VISION OF THE DEPARTMENT

To educate students with conceptual knowledge and technical skills in the field of Information Technology with moral and ethical values to achieve excellence, in academic, industry and research centric environments.

MISSION OF THE DEPARTMENT

1. To inculcate in students a firm foundation in theory and practice of IT skills coupled with the thought process for disruptive innovation and research methodologies, to keep pace with emerging technologies.
2. To provide a conducive environment for all academic, administrative, and interdisciplinary research activities using state-of-the-art technologies.
3. To stimulate the growth of graduates and doctorates, who will enter the workforce as productive IT engineers, researchers, and entrepreneurs with necessary soft skills, and continue higher professional education with competence in the global market.
4. To enable seamless collaboration with the IT industry and Government for consultancy and sponsored research.
5. To cater to cross-cultural, multinational, and demographic diversity of students.
6. To educate the students on the social, ethical, and moral values needed to make significant contributions to society.

1. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1. Demonstrate core competence in basic engineering and mathematics to design, formulate, analyze, and solve hardware/software engineering problems.
PEO2. Develop insights in foundational areas of Information Technology and related engineering to address real-world problems using digital and cognitive technologies.
PEO3. Collaborate with industry, academic and research institutions for state-of-the-art product development and research.
PEO4. Inculcate a high degree of professionalism, effective communication skills and team spirit to work on multidisciplinary projects in diverse environments.
PEO5. Practice high ethical values and technical standards.

2. PROGRAMME OUTCOMES (POs)

After going through the four years of study, our Information Technology Graduates will exhibit ability to:

<table>
<thead>
<tr>
<th>PO#</th>
<th>Graduate Attribute</th>
<th>Programme Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Engineering knowledge</td>
<td>Apply knowledge of mathematics, basic science, and engineering science.</td>
</tr>
<tr>
<td>2</td>
<td>Problem analysis</td>
<td>Identify, formulate, and solve engineering problems</td>
</tr>
<tr>
<td>PO#</td>
<td>Graduate Attribute</td>
<td>Programme Outcome</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Design/development of solutions</td>
<td>Design a system or process to improve its performance, satisfying its constraints.</td>
</tr>
<tr>
<td>4</td>
<td>Conduct investigations of complex problems</td>
<td>Conduct experiments &amp; collect, analyze, and interpret the data.</td>
</tr>
<tr>
<td>5</td>
<td>Modern tool usage</td>
<td>Apply various tools and techniques to improve the efficiency of the system.</td>
</tr>
<tr>
<td>6</td>
<td>The Engineer and society</td>
<td>Conduct themselves to uphold the professional and social obligations.</td>
</tr>
<tr>
<td>7</td>
<td>Environment and sustainability</td>
<td>Design the system with environment consciousness and sustainable development</td>
</tr>
<tr>
<td>8</td>
<td>Ethics</td>
<td>Interact in industry, business, and society in a professional and ethical manner.</td>
</tr>
<tr>
<td>9</td>
<td>Individual and teamwork</td>
<td>Function in a multidisciplinary team.</td>
</tr>
<tr>
<td>10</td>
<td>Communication</td>
<td>Proficiency in oral and written communication.</td>
</tr>
<tr>
<td>11</td>
<td>Project management and finance</td>
<td>Implement cost effective and improved system.</td>
</tr>
<tr>
<td>12</td>
<td>Life-long learning</td>
<td>Continue professional development and learning as a life-long activity.</td>
</tr>
</tbody>
</table>

3. PROGRAM SPECIFIC OUTCOMES (PSOs)

**PSO1.** Ability to apply programming principles and practices for the design of software solutions in an internet-enabled world of business and social activities.

**PSO2.** Ability to identify the resources to build and manage the IT infrastructure using the current technologies in order to solve real world problems with an understanding of the tradeoffs involved in the design choices.

**PSO3.** Ability to plan, design and execute projects for the development of intelligent systems with a focus on the future.

4. PEO / PO Mapping

<table>
<thead>
<tr>
<th>PEO’S</th>
<th>PROGRAM OUTCOMES (POs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12</td>
</tr>
<tr>
<td>PEO1</td>
<td>3 3 3 3 3 3 3 3 3 3 3 3 3</td>
</tr>
<tr>
<td>PEO2</td>
<td>3 3 3 3 3 3 3 3 3 3 3 3 3</td>
</tr>
<tr>
<td>PEO3</td>
<td>3 3 3 3 3 3 3 3 3 3 3 3 3</td>
</tr>
<tr>
<td>PEO4</td>
<td>3 3 3 3 3 3 3 3 3 3 3 3 3</td>
</tr>
<tr>
<td>PEO5</td>
<td>3 3 3 3 3 3 3 3 3 3 3 3 3</td>
</tr>
</tbody>
</table>
### CURRICULA AND SYLLABI

#### SEMESTER I

<table>
<thead>
<tr>
<th>S. NO.</th>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>CATEGORY</th>
<th>PERIODS PER WEEK</th>
<th>TOTAL CONTACT PERIODS</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>L    T   P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>THEORY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>HS3151</td>
<td>English for Communication - I</td>
<td>HSMC</td>
<td>3    0   0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>MA3151</td>
<td>Matrices and Calculus</td>
<td>BSC</td>
<td>3    1   0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>PH3151</td>
<td>Engineering Physics</td>
<td>BSC</td>
<td>3    0   0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>CY3151</td>
<td>Engineering Chemistry</td>
<td>BSC</td>
<td>3    0   0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>EE3152</td>
<td>Fundamentals of Electrical and Electronics Engineering</td>
<td>ESC</td>
<td>3    0   0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>GE3153</td>
<td>Programming in C</td>
<td>ESC</td>
<td>2    0   4</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>GE3154</td>
<td>தமிழ் மரபு /Heritage of Tamils</td>
<td>HSMC</td>
<td>1    0   0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRACTICALS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>PH3161</td>
<td>Physics Laboratory</td>
<td>BSC</td>
<td>0    0   2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>GE3162</td>
<td>English Laboratory - I§</td>
<td>EEC</td>
<td>0    0   2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TOTAL</td>
<td></td>
<td>18   1   8</td>
<td>27</td>
<td>23</td>
</tr>
</tbody>
</table>

* § Skill Based Course

#### SEMESTER II

<table>
<thead>
<tr>
<th>S. NO.</th>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>CATEGORY</th>
<th>PERIODS PER WEEK</th>
<th>TOTAL CONTACT PERIODS</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>L    T   P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>THEORY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>HS3251</td>
<td>English For Communication – II</td>
<td>HSMC</td>
<td>3    0   0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>MA3251</td>
<td>Ordinary Differential Equations and Transform Techniques</td>
<td>BSC</td>
<td>3    1   0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>PH3202</td>
<td>Physics of Electronic Materials and Devices</td>
<td>BSC</td>
<td>3    0   0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>GE3155</td>
<td>Engineering Drawing</td>
<td>ESC</td>
<td>2    0   4</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>IT3201</td>
<td>Information Technology Essentials</td>
<td>ESC</td>
<td>3    0   2</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>GE3251</td>
<td>தமிழ் மற்றும் தமிழ்தமிழ்ப் பயனையாளிக்கும் தமிழ் மற்றும் தமிழ்தமிழ்ப் பயனையாளிக்கும் /Tamils and Technology</td>
<td>HSMC</td>
<td>1    0   0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>NCC Credit Course Level 1</td>
<td>-</td>
<td>2    0   0</td>
<td>2</td>
<td>2§</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRACTICALS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>GE3161</td>
<td>Engineering Practices Laboratory</td>
<td>ESC</td>
<td>0    0   4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>CY3161</td>
<td>Chemistry Laboratory</td>
<td>BSC</td>
<td>0    0   2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>GE3261</td>
<td>English Laboratory - II§</td>
<td>EEC</td>
<td>0    0   2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TOTAL</td>
<td></td>
<td>15   1   14</td>
<td>30</td>
<td>23</td>
</tr>
</tbody>
</table>

* § Skill Based Course

a NCC Credit Course level 1 is offered for NCC students only. Other students may enroll for NSS/NSO/YRC activity. The grades earned by the students will be recorded on the Mark Sheet, however the same shall not be considered for the computation of CGPA.

§ Skill Based Course.
UNIT I  BASICS OF COMMUNICATION  9
Listening – Telephone conversation & Writing message, gap filling; Reading – Telephone message, bio-note; Writing – Personal profile; Grammar – Simple present tense, Present continuous tense, Asking questions (wh-questions); Vocabulary – One word substitution, Synonyms

UNIT II  NARRATION  9
Listening – Travel podcast / Watching a travel documentary; Reading – An excerpt from a travelogue, Newspaper Report; Writing – Narrative (Event, personal experience etc.); Grammar – Subject – verb agreement, Simple past, Past continuous Tenses; Vocabulary – Antonyms, Word formation (Prefix and Suffix).

UNIT III  DESCRIPTION  9
Listening – Conversation, Radio/TV advertisement; Reading – A tourist brochure and planning an itinerary, descriptive article / excerpt from literature; Writing – Definitions, Descriptive writing, Checklists; Grammar – Future tense, Perfect tenses, Preposition; Vocabulary – Adjectives and Adverbs

UNIT IV  CLASSIFICATION  9
Listening – Announcements and filling a table; Reading – An article, social media posts and classifying (channel conversion – text to table); Writing – Note making, Note taking and Summarising, a classification paragraph; Grammar – Connectives, Transition words; Vocabulary – Contextual vocabulary, Words used both as noun and verb, Classification related words.

UNIT V  EXPRESSION OF VIEWS  9
Listening – Debate / Discussion; Reading – Formal letters, Letters to Editor, Opinion articles / Blogs; Writing – Letter writing/ Email writing (Enquiry / Permission, Letter to Editor); Grammar – Question tags, Indirect questions, Yes / No questions; Vocabulary – Compound words, Phrasal verbs.

Assessment
Two Written Assessments: 35% weightage each
Assignment: 30% weightage
Designing a tourist brochure / Writing an opinion article / Making a travel podcast

End Semester Exam: 3-hour written exam

TOTAL : 45 PERIODS

COURSE OUTCOMES
At the end of the course, students will be able to
CO1: Use grammar and vocabulary suitable for general context.
CO2: Comprehend the nuances of spoken and written communication.
CO3: Use descriptive and analytical words, phrases, and sentence structures in written communication.
CO4: Read different types of texts and comprehend their denotative and connotative meanings.
CO5: Write different types of texts using appropriate formats.
TEXT BOOKS:
1. “English for Engineers and Technologists” Volume I by Orient Blackswan, 2022

REFERENCES
4. www.uefap.com

CO-PO & PSO MAPPING

<table>
<thead>
<tr>
<th>CO</th>
<th>PO</th>
<th>PSO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Avg.</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

1-low, 2-medium, 3-high

MA3151

MATRICES AND CALCULUS

UNIT I MATRICES
Eigen values and Eigen vectors of a real matrix – Properties of Eigen values - Cayley-Hamilton theorem (excluding proof) – Diagonalization of matrices - Reduction of Quadratic form to canonical form by using orthogonal transformation - Nature of a Quadratic form.

UNIT II FUNCTIONS OF SEVERAL VARIABLES

UNIT III INTEGRAL CALCULUS
Improper integrals of the first and second kind and their convergence – Differentiation under integrals - Evaluation of integrals involving a parameter by Leibnitz rule – Beta and Gamma functions-Properties – Evaluation of integrals by using Beta and Gamma functions – Error functions.

UNIT IV MULTIPLE INTEGRALS
UNIT V  VECTOR CALCULUS (9+3)
Gradient of a scalar field, directional derivative – Divergence and Curl – Solenoidal and Irrotational vector fields - Line integrals over a plane curve - Surface integrals – Area of a curved surface – Volume Integral - Green’s theorem, Stoke’s and Gauss divergence theorems – Verification and applications in evaluating line, surface and volume integrals.

TOTAL: 60 PERIODS

COURSE OUTCOMES:
At the end of the course, the students will be able to:
CO1: Use the matrix algebra methods for solving practical problems.
CO2: Use differential calculus ideas on several variable functions.
CO3: Apply different methods of integration in solving practical problems by using Beta and Gamma functions.
CO4: Apply multiple integral ideas in solving areas and volumes problems.
CO5: Apply the concept of vectors in solving practical problems.

TEXT BOOKS:

REFERENCES:

CO-PO Mapping

<table>
<thead>
<tr>
<th>CO</th>
<th>P01</th>
<th>P02</th>
<th>P03</th>
<th>P04</th>
<th>P05</th>
<th>P06</th>
<th>P07</th>
<th>P08</th>
<th>P09</th>
<th>P10</th>
<th>P11</th>
<th>P12</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>CO2</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>CO3</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>CO4</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>CO5</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Av.</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

1’ = Low; ‘2’ = Medium; ‘3’ = High
UNIT I MECHANICS OF MATERIALS 9

UNIT II OSCILLATIONS, SOUND AND THERMAL PHYSICS 9

UNIT III OPTICS AND LASERS 9

UNIT IV QUANTUM MECHANICS 9

UNIT V CRYSTAL PHYSICS 9

TOTAL: 45 PERIODS

COURSE OUTCOMES:
After completion of this course, the students shall be
CO1: Understand the important mechanical properties of materials
CO2: Express the knowledge of oscillations, sound and applications of Thermal Physics
CO3: Know the basics of optics and lasers and its applications
CO4: Understand the basics and importance of quantum physics.
CO5: Understand the significance of crystal physics.
TEXT BOOKS:

REFERENCES:

CO-PO & PSO MAPPING

<table>
<thead>
<tr>
<th></th>
<th>PO1</th>
<th>PO2</th>
<th>PO3</th>
<th>PO4</th>
<th>PO5</th>
<th>PO6</th>
<th>PO7</th>
<th>PO8</th>
<th>PO9</th>
<th>PO10</th>
<th>PO11</th>
<th>PO12</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO5</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

1-low, 2-medium, 3-high

CY3151 ENGINEERING CHEMISTRY L T P C
3 0 0 3

UNIT I POLYMER CHEMISTRY 9
Engineering Plastics: Polyamides, Polycarbonates and Polyurethanes. Compounding and Fabrication Techniques: Injection, Extrusion, Blow and Calendaring

UNIT II NANO CHEMISTRY 9
UNIT III CORROSION SCIENCE

UNIT IV ENERGY SOURCES
Batteries - Characteristics - types of batteries – primary battery (dry cell), secondary battery (lead acid, lithium-ion-battery)- emerging batteries – nickel-metal hydride battery, aluminum air battery, batteries for automobiles and satellites - Fuel cells (Types) – H₂-O₂ fuel cell - Supercapacitors-Types and Applications, Renewable Energy: Solar- solar cells, DSSC

UNIT V WATER TECHNOLOGY

TOTAL: 45 PERIODS

COURSE OUTCOMES:
CO1: To recognize and apply basic knowledge on different types of polymeric materials, their general preparation methods and applications to futuristic material fabrication needs.
CO2: To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.
CO3: To recognize and apply basic knowledge on suitable corrosion protection technique for practical problems.
CO4: To recognize different storage devices and apply them for suitable applications in energy sectors.
CO5: To demonstrate the knowledge of water and their quality in using at different industries.

TEXT BOOKS:

REFERENCES:
CO - PO Mapping

<table>
<thead>
<tr>
<th></th>
<th>PO1</th>
<th>PO2</th>
<th>PO3</th>
<th>PO4</th>
<th>PO5</th>
<th>PO6</th>
<th>PO7</th>
<th>PO8</th>
<th>PO9</th>
<th>PO10</th>
<th>PO11</th>
<th>PO12</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO5</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

1-low, 2-medium, 3-high

EE3152  FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS ENGINEERING  

UNIT I  BASIC ELECTRICAL CIRCUITS  
DC Circuits: Sources, Ohm's Law - Kirchhoff's Laws – Solution of DC circuits with Independent sources only (Steady state)  

UNIT II  AC AND DC MACHINES  
Magnetic Circuits fundamentals – DC Machines : Construction, Working Principle, Types and Applications of DC Generator and Motor, EMF and Torque equation.  

UNIT III  ANALOG AND DIGITAL ELECTRONICS  
Operation and Characteristics of electronic devices: PN Junction Diodes, Zener Diode, BJT, JFET and MOSFET– Operational Amplifiers (OPAMPs) : Characteristics and basic application circuits-555 timer IC based astable and monostable multivibrator.  
Basic switching circuits – Gates and Flip-Flops-Sample and hold circuit- R-2R ladder type DAC-Successive approximation based ADC.

UNIT IV  SENSORS AND TRANSDUCERS  
Solenoids, electro-pneumatic systems, proximity sensors, limit switches, piezoelectric, hall effect, photo sensors, Strain gauge, LVDT, piezo electric crystals, differential pressure transducer, optical and digital transducers, Smart sensors, Thermal Imagers.

UNIT V  MEASUREMENTS AND INSTRUMENTATION  

TOTAL: 45 PERIODS

COURSE OUTCOMES
Upon successful completion of the course, students should be able to:

CO 1: Compute the electric circuit parameters for simple problems.
CO 2: Explain the working principles and characteristics of electrical machines, electronic devices and measuring instruments.

CO 3: Identify general applications of electrical machines, electronic devices and measuring instruments.

CO 4: Analyze the basic electrical and electronic circuits.

CO 5: Explain the types and operating principles of sensors and transducers.

TEXT BOOKS:

REFERENCES:

<table>
<thead>
<tr>
<th>COs/POs &amp; PSOs</th>
<th>Mapping of COs with POs and PSOs</th>
<th>POs</th>
<th>PSOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td></td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>CO2</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>CO3</td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>CO4</td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CO5</td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

CO/PO & PSO Average: 2.2

1 – Slight, 2 – Moderate, 3 – Substantial

GE3153 PROGRAMMING IN C L T P C 2 0 4 4

UNIT I BASICS OF C PROGRAMMING 6+12
Introduction to programming paradigms — Structure of C program - C programming: Data Types - Constants - Keywords - Operators: Precedence and Associativity - Expressions - Input/Output statements, Assignment statements - Decision making statements - Switch statement.

PRACTICALS:
- Designing programs with algorithms/flowchart
- Programs for i/o operations with different data types
- Programs using various operators
• Programs using decision making and branching statements

UNIT II  LOOP CONTROL STATEMENTS AND ARRAYS  6+12
Iteration statements: For, while, Do-while statements, nested loops, break & continue statements - Introduction to Arrays: Declaration, Initialization - One dimensional array - Two dimensional arrays – Searching and sorting in Arrays – Strings – string handling functions - array of strings

PRACTICALS:
• Programs using for, while, do-while loops and nested loops.
• Programs using arrays and operations on arrays.
• Programs implementing searching and sorting using arrays
• Programs implementing string operations on arrays

UNIT III  FUNCTIONS AND POINTERS  6+12
Modular programming - Function prototype, function definition, function call, Built-in functions – Recursion – Recursive functions - Pointers - Pointer increment, Pointer arithmetic - Parameter passing: Pass by value, Pass by reference, pointer and arrays, dynamic memory allocation with malloc/calloc

PRACTICALS:
• Programs using functions
• Programs using recursion
• Programs using pointers & strings with pointers
• Programs using Dynamic Memory Allocation

UNIT IV  STRUCTURES AND UNION  6+12
Storage class, Structure and union, Features of structures, Declaration and initialization of structures, array of structures, Pointer to structure, structure and functions, typedef , bit fields , enumerated data types, Union.

PRACTICALS:
• Programs using Structures
• Programs using Unions
• Programs using pointers to structures and self-referential structures.

UNIT V  MACROS AND FILE PROCESSING  6+12

PRACTICALS:
• Programs using pre-processor directives & macros
• Programs to handle file operations
• Programs to handle file with structure

COURSE OUTCOMES:
Upon completion of the course, the students will be able to
CO1: Write simple C programs using basic constructs.
CO2: Design searching and sorting algorithms using arrays and strings.
CO3: Implement modular applications using Functions and pointers.
CO4: Develop and execute applications using structures and Unions.
CO5: Solve real world problem using files.

Total Hours: 90 (30+60)

TEXT BOOKS:

REFERENCE BOOKS:

CO's-PO's & PSO's MAPPING

<table>
<thead>
<tr>
<th>CO</th>
<th>PO1</th>
<th>PO2</th>
<th>PO3</th>
<th>PO4</th>
<th>PO5</th>
<th>PO6</th>
<th>PO7</th>
<th>PO8</th>
<th>PO9</th>
<th>PO10</th>
<th>PO11</th>
<th>PO12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AVG</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

1 - low, 2 - medium, 3 - high
அலகு II  பாகங்கள் தொகுப்புகள்: 3
தமிழ் மாதிரிகள் வரிசை பாகத்தொகுப்புகள்: மகாவியங்கள் - தொற்றுப்புறக் கறலகள்: 3

அலகு III  கோபுரக் கலங்கள்: 3
கோலக்கூத்து, கரகொட்ட, வில்லுப்பொட்டு, கணியொன் கூத்து, ஒயிலொட்ட, மதொல்பொமவக் கூத்து, சிலப் பொட்ட, வளரி, புலியொட்ட, தமிழர்களின் விமளயொட்டுகள்.

அலகு IV  தமிழர்களின திறைக் கொட்பொடுகள்: 3

அலகு V  தமிழ் தச்சைகள் முறை தமிழ் பண்பொட்டின் தொக்க - சுயரியொமதியியக்குதல்: 3
தமிழ் விடுதினமலப்மபொரில் தமிழர்களின் பங்கு – இந்தியொவின் பிறப்பகுதிகளில் சித்தருத்துவத்தின் பங்கு – கல்மவட்டுகள், மகமயழுத்துப்படிகள் - தமிழ்ப் புத்தகங்களின் வரலொறு.

TOTAL : 15 PERIODS

TEXT-CUM-REFERENCE BOOKS
1. தமிழக வரலொறு – மகப்பு பண்பொடு – காவ், பிரித்தானியா (வெளியில்: கிருணை பாலானாம் மதர் கோல்பொமவக் கூத்து).
2. காவிலிய கமலை – பல்லவர் தில. கொட்டு (வெளியில் பிரித்தானியா).
3. சித்தருத்துவத்திய திருவள்ளுவர் கொத்தூர் (டெக்கூட்டு வெளியில்).
4. பல்லவர் – உடனொருகல ததக்கத்திய (வெளியில் கடல்கடன்).
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies).
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - ‘Sangam City Civilization on the banks of river Vaigai’ (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation,
Tamil Nadu
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Bookand Educational Services Corporation, Tamil Nadu)

GE3154 HERITAGE OF TAMILS

UNIT I LANGUAGE AND LITERATURE

UNIT II HERITAGE - ROCK ART PAINTINGS TO MODERN ART – SCULPTURE

UNIT III FOLK AND MARTIAL ARTS
Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leather puppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.

UNIT IV THINAI CONCEPT OF TAMILS
Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas.

UNIT V CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE
Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books.

TOTAL: 15 PERIODS

TEXT-CUM-REFERENCE BOOKS
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies).
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - ‘Sangam City Civilization on the banks of river Vaigai’ (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Publishedby: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Bookand Educational Services Corporation, Tamil Nadu)

PH3161 PHYSICS LABORATORY
(0021)

Any SEVEN Experiments

1. Torsional Pendulum-Determination of rigidity modulus of wire and moment of inertia of the disc
2. Non-uniform bending -Determination of Young’s modulus of the material of the beam.
3. Uniform bending–Determination of Young’s modulus of the material of the beam.
4. Lee’s Disc Experiment - Determination of thermal conductivity of bad conductors.
5. Viscosity of Liquids.
6. Acoustic grating-Determination of the velocity of ultrasonic waves in liquids.
7. Ultrasonic interferometer – determination of sound velocity and liquids compressibility
8. Laser-Determination of the wavelength of the laser using grating
   - Determination of the width of the groove of the compact disc using laser.
   - Estimation of laser parameters.
9. Air wedge -Determination of the thickness of a thin sheet/wire
10. a) Optical fibre -Determination of Numerical Aperture and acceptance angle
    b) Determination of bending loss of fibre.
11. Spectrometer-Determination of the wavelength of light using grating
12. Michelson Interferometer -Determination of wavelength of the monochromatic source of light.
13. Photoelectric effect – Determination of Planck’s constant
14. Black body radiation (Demonstration)
15. Melde’s string experiment - Standing waves.
16. Forced and Damped Oscillations.
17. Thermistor sensor
18. Thermocouple sensor
20. Design LCR series and parallel circuit and estimation of the resonant frequency.
22. Four Probe Set up – determination of band gap/resistivity of a material.  

**COURSE OUTCOMES:**

Upon completion of the course, the students will be able

**CO1:** To determine various moduli of elasticity, thermal properties of materials and viscosity of liquids.

**CO2:** To determine the velocity of ultrasonic waves in Liquids.

**CO3:** To calculate and analyze various optical properties.

**CO4:** To build and analyze the characteristics of mechanical vibrations and logic operation.

**CO5:** To determine the desired electric and magnetic parameters of materials, semiconductors devices and sensors.

**CO-PO & PSO MAPPING**

<table>
<thead>
<tr>
<th>PO1</th>
<th>PO2</th>
<th>PO3</th>
<th>PO4</th>
<th>PO5</th>
<th>PO6</th>
<th>PO7</th>
<th>PO8</th>
<th>PO9</th>
<th>PO10</th>
<th>PO11</th>
<th>PO12</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO5</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1-low, 2-medium, 3-high

**GE3162 ENGLISH LABORATORY – I**

**UNIT I**  **SELF-INTRODUCTION**  
Introducing oneself; Telephone conversation, Relaying telephone message – Role play

**UNIT II**  **NARRATION**
Narrating one’s personal experience in front of a group (formal and informal context)  
Ex.: First day in college / vacation / first achievement etc.

**UNIT III**  **CONVERSATION**
Making conversation – formal and informal – Turn taking and Turn giving – Small talk

**UNIT IV**  **SHORT SPEECH**
Giving short speeches on topics like College Clubs and their activities in the college / Campus Facilities / native place and its major attractions.

**UNIT V**  **DISCUSSION**
Taking part in a group discussion on general topics – Debating on topics of interest and relevance.

**Assessment**

Internals – 100%
Short Speeches
Group discussion

**TOTAL: 30 PERIODS**
COURSE OUTCOMES
At the end of the course, students will be able to
CO1. Communicate effectively in formal and informal contexts
CO2. Converse appropriately and confidently with different people
CO3. Express their opinions assertively in group discussions

CO-PO & PSO MAPPING

<table>
<thead>
<tr>
<th>CO</th>
<th>PO</th>
<th>PSO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Avg.</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

1-low, 2-medium, 3-high

HS3251  ENGLISH FOR COMMUNICATION – II  L T P C
3 0 0 3

UNIT I  CAUSE AND EFFECT
Listening – Radio / TV / Podcast Interview (survivors tale) and framing a set of instructions/ Do’s and Don’ts; Reading – Excerpts of Literature (short stories), Journal articles on issues like Global warming; Writing - Instructions; Official letter / email (Request for internship / Industrial visit); Grammar – If conditionals, Imperatives; Vocabulary – Cause and effect expressions, Idiom

UNIT II  COMPARE AND CONTRAST
Listening – Product reviews and gap fill exercises, Short Talks (like TED Talks) for specific information; Reading – Graphical content (table / chart / graph) and making inferences; Writing – Compare and Contrast Essay; Grammar – Degrees of Comparison; Mixed Tenses; Vocabulary – Order of Adjectives, Transition words.

UNIT III  PROBLEM AND SOLUTION
Listening – Group discussion (case study); Reading – Visual content (Pictures on social issues / natural disasters) for comprehension; Editorial; Writing Picture description; Problem and Solution Essay; Grammar – Modal verbs; Relative pronoun; Vocabulary – Negative prefixes, Signal words for problem and solution.

UNIT IV  REPORTING
Listening – Oral news report; Reading – Newspaper report on survey findings – Writing – Survey report, Making recommendations; Grammar – Active and passive voice, Direct and Indirect speech; Vocabulary – Reporting verbs, Numerical adjectives.

UNIT V  PRESENTATION
Listening – Job interview, Telephone interview; Reading - Job advertisement and company profile and making inferences; Writing – Job application (cover letter and CV) Grammar – Prepositional phrases; Vocabulary – Fixed expressions, Collocations.
Assessment
Two Written Assessments : 35% weightage each
Assignment: 30% weightage
Conducting a survey on specific topic and write a final survey report.

End Semester Exam: 3-hour written exam

TOTAL : 45 PERIODS

COURSE OUTCOMES
On completion of the course, the students will be able to:
CO1. Listen effectively to various oral forms of conversation, lectures, discussion and understand the main gist of the content.
CO2. Communicate effectively in formal and informal context.
CO3. Read and comprehend technical texts effortlessly.
CO4. Write reports and job application for internship or placement.
CO5. Learn to use language effectively in a professional context.

TEXT BOOKS
1. “English for Engineers and Technologists” Volume 2 by Orient Blackswan, 2022

REFERENCES
4. www.uefap.com

CO-PO & PSO MAPPING


MA3251 ORDINARY DIFFERENTIAL EQUATIONS AND TRANSFORM TECHNIQUES

UNIT I ORDINARY DIFFERENTIAL EQUATIONS
Homogeneous linear ordinary differential equations of second order, linearity principle, general solution- Particular integral - Operator method - Solution by variation of parameters - Method of

UNIT II LAPLACE TRANSFORMS (9+3)

UNIT III FOURIER SERIES (9+3)

UNIT IV FOURIER TRANSFORMS (9+3)
Fourier integral theorem – Fourier transform pair - Fourier sine and cosine transforms – Properties – Transform of elementary functions - Convolution theorem (without proof) – Parseval’s identity.

UNIT V Z – TRANSFORM AND DIFFERENCE EQUATIONS (9+3)

TOTAL: 60 PERIODS

COURSE OUTCOMES:
At the end of the course, the students will be able to:
CO1: Solve higher order ordinary differential equations which arise in engineering applications.
CO2: Apply Laplace transform techniques in solving linear differential equations.
CO3: Apply Fourier series techniques in engineering applications.
CO4: Understand the Fourier transforms techniques in solving engineering problems.
CO5: Understand the Z-transforms techniques in solving difference equations.

TEXT BOOKS:

REFERENCES:
CO-PO MAPPING

<table>
<thead>
<tr>
<th>CO</th>
<th>PO1</th>
<th>PO2</th>
<th>PO3</th>
<th>PO4</th>
<th>PO5</th>
<th>PO6</th>
<th>PO7</th>
<th>PO8</th>
<th>PO9</th>
<th>PO10</th>
<th>PO11</th>
<th>PO12</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>CO2</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>CO3</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>CO4</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>CO5</td>
<td>3</td>
<td>2</td>
<td></td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Avg</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

1’ = Low; ‘2’ = Medium; ‘3’ = High

PH3202 PHYSICS OF ELECTRONIC MATERIALS AND DEVICES L T P C

UNIT I ELECTRON THEORY OF MATERIALS 9

UNIT II SEMICONDUCTORS AND DISPLAY DEVICES 9

UNIT III MAGNETIC/OPTICAL DATA STORAGE TECHNIQUES 9

UNIT IV DIGITAL ELECTRONICS 9
Analog and digital signals - Digital circuits - Binary number system - conversion of Binary to decimal - decimal to binary - logic gates - OR gate - AND gate - NOT gate - Combination of Logic gates - NAND and NOR as universal building blocks. Boolean algebra and theorems: sum of products, products of sums expression, simplification by Karnaugh Map method, simplification based on basic Boolean theorems - don’t care conditions.

UNIT V NANODEVICES AND QUANTUM COMPUTING 9

TOTAL: 45 PERIODS

COURSE OUTCOMES:
Students should be able to

CO1: To understand and apply the electrical properties of materials.
CO2: To explore the principles of semiconductor and Display Devices
CO3: To make use of magnetic and optical data storage Devices.
CO4: To implement the essential principles of digital electronics for communication.
CO5: Understand the basics of quantum structures and their applications and basics of quantum computing

TEXTBOOKS

4. Electronic devices and circuits - G.J.Mithal, Khana publishers, New Delhi
5. Basic Electronics - B.L. Theraja - S.Chan publication, New Delhi

REFERENCES


CO-PO & PSO MAPPING

<table>
<thead>
<tr>
<th>CO1</th>
<th>PO1</th>
<th>PO2</th>
<th>PO3</th>
<th>PO4</th>
<th>PO5</th>
<th>PO6</th>
<th>PO7</th>
<th>PO8</th>
<th>PO9</th>
<th>PO10</th>
<th>PO11</th>
<th>PO12</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO5</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1-low, 2-medium, 3-high, "-"- no correlation

GE3155 ENGINEERING DRAWING

L T P C
2 0 4 4

CONCEPTS AND CONVENTIONS (NOT FOR EXAMINATION)
Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.
UNIT I  PLANE CURVES  4 + 12
Basic Geometrical constructions, Curves used in engineering practices: Conics — Construction of ellipse, parabola and hyperbola by eccentricity method — Construction of cycloid — construction of involutes of square and circle — Drawing of tangents and normal to the above curves.

UNIT II  PROJECTION OF POINTS, LINES AND PLANE SURFACE  6 + 12
Orthographic projection- Principal planes - First angle projection - projection of points. Projection of straight lines (only First angle projections) inclined to both the principal planes - Determination of true lengths and true inclinations by rotating line method and traces. Projection of planes (polygonal and circular surfaces) inclined to both the principal planes by rotating object method.

UNIT III  PROJECTION OF SOLIDS AND FREEHAND SKETCHING  6 + 12
Projection of simple solids like prisms, pyramids, cylinder, and cone when the axis is inclined to both the principal planes by rotating object method. Visualization concepts and Free Hand sketching: Visualization principles — Representation of Three-Dimensional objects — Layout of views- Freehand sketching of multiple views from pictorial views of objects. Practicing three dimensional modeling of simple objects by CAD Software (Not for examination).

UNIT IV  PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES  6 + 12
Sectioning of simple solids like prisms, pyramids, cylinder, and cone in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other — obtaining true shape of section. Development of lateral surfaces of simple and sectioned solids — Prisms, pyramids cylinders and cones. Development of lateral surfaces of solids with cut-outs and holes. Practicing three dimensional modeling of simple truncated objects by CAD Software (Not for examination).

UNIT V  ISOMETRIC AND PERSPECTIVE PROJECTIONS  6 + 12
Principles of isometric projection — isometric scale - Isometric projections of simple solids and truncated solids - Prisms, pyramids, cylinders, cones- combination of two solid objects in simple vertical positions - Perspective projection of simple solids-Prisms, pyramids, cone and cylinders by visual ray method. Creating isometric model of simple objects from orthographic projections using CAD software (Not for examination).

TOTAL : 90 PERIODS

COURSE OUTCOMES:
On successful completion of this course, the student will be able to
CO1. Draw conic curves, cycloids and involutes
CO2. Draw orthographic projections of points, lines and planes
CO3. Draw orthographic projections and free hand sketches of solids
CO4. Draw sectional views of the objects and development of surfaces.
CO5. Draw isometric and perspective views of simple solids

TEXTBOOKS:
REFERENCES:

Publication of Bureau of Indian Standards:

Special points applicable to University Examinations on Engineering Drawing:
1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets only in the size of A3.
4. The students will be permitted to use appropriate scale to fit the solution within A3 size.
5. The examination will be conducted in appropriate sessions on the same day.

CO-PO & PSO MAPPING

<table>
<thead>
<tr>
<th>COs</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>PSOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>AVG</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

1-low, 2-medium, 3-high, '-'- no correlation

IT3201 INFORMATION TECHNOLOGY ESSENTIALS

UNIT I HARDWARE AND NETWORK ESSENTIALS

UNIT II     WEB AND SCRIPTING ESSENTIALS

UNIT III     FRONT-END ESSENTIALS

UNIT IV     BACK-END SCRIPTING ESSENTIALS

UNIT V     MOBILE AND APPLICATION ESSENTIALS

LABORATORY EXERCISES
1. Design of static webpage primarily with text and CSS.
2. Apply the inline and block level elements to identify the difference in the layout.
3. Design the HTML forms (text boxes, text areas, radio buttons, check boxes and other elements by understanding the input types and specified needs).
4. Include image/audio and video elements in the web pages.
5. Format and position the text using CSS borders, background, and color by understanding the box model.
7. Working with DOM tree and Events.
8. Front-end UI development with React JSX and Components
10. Application backend development with Node.js and Express

TOTAL: 75 PERIODS

COURSE OUTCOMES (COs)
Upon successful completion of the course, the student will reliably demonstrate the ability to:

CO1. Understand the basic concepts of hardware, data communications and networking.
CO2. Create dynamic website/web-based applications using HTML5, CSS3 and understand the syntax, semantics, and dialects of JavaScript.
CO3. Get familiar with the use of Python and ReactJS for GUI Development.
CO5. Identify the fundamental concepts of mobile communications and key issues in the design of commonly used applications.
CO6. Design and build robust and scalable web applications.

TEXTBOOKS:

REFERENCES:

<table>
<thead>
<tr>
<th>CoS</th>
<th>PO1</th>
<th>PO2</th>
<th>PO3</th>
<th>PO4</th>
<th>PO5</th>
<th>PO6</th>
<th>PO7</th>
<th>PO8</th>
<th>PO9</th>
<th>PO10</th>
<th>PO11</th>
<th>PO12</th>
<th>PSO 1</th>
<th>PSO 2</th>
<th>PSO 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CO2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CO3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CO4</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CO5</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>CO6</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AVG</td>
<td>2.67</td>
<td>2.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

GE3251 கையலிதுவுடைய கட்டமைப்பேறு பாடலின் விளக்கம் 3
அலகு I விளக்கமைப்பு பாடலின் விளக்கமைப்பு: 3
தமிழ் கட்டமைப்பு நுற்று விளக்கமைப்பு - பாடலின் விளக்கமைப்பு - கட்டமைப்பு விளக்கமைப்பு - பாடலின் விளக்கமைப்பு - கட்டமைப்பு விளக்கமைப்பு.

அலகு II மூன்றுப் பாடலின் விளக்கமைப்பு: 3
தமிழ் கட்டமைப்பு மூன்றுப் பாடலின் விளக்கமைப்பு - நுற்று விளக்கமைப்பு - கட்டமைப்பு விளக்கமைப்பு - கட்டமைப்பு விளக்கமைப்பு - கட்டமைப்பு விளக்கமைப்பு - கட்டமைப்பு விளக்கமைப்பு.

L T P C 1 0 0 1
கல்வி நுட்பம்:\n

2. காவளை றமம் மற்றும் நீர்ப்பொசனத் மாணுத்தியல் நுட்பம்:\n

3. அறிவியல் தமிழ் மற்றும் கைித்தமிழ்:\n

TOTAL : 15 PERIODS

TEXT-CUM-REFERENCE BOOKS

1. தமிழக வரலொறு – க்களுடன் பண்பொடு – த.தே, பிறனை (தமிழில்: தொகையான பார்கள் பண்பொடு குறித்தியல் குறுக்கு).
2. காற்பிக்கு கொள்ளு – மேலொட்டு ம.குர்றம். (நூல் பிறனை).
3. காற்பிக்கு – காலக் குறித்தியல் குமகக்கான குறுக்கு (தமிழில் விளக்க குறுக்கு).
4. பாலோன் – அறிவியல் குறுக்கு. (தமிழில் விளக்க குறுக்கு)
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils – The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies).
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi – ‘Sangam City Civilization on the banks of river Vaigai’ (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Publishedby: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Bookand Educational Services Corporation, Tamil Nadu)
UNIT I  WEAVING AND CERAMIC TECHNOLOGY  
Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries.

UNIT II  DESIGN AND CONSTRUCTION TECHNOLOGY  

UNIT III  MANUFACTURING TECHNOLOGY  

UNIT IV  AGRICULTURE AND IRRIGATION TECHNOLOGY  

UNIT V  SCIENTIFIC TAMIL & TAMIL COMPUTING  

TOTAL : 15 PERIODS

TEXT-CUM-REFERENCE BOOKS
1. பிள்மள் மக்களு – க்களுடை பண்பொடு – திசைடன் பிள்மள் (மையக்கிணற்று: பிள்மள் பலகத்து மக்களுக்கு பண்பொடு குறிப்பிட்டு).
2. சதுர்கோன்றி நாயகோவில் – சதுர்கோன்றி திருக்குட். (திசைடன் பிள்மள்).
3. செய்யல் – தூத்துக்கு எதிர்குறுத்துப்பின் எதிர்குத்து தவறு காரணிகம் (மையக்கிணற்று செய்யல் பிள்மள்).
4. பெயர்கோன்றி – அன்னக்கோன்றிகள் காரணிகம். (மையக்கிணற்று செய்யல் பிள்மள்).
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils – The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies).
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi – ‘Sangam City Civilization on the banks of river Vaigai’ (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr. K.K. Pillay) (Published by: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)

NX3251 (ARMY WING) NCC Credit Course Level - I

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCC</td>
<td>Aims, Objectives &amp; Organization of NCC</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>NCC 1</td>
<td>Incentives</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCC 2</td>
<td>Duties of NCC Cadet</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCC 3</td>
<td>NCC Camps: Types &amp; Conduct</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NATIONAL INTEGRATION AND AWARENESS

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI 1</td>
<td>National Integration: Importance &amp; Necessity</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI 2</td>
<td>Factors Affecting National Integration</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI 3</td>
<td>Unity in Diversity &amp; Role of NCC in Nation Building</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI 4</td>
<td>Threats to National Security</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PERSONALITY DEVELOPMENT

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD 1</td>
<td>Self-Awareness, Empathy, Critical &amp; Creative Thinking, Decision Making and Problem Solving</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PD 2</td>
<td>Communication Skills</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PD 3</td>
<td>Group Discussion: Stress &amp; Emotions</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LEADERSHIP

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>L 1</td>
<td>Leadership Capsule: Traits, Indicators, Motivation, Moral Values, Honour ‘Code</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L 2</td>
<td>Case Studies: Shivaji, Jhansi Ki Rani</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOCIAL SERVICE AND COMMUNITY DEVELOPMENT

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS 1</td>
<td>Basics, Rural Development Programmes, NGOs, Contribution of Youth</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS 4</td>
<td>Protection of Children and Women Safety</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS 5</td>
<td>Road / Rail Travel Safety</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS 6</td>
<td>New Initiatives</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS 7</td>
<td>Cyber and Mobile Security Awareness</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL : 30 PERIODS

NX3252 (NAVAL WING) NCC Credit Course Level - I

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCC</td>
<td>Aims, Objectives &amp; Organization of NCC</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td>Periods</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>---------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCC 2 Incentives</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCC 3 Duties of NCC Cadet</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCC 4 NCC Camps: Types &amp; Conduct</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NATIONAL INTEGRATION AND AWARENESS</strong></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI 1 National Integration: Importance &amp; Necessity</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI 2 Factors Affecting National Integration</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI 3 Unity in Diversity &amp; Role of NCC in Nation Building</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI 4 Threats to National Security</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PERSONALITY DEVELOPMENT</strong></td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PD 1 Self-Awareness, Empathy, Critical &amp; Creative Thinking, Decision Making and Problem Solving</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PD 2 Communication Skills</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PD 3 Group Discussion: Stress &amp; Emotions</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LEADERSHIP</strong></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L 1 Leadership Capsule: Traits, Indicators, Motivation, Moral Values, Honour Code</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L 2 Case Studies: Shivaji, Jhasi Ki Rani</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SOCIAL SERVICE AND COMMUNITY DEVELOPMENT</strong></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS 1 Basics, Rural Development Programmes, NGOs, Contribution of Youth</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS 4 Protection of Children and Women Safety</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS 5 Road / Rail Travel Safety</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS 6 New Initiatives</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS 7 Cyber and Mobile Security Awareness</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL : 30 PERIODS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NCC Credit Course Level 1* NX3253 (AIR FORCE WING) NCC Credit Course Level - I

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

**NCC GENERAL**

<table>
<thead>
<tr>
<th>Section</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCC 1 Aims, Objectives &amp; Organization of NCC</td>
<td>1</td>
</tr>
<tr>
<td>NCC 2 Incentives</td>
<td>2</td>
</tr>
<tr>
<td>NCC 3 Duties of NCC Cadet</td>
<td>1</td>
</tr>
<tr>
<td>NCC 4 NCC Camps: Types &amp; Conduct</td>
<td>2</td>
</tr>
<tr>
<td><strong>NATIONAL INTEGRATION AND AWARENESS</strong></td>
<td>4</td>
</tr>
<tr>
<td>NI 1 National Integration: Importance &amp; Necessity</td>
<td>1</td>
</tr>
<tr>
<td>NI 2 Factors Affecting National Integration</td>
<td>1</td>
</tr>
<tr>
<td>NI 3 Unity in Diversity &amp; Role of NCC in Nation Building</td>
<td>1</td>
</tr>
<tr>
<td>NI 4 Threats to National Security</td>
<td>1</td>
</tr>
<tr>
<td><strong>PERSONALITY DEVELOPMENT</strong></td>
<td>7</td>
</tr>
<tr>
<td>PD 1 Self-Awareness, Empathy, Critical &amp; Creative Thinking, Decision Making and Problem Solving</td>
<td>2</td>
</tr>
<tr>
<td>PD 2 Communication Skills</td>
<td>3</td>
</tr>
<tr>
<td>PD 3 Group Discussion: Stress &amp; Emotions</td>
<td>2</td>
</tr>
</tbody>
</table>
LEADERSHIP
L 1 Leadership Capsule: Traits, Indicators, Motivation, Moral Values, Honour Code 3
L 2 Case Studies: Shivaji, Jhasi Ki Rani 2

SOCIAL SERVICE AND COMMUNITY DEVELOPMENT
SS 1 Basics, Rural Development Programmes, NGOs, Contribution of Youth 3
SS 4 Protection of Children and Women Safety 1
SS 5 Road / Rail Travel Safety 1
SS 6 New Initiatives 2
SS 7 Cyber and Mobile Security Awareness 1

TOTAL: 30 PERIODS

GE3161 ENGINEERING PRACTICES LABORATORY L T P C 0 0 4 2

GROUP – A (CIVIL & ELECTRICAL)

1. CIVIL ENGINEERING PRACTICES
PLUMBING:
Basic pipe connections involving the fittings like valves, taps, coupling, unions, reducers, elbows and other components used in household fittings. Preparation of plumbing line sketches.
   a) Laying pipe connection to the suction side of a pump
   b) Laying pipe connection to the delivery side of a pump.
   c) Practice in connecting pipes of different materials: Metal, plastic and flexible pipes used in household appliances.

WOOD WORK:
Sawing, planing and making joints like T-Joint, Mortise and Tenon joint and Dovetail joint.

STUDY EXCERSISES
   a) Study of joints in door panels and wooden furniture
   b) Study of common industrial trusses using models.

2. ELECTRICAL ENGINEERING PRACTICES
   a) Basic household wiring using Switches, Fuse, Indicator and Lamp etc.,
   b) Stair case light wiring
   c) Tube – light wiring
   d) Preparation of wiring diagrams for a given situation.
   e) Study of Iron-Box, Fan Regulator and Emergency Lamp
GROUP – B (MECHANICAL AND ELECTRONICS)

3. MECHANICAL ENGINEERING PRACTICES 15

WELDING
a) Arc welding of Butt Joints, Lap Joints, and Tee Joints
b) Gas welding demonstration.
c) Basic Machining - Simple turning, drilling and tapping operations.
d) Study and assembling of the following: Centrifugal pump, Mixer, Air-conditioner

SHEET METAL PRACTICE: Making of a square tray

DEMONSTRATION ON FOUNDRY OPERATIONS.

4. ELECTRONIC ENGINEERING PRACTICES 15
a) Soldering simple electronic circuits and checking continuity.
b) Assembling electronic components on a small PCB and Testing.
c) Study of Telephone, FM radio and Low Voltage Power supplies.

TOTAL: 60 PERIODS

COURSE OUTCOMES:
CO1. Ability to make common joints in carpentry and pipe connections with fittings used in plumbing works.
CO2. Ability to do electrical wiring for household applications.
CO3. Ability to weld the steel the structures and soldering of electronical connections and testing of PCBs

CO-PO & PSO MAPPING

<table>
<thead>
<tr>
<th>COs</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Avg</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>

1-low, 2-medium, 3-high

CY3161 CHEMISTRY LABORATORY L T P C 0 0 2 1

LIST OF EXPERIMENTS:
Minimum of 8 experiments to be conducted
1. Estimation of HCl using Na₂CO₃ as primary standard
2. Determination of alkalinity in water sample.
3. Determination of hardness of water by EDTA method.
4. Determination of DO content of water sample by Winkler’s method.
5. Determination of chloride content of water sample by Argentometric method.
6. Estimation of copper content of the given solution by iodometry.
7. Determination of strength of given hydrochloric acid using pH meter.
8. Determination of strength of acids in a mixture of acids using conductivity meter.
9. Estimation of iron content of the given solution using potentiometer.
10. Estimation of iron content of the water sample using spectrophotometer (1, 10-
   Phenanthroline/thiocyanate method).
11. Estimation of sodium and potassium present in water using flame photometer.
13. Determination of Glass transition temperature of a polymer
14. Phase change in a solid.
15. Corrosion experiment-weight loss method.

TOTAL: 30 PERIODS

COURSE OUTCOMES:
After completion of the laboratory course, the student will be able to –
CO1: analyse the water quality parameters for domestic and industrial purposes.
CO2: determine the amount of metal ions by spectroscopic techniques
CO3: select a suitable polymer for industrial applications.
CO4: quantitatively analyse the impurities in solution by electroanalytical techniques.
CO5: predict the choice of metals for industrial purposes using corrosion studies.

TEXTBOOKS:

CO - PO Mapping

<table>
<thead>
<tr>
<th></th>
<th>PO1</th>
<th>PO2</th>
<th>PO3</th>
<th>PO4</th>
<th>PO5</th>
<th>PO6</th>
<th>PO7</th>
<th>PO8</th>
<th>PO9</th>
<th>PO10</th>
<th>PO11</th>
<th>PO12</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO5</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 - low, 2 - medium, 3 - high, ‘-’ - no correlation

GE3261 ENGLISH LABORATORY – II  L T P C
0 0 2 1

UNIT I INTERVIEW IN SOCIAL CONTEXT 6
Asking questions and answering - Conducting an interview (of an achiever / survivor) – Role play

UNIT II PERSUASIVE SKILLS 6
Speaking about specifications of a product (Eg. Home appliances) – Persuasive Talk – Role play activity.
UNIT III       CASE STUDY
Discussions on Case Study to find solutions for problems in professional contexts – Analytical discussion on various aspects of a given problem.

UNIT IV       VISUAL INTERPRETATION
Describing visual content (Pictures/Table/Chart) using appropriate descriptive language and making appropriate inferences and giving recommendations.

UNIT V       PRESENTATION
Making presentation with visual component (PPT slides) (job interview / project / innovative product presentation)

Assessment
Internals – 100%
Picture / Graphical description and Interpretation
Formal Presentation with visual tool (like PPT)

TOTAL : 30 PERIODS

COURSE OUTCOMES
At the end of the course, students will be able to
CO1: Comprehend and transcode visual content appropriately.
CO2: Participate effectively in formal group discussions.
CO3: Make presentation on a given topic in a formal context.

CO-PO & PSO MAPPING

<table>
<thead>
<tr>
<th>CO</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Avg.</td>
<td>1.2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

1-low, 2-medium, 3-high