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.
PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):
Graduates can

I. Utilize their proficiencies in the fundamental knowledge of basic sciences, mathematics, Artificial Intelligence, data science and statistics to build systems that require management and analysis of large volumes of data.

II. Advance their technical skills to pursue pioneering research in the field of AI and Data Science and create disruptive and sustainable solutions for the welfare of ecosystems.

III. Think logically, pursue lifelong learning and collaborate with an ethical attitude in a multidisciplinary team.

IV. Design and model AI based solutions to critical problem domains.

V. Exhibit innovative thoughts and creative ideas for effective contribution towards economy building.

PROGRAMME OUTCOMES (POs):
After going through the four years of study, our Information Technology Graduates will exhibit ability to:
<table>
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<tr>
<th>PO#</th>
<th>Graduate Attribute</th>
<th>Programme Outcome</th>
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<tbody>
<tr>
<td>1</td>
<td>Engineering knowledge</td>
<td>Apply knowledge of mathematics, basic science and engineering science.</td>
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<td>2</td>
<td>Problem analysis</td>
<td>Identify, formulate and solve engineering problems.</td>
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<td>Design/development of solutions</td>
<td>Design a system or process to improve its intelligence, performance, satisfying its constraints.</td>
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<td>4</td>
<td>Conduct investigations of complex problems</td>
<td>Conduct experiments &amp; collect, analyze and interpret the data.</td>
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<td>Modern tool usage</td>
<td>Apply various tools and techniques to improve the efficiency of the system.</td>
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<tr>
<td>6</td>
<td>The Engineer and society</td>
<td>Conduct themselves to uphold the professional and social obligations.</td>
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<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>
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<tr>
<td>9</td>
<td>Individual and team work</td>
<td>Function in a multidisciplinary team.</td>
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<td>10</td>
<td>Communication</td>
<td>Proficiency in oral and written communication.</td>
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<tr>
<td>11</td>
<td>Project management and finance</td>
<td>Implement cost effective and improved system.</td>
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<tr>
<td>12</td>
<td>Life-long learning</td>
<td>Continue professional development and learning as a life-long activity.</td>
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**PROGRAM SPECIFIC OUTCOMES (PSOs):**
**Graduates should be able to:**

1. Apply the theoretical knowledge of AI and Data Science for effective decision making in business and governance domains.
2. Develop the skills in data analytics and data visualization, pertaining to knowledge acquisition, knowledge representation and knowledge engineering and hence capable of coordinating complex projects.
3. Accomplish research to cater the critical needs of the society through cutting edge technologies of AI.

**PEO / PO Mapping**

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<th>PEO'S</th>
<th>PROGRAM OUTCOMES (POs)</th>
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### SEMESTER I

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| PRACTICALS |     |                                        |          |      |      |      |          |
| 8.    | PH3161      | Physics Laboratory                  | BSC      | 0    | 0    | 2    | 2        | 1       |
| 9.    | GE3162      | English Laboratory - I\(^{\$}\)     | EEC      | 0    | 0    | 2    | 2        | 1       |

**TOTAL** 18 1 8 27 23

\(^{\$}\) Skill Based Course

### SEMESTER II

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| PRACTICALS |     |                                        |          |      |      |      |          |
| 8.    | CY3161      | Chemistry Laboratory                | BSC      | 0    | 0    | 2    | 2        | 1       |
| 9.    | GE3261      | English Laboratory – II\(^{\$}\)    | EEC      | 0    | 0    | 2    | 2        | 1       |

**TOTAL** 15 1 12 30 22

\(^{\#}\) 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 in 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

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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
- Limit, continuity, partial derivatives
- Homogeneous functions and Euler’s theorem
- Total derivative
- Differentiation of implicit functions
- Taylor’s formula for two variables
- Errors and approximations
- Maxima and Minima of functions of two variables
- Lagrange’s method of undermined multipliers.

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
- Double integrals
- Change of order of integration
- Double integrals in polar coordinates
- Area enclosed by plane curves
- Triple integrals
- Volume of Solids
- Change of variables in double and triple integrals.
UNIT V VECTOR CALCULUS

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

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

UNIT II OSCILLATIONS, SOUND AND THERMAL PHYSICS

UNIT III OPTICS AND LASERS

UNIT IV QUANTUM MECHANICS

UNIT V CRYSTAL PHYSICS

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

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1-low, 2-medium, 3-high

CY3151 ENGINEERING CHEMISTRY

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

UNIT II NANOCHEMISTRY
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:

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UNIT I DC CIRCUIT ANALYSIS
Voltage and Current Sources, Ohms Law, Kirchoff’s Current Law, Kirchoff’s voltage law, The single Node – Pair Circuit, series and Parallel Connected Independent Sources, Resistors in Series and Parallel, voltage and current division, Nodal analysis, Mesh analysis

UNIT II BASICS OF ELECTRONICS
Intrinsic semiconductors, Extrinsic semiconductors – P-type and N-type, P-N junction, VI Characteristics of PN junction diode, Zener effect, Zener diode, Zener diode Characteristics-Rectifier circuits-Filters, voltage regulator.circuit, Zener as regulator, relays

UNIT III CURRENT CONTROLLED AND VOLTAGE CONTROLLED DEVICES
Construction, Input and Output characteristics of CE,CB, CC configuration for NPN Transistor JFETs – Drain and Transfer characteristics,-Current equations-Pinch off voltage and its significance-MOSFET- Characteristics- Threshold voltage -Channel length modulation, D- MOSFET, E-MOSFET- Characteristics

UNIT IV OPTOELECTRONICS DEVICES
Construction working principle and applications of Photodiode, Photo resistor, photo transistor Solar Cells, Light Emitting Diodes, Optical Fibre, Laser Diodes, Introduction to LCD, OLED and QLED

UNIT V FUNDAMENTALS OF COMMUNICATION SYSTEMS

TOTAL:45 PERIODS

COURSE OUTCOMES
On completion of the course, the students will be able to
CO1:To gain a solid understanding of basic electronics concepts, including electricity, passive circuit elements, and semiconductor devices.
CO2:To become adept at working with electronic components and circuits, including resistors, capacitors, inductors, diodes, and voltage regulators.
CO3: To achieve competency in comprehending the characteristics and working principles of current-controlled and voltage-controlled devices, such as BJT, SCR, JFET, and MOSFET.

CO4: To acquire knowledge and skills related to various types of optoelectronic devices, and their practical applications.

CO5: To develop proficiency in understanding the principles and techniques of communication systems, including analog and digital modulation, transmission media, and multiplexing.

TEXT BOOKS:

REFERENCES:
4. Introduction to Analog and Digital Communications by Simon Haykin; Michael Moher; 2ed (An Indian Adaptation) Wiley India Private Limited

CO-PO & PSO MAPPING

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1-low, 2-medium, 3-high

GE3153 PROGRAMMING IN C

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

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GE3154

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அங்கா II  புராண-பாண்டிகக் குறிக்குரிய சமயச்சுருள் - சிற்றகம்

அங்கா III  காவியப் பாண்டிகக் குறிக்குரிய சிற்றகம்:

அங்கா IV  சமயப் பாண்டிகக் குறிக்குரிய சிற்றகம்:

அங்கா V  சமயப் பாண்டிகக் குறிக்குரிய சிற்றகம்: சிற்றகம் பாண்டிகக்

TEXT-CUM-REFERENCE BOOKS

1. கியூராணி - பதிகம் பாண்டிகம் - தெற்கு பாண்டிகம் (தொகுப்பிரிவு: நூற்றாணி பாண்டிகம்)
2. பாண்டிகம் - தொகுப்பிரிவு (தொகுப்பிரிவு).
3. பாண்டிகம் - குறிக்குரிய சிற்றகம் (தொகுப்பிரிவு).
4. பாண்டிகம் - குறிக்குரிய சிற்றகம் (தொகுப்பிரிவு).
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, Leatherpuppetry, 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
1. தமிழக வரலொறு – மக்களும் பண் பொடும் – மக.மக.பிள்மள (தவளியீடு:தமிழ்நொடுபொடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் – முமனவர் இல.சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – மவமகநதிக்கமரயில் எங்ககொலநகரிகம் (ததொல்லியல் துமற் தவளியீடு).
4. தபொருமந – ஆற்றங்கமரநொகரிகம். (ததொல்லியல் துமற் தவளியீடு)
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).
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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)

PH3161  PHYSICS LABORATORY  L T P C

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.

TOTAL: 30 PERIODS
**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**

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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

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HS3251 ENGLISH FOR COMMUNICATION – II L T P C

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

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MA3251 ORDINARY DIFFERENTIAL EQUATIONS AND TRANSFORM TECHNIQUES

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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)
Dirichlet’s conditions – General Fourier series – Odd and even functions – Half-range Sine and Cosine series – Complex form of Fourier series – Parseval’s identity – Harmonic Analysis.

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:

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1’ = Low; ’2’ = Medium; ’3’ = High

PH3252 SEMICONDUCTOR DEVICES AND QUANTUM TECHNOLOGY

UNIT I ELECTRON THEORY OF MATERIALS

UNIT II SEMICONDUCTORS AND DISPLAY DEVICES

UNIT III MAGNETIC AND OPTICAL DATA STORAGE TECHNIQUES

UNIT IV NANODEVICES

UNIT V QUANTUM COMPUTING

TOTAL: 45 PERIODS
COURSE OUTCOMES:
Upon completion of this course, the students shall be able to

CO1: Express knowledge on the electrical properties of materials.
CO2: Have an insight into the semiconductor junction and Display Devices
CO3: Explore the magnetic and optical data storage Devices
CO4: Implement the essential principles behind digital electronics.
CO5: Envisage the basics of quantum structures and their applications to quantum computing

TEXTBOOKS
3. V.K. Mehta - Principles of Electronics - S.Chand Publications, New Delhi
4. G.J.Mithal - Electronic devices and circuits, Khanna publishers, New Delhi
5. B.L. Theraja - Basic Electronics - S.Chand Publications, New Delhi

REFERENCES

CO-PO & PSO MAPPING

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1-low, 2-medium, 3-high

GE3155 ENGINEERING DRAWING L T P C

2 0 4 4

CONCEPTS AND CONVENTIONS (NOT FOR EXAMINATION) 2
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:

**CO-PO & PSO MAPPING**

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1-low, 2-medium, 3-high

AZ3201 OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES LTPC 3045

UNIT I OBJECT ORIENTED PROGRAMMING - FUNDAMENTALS 8
C++ - Data abstraction – Encapsulation - Class – Object – Constructor - Copy constructor - Static member - Constant member - Member function – Pointers - String handling - Polymorphism – Function overloading - Operator overloading - Dynamic memory allocation.

UNIT II OBJECT ORIENTED PROGRAMMING - ADVANCED FEATURES 8

UNIT III LINEAR DATA STRUCTURES – LIST, STACK, QUEUE 9
Array-based and Linked list-based implementation – Doubly and Circular Linked list - Applications of list – Polynomial manipulation – Stack ADT – Queue ADT – Circular queue – Applications.

UNIT IV NON-LINEAR DATA STRUCTURES – TREE AND GRAPH 12
UNIT V  SORTING, SEARCHING AND HASHING TECHNIQUES  8

LIST OF EXPERIMENTS:  30
Implement the following experiments using C++:
1. Practice of C++ Programming using statements, expressions, decision making constructs, iterative and branching constructs, structures, arrays, functions and pointers.
2. Implementation of advanced features of C++ like polymorphism, inheritance, templates and STL.
3. Implementation of singly linked list and doubly linked list.
4. Implementation of Stack and Queue using array and linked List.
5. Implementation of applications using linked list and stack.
7. Implementation of Graph traversals algorithms: Breadth-First Search and Depth-First Search.
8. Mini Project to explore all features of C++ using appropriate data structures.

TOTAL: 75 PERIODS

COURSE OUTCOMES:
Upon the completion of the course the student should be able to
CO1: Explore the concepts of OOP to solve the applications.
CO2: Analyse and design the problems using advanced concepts of OOP.
CO3: Select and use appropriate linear data structures for solving a given problem.
CO4: Apply suitable hierarchical data structures to solve practical problems.
CO5: Apply the graph data structures for real world problems.
CO6: Appropriately use sort, search, hash techniques for a given application.

TEXT BOOKS:

REFERENCES:

CO-PO & PSO MAPPING

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நூலகம் தமிழ்மற்றும் திட்டுப்புறம் - மீனொட்சிகள் - தநெவுத் – மெொழர் கொலத்துப் பால்களும் – வீட்டுப் பிற வீட்டுணைடு டுகள்

GE3251 கல்விக்கழகம்

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அணு I திட்டுப்புறம் பால்கள் திட்டுப்புறம்: 3
என்னுடைய தெய்வாப்பை – பால்கள் திட்டுப்புறம் - கல்விக்கழகம்

அணு II தமிழ்மற்றும் திட்டுப்புறம்: 3
என்னுடைய பரிமாற்ற மரபு மாதிரிகளின் வலசம் 1வது பால்கள் தமிழ்மற்றும் திட்டுப்புறம் - என்னுடைய திட்டுப்புறம்

அணு III திட்டுப்புறம் திட்டுப்புறம்: 3
என்னுடைய வளர்சி முக்கியத்துவம் - என்னுடைய வளர்சி முக்கியத்துவம்

அணு IV வீட்டுணையது மற்றும் ஓர்ப்பார்த்த திட்டுப்புறம்: 3
என்னுடைய வீட்டுணையது மற்றும் ஓர்ப்பார்த்த திட்டுப்புறம்

அணு V கலையாளர் கலையாளர் கலையாளர்: 3
என்னுடைய கலையாளர் கலையாளர் கலையாளர் - என்னுடைய கலையாளர் கலையாளர்

TOTAL : 15 PERIODS
TEXT-CUM-REFERENCE BOOKS

1. தமிழக வரலை - மக்களும் பணைப்பும் - தமிழ் பிற்கால தொல்லியல் துறை கல்வியியல் பணிகள் கழகம்.

2. கணினித் தமிழ் - முமனவர் இலைசுந்தரம். (விகடன் பிரசுரம்).

3. கீழடிமவமகநதிக்கமரயில் இறநகர் நொகரிகம் (ததொல்லியல் துறை).

4. தபொருமநாறுகமரனொகரிகம். (ததொல்லியல் துறை).

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)


GE3251 TAMILS AND TECHNOLOGY

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

Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period.

UNIT III MANUFACTURING TECHNOLOGY

UNIT IV  AGRICULTURE AND IRRIGATION TECHNOLOGY  3
Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoompu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries – Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society.

UNIT V  SCIENTIFIC TAMIL & TAMIL COMPUTING  3

TOTAL : 15 PERIODS

TEXT-CUM-REFERENCE BOOKS

1. தமிழக வரலொறு - மக்களும் பண்பொடும் - மக.மக.பிள்மல (தவளியீடு: தமிழ்நொடுபொடநூல் மற்றும் கல்வியியியல் பணிகள் கழகம்).

2. கணினித்தமிழ் - முமனவர் இல.சுந்தரம். (விகடன் பிரசுரம்).

3. கீழடி - மவமக நதிக்கமரயில் எங்ககொல நகர் நொகரிகம் (ததொல்லியல் துமறதவளியீடு).

4. பருந்தை - மூச்சநகர தரகிலிகம். (ததொல்லியல் துமறதவளியீடு)

5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)

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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  L T P C

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NATIONAL INTEGRATION AND AWARENESS  4

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| NI 1 | National Integration: Importance & Necessity | 1 |
| NI 2 | Factors Affecting National Integration | 1 |
| NI 3 | Unity in Diversity & Role of NCC in Nation Building | 1 |
NI 4  Threats to National Security

PERSONALITY DEVELOPMENT  
PD 1  Self-Awareness, Empathy, Critical & Creative Thinking, Decision Making and Problem Solving  2
PD 2  Communication Skills  3
PD 3  Group Discussion: Stress & Emotions  2

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

NCC Credit Course Level 1*

NX3252  
(NAVAL WING) NCC Credit Course Level - I  
L  T  P  C
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NCC GENERAL  
NCC 1  Aims, Objectives & Organization of NCC  1
NCC 2  Incentives  2
NCC 3  Duties of NCC Cadet  1
NCC 4  NCC Camps: Types & Conduct  2

NATIONAL INTEGRATION AND AWARENESS  
NI 1  National Integration: Importance & Necessity  1
NI 2  Factors Affecting National Integration  1
NI 3  Unity in Diversity & Role of NCC in Nation Building  1
NI 4  Threats to National Security  1

PERSONALITY DEVELOPMENT  
PD 1  Self-Awareness, Empathy, Critical & Creative Thinking, Decision Making and Problem Solving  2
PD 2  Communication Skills  3
PD 3  Group Discussion: Stress & Emotions  2

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

NCC Credit Course Level 1*
NX3253  (AIR FORCE WING) NCC Credit Course Level - I
L  T  P  C
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NCC GENERAL  6
NCC 1  Aims, Objectives & Organization of NCC  1
NCC 2  Incentives  2
NCC 3  Duties of NCC Cadet  1
NCC 4  NCC Camps: Types & Conduct  2

NATIONAL INTEGRATION AND AWARENESS  4
NI 1  National Integration: Importance & Necessity  1
NI 2  Factors Affecting National Integration  1
NI 3  Unity in Diversity & Role of NCC in Nation Building  1
NI 4  Threats to National Security  1

PERSONALITY DEVELOPMENT  7
PD 1  Self-Awareness, Empathy, Critical & Creative Thinking, Decision Making and Problem Solving  2
PD 2  Communication Skills  3
PD 3  Group Discussion: Stress & Emotions  2

LEADERSHIP  5
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  8
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

CY3161  CHEMISTRY LABORATORY
L  T  P  C
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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

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1’ = Low; ‘2’ = Medium; ‘3’ = High

GE3261 ENGLISH LABORATORY – II
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UNIT I INTERVIEW IN SOCIAL CONTEXT
Asking questions and answering - Conducting an interview (of an achiever / survivor) – Role play

UNIT II PERSUASIVE SKILLS
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

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