fit as per given specifications. | **C179.2, C179.3, C179.4, C179.5** |

| | | | |
|---|---|---|---|
| **5.** | Machine Shop | To perform turning, facing and grooving operation on Lathe.<br>To perform slotting operation on Shaper Machine.<br>To perform face milling operation on Milling Machine.<br>To study G and M Codes for a CNC Machining. | **C179.1, C179.2** |

**Evaluation Criteria**

| **Components** | **Maximum Marks** |
|---|---|
| Viva 1 | 20 |
| Viva 2 | 20 |
| Report file, Attendance, and D2D | 60 [File Work (20) + Attendance (10) + Experimental Work (30)] |
| **Total** | **100** |

**Project based learning**: Here students are divided in groups and learn about the applying of appropriate tools to fabricate joints utilizing work-bench tools which helps them in creating various prototypes in the field of engineering and technology. In the present workshop laboratory with the application of the course outcomes, students prepare their projects like robotic car, cutting of electronic board made of wood, etc. where application of carpentry shop, sheet metal shop and fitting shop is required.

**Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)


| | |
|---|---|
| **1.** | Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., "Elements of Workshop Technology", Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai |
| **2.** | Kalpakjian S. And Steven S. Schmid, "Manufacturing Engineering and Technology",4th edition, Pearson Education India Edition, 2002. |
| **3.** | Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata Mc GrawHill House, 2017. |
| **4.** | John K.C., Mechanical Workshop Practice, 2nd Edition, PHI, 2010 |
| **5.** | Roy A. Lindberg, "Processes and Materials of Manufacture", 4th edition, Prentice Hall India, 1998 |
| **6.** | Gowri P.Hariharan and A. Suresh Babu," Manufacturing Technology – I" Pearson Education, 2008 |
| **7.** | Raghuwanshi B.S., Workshop Technology Vol. I & II, Dhanpath Rai & Sons. |


## Basic Electronics (24B11EC111)

| | | | | |
|---|---|---|---|---|
| **Course Code** | 24B11EC111 | **Semester:** ODD **(specify Odd/Even)** | **Semester:** 1st **Session:** 2024 -2025 **Month from** July to Dec | |
| **Course Name** | BASIC ELECTRONICS | | | |
| **Credits** | 4 | **Contact Hours** | 3-1-0 | |
| **Faculty (Names)** | **Coordinator(s)** | | | |
| | **Teacher(s) (Alphabetically)** | | | |
| **COURSE OUTCOMES** | | | **COGNITIVE LEVELS** | |

| | | |
|---|---|---|
| **EBEC120.1** | Recall the concepts of various circuit elements and Kirchhoff's laws. | Remembering Level (C1) |
| **EBEC120.2** | Understand the basics of semiconductor PN junction diodes and Op-Amp, and their applications. | Understanding Level (C2) |
| **EBEC120.3** | Apply network theorems to effectively solve complex DC circuits. | Applying Level (C3) |
| **EBEC120.4** | Explain the operation of transistors (BJT and MOSFET) and analyze their biasing techniques. | Analyzing Level (C4) |

| **Module No.** | **Title of Module** | **Topics in the Module** | **No. of Lectures for the module** |
|---|---|---|---|
| 1 | Basic Circuit Analysis | Kirchhoff's Laws, Voltage Divider rule, Current Divider Rule, DC circuit analysis (Nodal, Mesh), Superposition and Thevenin/Norton Theorem | 10 |
| 2 | PN Junction diode and Applications | PN Junction, Biasing the PN Junction, Current–Voltage Characteristics of a PN Junction, PN Junction Diodes, Half Wave Rectifier & Full Wave Rectifier Clipper & Clamping Circuits | 8 |
| 3 | Zener Diode and Applications | Zener Diode and applications, Line and Load Regulations of reference circuits. | 4 |
| 4 | Introduction to BJT | Introduction to BJT, operation, characteristics, Biasing and Stability | 6 |
| 5 | Introduction to MOSFET | Introduction to MOSFET, operation, characteristics and biasing | 6 |
| 6 | Op-amps and applications | Block Diagram Representation of Typical Op-Amp, Schematic Symbol, Op-Amp parameters, Ideal Op-Amp, Equivalent Circuit of Op-Amp, Op-Amp Applications: Inverting Configuration, Non-Inverting Configuration, Voltage Follower, summer, comparator, difference Amplifier, Integrator, Differentiator | 8 |
| | | **Total number of Lectures** | **42** |

**Evaluation Criteria**

| **Components** | **Maximum Marks** |
|---|---|
| T1 | 20 |
| T2 | 20 |
| End Semester Examination | 35 |
| TA | 25 (Assignments, Attendance, Quiz) |
| **Total** | **100** |

**Project-based learning:** Students will learn fundamental concepts, working and applications of different semiconductor devices to develop aptitude among students to design minor and major projects. Also, the students with knowledge of BJT, MOSFETs, and OP-AMP, can design and analyze the circuits for the signal processing applications

**Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books,

| Reference Books, Journals, Reports, Websites etc. in the IEEE format) | |
|---|---|
| Text Books | |
| **1.** | R. L. Boylestad, and L. Nashelsky, "Electronic Devices and Circuit Theory", 11th edition, Prentice Hall of India, 2014. |
| **2.** | D.C. Kulshreshtha, "Basic Electrical Engineering", Revised 1st edition, Tata McGraw Hill, 2017 |
| Reference Books | |
| **3.** | R.C. Dorf and James A. Svoboda, "Introduction to Electric Circuits", 9th edition, John Wiley & Sons, 2013. |
| **4.** | Charles K. Alexander (Author), Matthew N.O Sadiku, "Fundamentals of Electric Circuits", 6th edition, Tata McGraw Hill, 2019. |

# Basic Electronics Lab (24B15EC111)

| **Course Code** | 24B15EC111 | **Semester:** Odd **(specify Odd/Even)** | **Semester:** 1st **Session** 2024-25 **Month from:** July to December |
|---|---|---|---|
| **Course Name** | Basic Electronics Lab | | |
| **Credits** | 1 | **Contact Hours** | 0-0-2 |

| **Faculty (Names)** | **Coordinator(s)** | |
|---|---|---|
| | **Teacher(s) (Alphabetically)** | |

| **COURSE OUTCOMES -** At the end of the course, students will be able to: | | **COGNITIVE LEVELS** |
|---|---|---|
| C141.1 | Recall various electronic components and working of basic measuring instruments | Remembering (C1) |
| C141.2 | Understand the input-output characteristics of BJT | Understanding (C2) |
| C141.3 | Verify Kirchhoff's laws and apply network theorems to solve DC circuit | Applying (C3) |
| C141.4 | Analyze operational amplifier in various configurations and characteristics of basic diodes including their applications | Analyzing (C4) |

| **Module No.** | **Title of the Module** | **List of Experiments** | **CO** |
|---|---|---|---|
| **1.** | Introduction to basic electrical equipment and components | Introduction to various components (Resistor, Capacitor, Inductor, and IC) and instruments Multimeter, Bread board, Regulated D.C. power supply, and CRO. | C141.1 |
| **2.** | Basic Circuit Analysis | Verification of KVL and KCL using a given circuit. | C141.3 |
| **3.** | Basic Circuit Analysis | Verification of Thevenin's Theorem | C141.3 |

| | | | |
|---|---|---|---|
| **4.** | PN Junction diode and Applications | To study the forward bias I-V (current-voltage) characteristics of a simple p-n junction diode. Also determine the forward resistance of the diode | C141.4 |
| **5.** | PN Junction diode and Applications | To observe the output waveform of half/full wave rectifier and calculate its ripple factor and efficiency | C141.4 |
| **6.** | Zener diode and Applications | To study the reverse bias I-V (current-voltage) characteristics of a Zener diode. Also determine the breakdown voltage, static and dynamic resistances. | C141.4 |
| **7.** | Bipolar Junction Transistors | To plot input characteristics of a common emitter NPN BJT | C141.2 |
| **8.** | Bipolar Junction Transistors | To plot output characteristics of a common emitter NPN BJT | C141.2 |
| **9** | Operational Amplifier | To realize inverting and non inverting amplifier configuration using Op-Amp IC- 741 | C141.4 |
| **10.** | Operational Amplifier | To realize adder and subtractor circuits using Op-Amp IC-741 | C141.4 |
| **11.** | Basic Circuit Analysis | Verification of Superposition Theorem | C141.3 |
| **12.** | PN Junction diode and Applications | Realization of desired wave shapes using clipper and clamper circuits | C141.4 |
| **13.** | Virtual Lab Experiments | To plot input characteristics of a common collector NPN BJT. | C141.2 |
| **14.** | Virtual Lab Experiments | To plot output characteristics of a common collector NPN BJT. | C141.2 |

**Evaluation Criteria**

| **Components** | **Maximum Marks** |
|---|---|
| Mid Sem Viva | 20 |
| End Sem Viva | 20 |
| Day-to-day performance, Lab Record | 60 |
| **Total** | **100** |

**Project Based Learning:** Students will learn working of basic electronic equipment and applications of basic circuit theorems and different semiconductor devices including diodes and transistors to design circuits for various applications.

| **Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. ( Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format) | |
|---|---|
| 1. | R. L. Boylestad, and L. Nashelsky, "Electronic Devices and Circuit Theory", 11th Ed., Prentice Hall of India, 2014. |
| 2. | D.C. Kulshreshtha, "Basic Electrical Engineering", Revised 1st Ed., Tata McGraw Hill, 2017 |
| 3. | S.M. Sze, K.K. Ng, "Physics of Semiconductor Devices", Wiley India, 3rd Ed., 2006. |
| 4. | R. A. Gayakwad, "Op-Amps and Linear Integrated Circuits", 4th Ed., Pearson, 2000. |