E.G.S.PILLAYENGINEERINGCOLLEGE

(Autonomous)

NAGAPATTINAM– 611 002.

(AffiliatedtoAnnaUniversity,Chennai|AccreditedbyNAACwith'A++'GradeAccredited byNBA |ApprovedbyAICTE, NewDelhi)

REGULATIONS -R2023
B.E./B.Tech.–FIRST YEAR CURRICULUM
ELECTRONICS AND COMMUNICATION ENGINEERING

COURSECODE	COURSENAME	CATEGORY	L	T	P	C	MAX.MARKS		
							CA	ES	TOTAL
SEMETER II									
Theory Courses									
2301MA202	Calculus, Ordinary Differential Equations and Complex Variables	BSC	3	1	0	4	40	60	100
2302EC201	Electron Devices	PCC	3	0	0	3	40	60	100
2301GEX02	Engineering Graphics	ESC	2	1	0	3	40	60	100
2301GEX04	Problem solving using Python	ESC	2	0	4	4	50	50	100
	Language Elective	EEC	2	0	0	2	100	0	100
2301TA201	Tamils and Technology / தமிழரும் தொழில்நுட்பமும்	HSMC	1	0	0	1	100	0	100
Laboratory Courses									
2302EC251	Electron DevicesLaboratory	PCC	0	0	2	1	60	40	100
2301GEX51	Computer Practices Laboratory	ESC	0	0	2	1	100	0	100
2301LS201	LifeSkills –II	-	0	0	0	0	100	0	100
			13	2	8	19	630	270	900

2302MA202	CALCULUS, ORDINARY DIFFERENTIAL EQUATIONS ANDCOMPLEX VARIABLE (Common to ECE and BME)	L	T	P	C
		3	1	0	4

PREREQUISITE:
1. Differentiation
2. Integration

COURSE OBJECTIVES:
1. To develop the use of Laplace transform is needed by engineers for practical applications..
2. To find the solution of ordinary differential equations as most of the engineering problems are characterized in this form.
3. To familiarize the student with analytic functions of complex variables. This is needed in many branches of engineering.
4. To acquaint the student with mathematical tools needed in evaluating complex integrals and their applications.

COURSE OUTCOMES:
On the successful completion of the course, students will be able to

CO1:	Apply Laplace transforms to solve physical problems arising in Engineering.
CO2:	Solve engineering problems by using the concepts of gradient, divergence, and curl.
CO3:	Solve the higher order differential equations using various techniques
CO4:	Make use of differentiation formulas to construct analytic functions related to complex variable
CO5:	Apply the concepts of integration for complex functions in certain regions to determine real integrals.

COs Vs POs MAPPING:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1									
CO2	3	2	1									
CO3	3	2	1									
CO4	3	2	1									
CO5	3	2	1									

COs Vs PSOs MAPPING

COs	PSO1	PSO2	PSO3
CO1	1		
CO2	1		
CO3	1		
CO4	1		
CO5	1		

COURSE CONTENTS:

MODULE I	LAPLACE TRANSFORM	9 Hours

Laplace transform - Inverse Laplace transform - properties of Laplace transforms - Laplace transforms of unit step function, impulse function and periodic function - Convolution theorem - Solution of ordinary differential equations with constant coefficients and system of linear differential equations with constant coefficients using Laplace transform – Applications to electrical circuits.

MODULE II	VECTOR CALCULAS	9 Hours

Scalar and Vector fields - Vector Differentiation - Level surfaces - Directional derivative - Gradient of a scalar field - Divergence and Curl of a vector field. Line, surface and volume integrals; Green's theorem in a plane - Gauss Divergence theorem and Stoke's theorem.

MODULE III	ORDINARY DIFFERENTIAL EQUATIONS	9 Hours

Higher order linear differential equations with constant coefficients – Cauchy's and Legendre's linear differentialequations - Method of variation of parameters.

MODULE IV	COMPLEX VARIABLE – DIFFERENTIATION	9 Hours

Analytic functions - Cauchy-Riemann equations (excluding proof) – Properties of analytic function – Harmonicconjugate - Construction of analytic function by Milne Thomson method – Bilinear transformation.

MODULE V	COMPLEX VARIABLE– INTEGRATION	9 Hours

Cauchy's integral theorem- Cauchy's integral formula for derivatives- Cauchy residue theorem - Taylor's andLaurent's series – Contour integral in unit circle and semi circle (Excluding poles on real axis).

	TOTAL:45 + 15 = 60 HOURS

REFERENCES:

1.G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint,2002.

2.Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

3.W. E. Boyce and R. C. DiPrima, Elementary Differential Equations and Boundary ValueProblems, 9th Edn., Wiley India, 2009.

4.S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.

5.J. W. Brown and R. V. Churchill, Complex Variables and Applications, 7th Ed., McGraw Hill,2004.

6. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint,2008.

2302EC201	ELECTRON DEVICES	L	T	P	C
		3	0	0	3

PREREQUISITE: Semiconductor Physics

COURSE OBJECTIVES:

1. To Describe the principal of operation, analysis and design of junction diode BJT and FET transistors and amplifier circuits.
2. To understand various special devices and its applications
3. To explain the basics of PN junction fabrication

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO1:	DescribeaboutPNJunctiondiode and its characteristics
CO2:	Examine theoperationandcharacteristicfeatures ofBJT
CO3:	Construct various JFET and MOSFET models
CO4:	Test various Special semiconductor devices and its applications
CO5:	Model various applications of PN diode
CO6:	Construct different model of Regulators and SMPS

COs Vs POs MAPPING:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	1	-	-	-	-	-	-	2
CO2	3	3	2	3	1	-	-	-	-	-	-	2
CO3	3	3	2	3	2	-	-	-	-	-	-	2
CO4	3	2	3	2	2	-	-	-	-	-	-	2
CO5	3	2	3	2	1	-	-	-	-	-	-	2
CO6	3	2	3	2	1	-	-	-	-	-	-	2

COs Vs PSOs MAPPING

COs	PSO1	PSO2
CO1	2	-
CO2	2	-
CO3	2	-
CO4	2	-
CO5	2	-
CO6	2	

COURSE CONTENTS:

MODULE I	SEMICONDUCTORDEVICES	9 Hours

PNjunctiondiode,currentequations,diffusionanddriftcurrentdensities,forwardandreversebiascharacteristics,TransitionandDiffusioncapacitances,Switchingcharacteristics,BreakdowninPNjunction diodes.

MODULE II	BIPOLAR JUNCTION TRANSISTOR	9 Hours

NPN - PNP – Junctions - Early effect - Current equations – Input and Output characteristics of CE, CB, CC - Hybrid - π model - h-parameter model.

MODULE III	FIELD EFFECT TRANSISTOR	9 Hours

JFETs – Drain and Transfer characteristics - Current equations- Current equation - Equivalent circuit model and its parameters. Characteristics of MOSFET,E-MOSFET,D-MOSFET, Current equation of MOSFET

MODULE IV	SPECIAL SEMICONDUCTOR DEVICES	9 Hours

Zener diode - Varactor diode ,Tunnel diode,LASER diode, LDR,UJT, SCR, Diac, Triac, LED, LDR,Photo diode, Photo transistor.

MODULE V	APPLICATIONS OF PN JUNCTION DIODE	9 Hours

Rectifier-Half wave -Full-wave: Centre tapped and bridge rectifiers with resistive load -Analysis for Vdc and ripple voltage with C, C-L, L-C and C-L-C filters - Clippers and clampers - Zener diode and its application as regulator–Transistor voltage regulators: Series and shunt regulators -Switched mode power supply.

	TOTAL: 45 HOURS

REFERENCES:

1.Salivahanan. S and Sureshkumar.N, ―Electronic Devices & Circuit, 3rd Edition, Tata McGraw- Hill, New Delhi, 2011, ISBN : 9781259006418

2.Jacob Millman, Christos C. Halkias―Electronic Devices and Circuits 3rdEdition, McGraw Hill Education (India) Private Limited, 2010, ISBN :9780070700215

3.Allen Mottershead, ―Electronic Devices and Circuits-An Introduction 1stEdition, PHI, New Delhi, 1990, ISBN: 9788120301245.

4.Electronic Devices and Circuits Theory, Boylsted, Prentice Hall Publications.

2301GEX02	ENGINEERING GRAPHICS	L	T	P	C
		2	1	0	3

Prerequisite:

1. Basic knowledge about geometry
2. Lettering and Dimensioning

COURSE OBJECTIVES:

CO 1:	To develop in students, graphic skills for communication of concepts, ideas and design of Engineering products
CO 2:	To expose them to existing national standards related to technical drawings

COURSE OUTCOMES:

At the end of this course, Students will be able to,

CO1:	Construct conic curves, involutes and cycloids
CO2:	Solve problems involving projection of points, lines and plane surfaces
CO3:	Draw the projection of a sectioned simple solids
CO4:	Draw the development of a sectioned simple solids
CO5:	Draw the orthographic, isometric projection of simple solids

COs Vs POs / PSOs MAPPING:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	2		2					3		2	2	2	
CO2	3	1	2		2					3		2	2	2	
CO3	3	1	2		2					3		2	2	2	
CO4	3	1	2		2					3		2	2	2	
CO5	3	1	2		2					3		2	2	2	

COURSE CONTENTS:

MODULE I	BASIC CONCEPTS OF TECHNICAL DRAWING AND PLANE CURVES	9 Hours

Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, Scale, layout and folding of drawing sheets – Lettering and dimensioning.
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.

MODULE II	PROJECTION OF POINTS, LINES AND PLANE SURFACES	9 Hours

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.

MODULE III	PROJECTION OF SOLIDS	9 Hours

Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one of the principal planes by rotating object method.

MODULE IV	PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES	9 Hours

Sectioning of above solids 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.

MODULE V	ORTHOGRAPHIC AND ISOMETRIC PROJECTION	9 Hours

Visualization concepts–Representation of Three-Dimensional objects – Layout of views- Free hand sketching of multiple views from pictorial views of Objects.
Isometric view - Prisms, pyramids, cylinders, cones. 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 and miscellaneous problems.

	TOTAL: 45 HOURS

REFERENCES:

1. Bhatt N.D. and Panchal V.M., Charotar Publishing House, 53rd Edition, 2019.
2. Natrajan K.V., A Text Book of Engineering Graphics, Dhanalakshmi Publishers, Chennai, 2018.
3. Parthasarathy, N. S. and Vela Murali, "Engineering Drawing", Oxford University Press, 2015.
4. Basant Agarwal and Agarwal C.M., "Engineering Drawing", McGraw Hill, 2n d Edition, 2019.
5. Gopalakrishna K.R., "Engineering Drawing" (Vol. I&II combined), Subhas Publications, Bangalore,27th Edition, 2017
6. Shah M.B., and Rana B.C., "Engineering Drawing", Pearson Education India, 2nd Edition, 2009.
7. Venugopal K. and Prabhu Raja V., "Engineering Graphics", New Age International (P) Limited, 2008.

2301GEX04	PROBLEM SOLVING USING PYTHON	L	T	P	C
		2	0	4	4

PREREQUISITE:

The course assumes no prior skill or background in design, art or engineering. It is open to all undergraduates and graduate students with an interest in programming.

COURSE OBJECTIVES:

1. To know the basics of problem solving
2. To learn the basic syntax and semantics of python programming
3. To acquire programming skills in core python
4. To use python data structures and develop a skill of designing applications using modules and packages

COURSE CONTENTS:

MODULE I	PROBLEM SOLVING AND PYTHON INTRODUCTION	6 Hours

Problem Solving: Fundamentals of computing-Algorithms-Building blocks of an algorithm-Pseudocodes and flowcharts.**Introduction:**Python Interpreter and Interactive mode- Variables and Identifiers- Data Types-Operators-Operator Precedence-Expressions.

MODULE II	DECISION MAKING	5 Hours

Control Flow: If Statement-Elseif Statements-Nested If-else -Loop structure-While Loop-Nested While Loop-For Loop-Nested for Loop- Break and continue statements.

MODULE III	DATA STRUCTURES IN PYTHON	7 Hours

Introduction- **Lists:** List Operations-List Slicing-List methods- List Loop-Cloning lists- Mutability- Aliasing-**Tuples:** Tuple Assignment- Tuple as return value- Nested tuples- Basic tuple operations-Advanced list processing- List comprehension -Sets and Dictionaries**:** Operations and Methods-Arrays.

MODULE IV	STRINGS AND FUNCTIONS	6 Hours

Strings: Introduction, Indexing, Traversing, Concatenating, Appending, Multiplying, Formatting, Slicing, Comparing, Iterating – Basic Built-In String Functions – Functions: Parameters-Return Values-Local and Global Scope-Recursion- Lambda functions.

MODULE V	FILES, EXCEPTIONS, MODULES AND PACKAGES	6 Hours

Files and Exception: Text Files-Reading and writing files-Format operator-command line arguments- errors and exceptions- Handling exceptions – Multiple Exceptions. Modules:Loading and execution-Packages-Python standard Libraries.

LIST OF EXPERIMENTS:	30 Hours

1. Familiarization with different python IDE
2. Develop simple programs using python syntax and semantics
3. Demonstrate python programs using Arithmetic expressions
4. Illustrate conditional statements with real time problems
5. Basic python applications using list, Tuples.
6. Implement Python program using Dictionaries
7. Implementation of sorting and searching
8. Implement Python program using Strings
9. Write python functions to facilitate code reuse
10. Illustrate file concepts with real time problems
11. Use Exception handling in python applications for error handling
12. Implement simple applications using modules and packages
13. Develop Real Time applications like number guessing, Dice rolling simulator etc.

TOTAL: 60 HOURS

COs Vs POs & PSOs MAPPING:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	2										
CO2	3	3	2	2	2										
CO3	3	3	3	2	2										
CO4	3	3	2	2	2										
CO5	3	3	3	2	2										

REFERENCES:

1. Martin C Brown, "Python The Complete Reference", Mc Graw-Hill Education – Europe, 4th Edition, 2018
2. Reema Thareja, "Python Programming: Using Problem Solving Approach", Oxford University Press, 2017.
3. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", Second Edition, Shroff/O'Reilly Publishers, 2016. (http://greenteapress.com/wp/thinkpython/).
4. Ben Stephenson, "The Python workbook A brief introduction with exercises and solutions", Springer International publishing, Switzerland 2014.
5. Guido van Rossum, Fred L. Drake Jr., "An Introduction to Python – Revised and Updated for Python 3.2", Network Theory Ltd., 2011.
6. Charles Dierbach, "Introduction to Computer Science using Python", Wiley India Edition, 2016.
7. Timothy A. Budd, "Exploring Python", Mc-Graw Hill Education (India) Private Ltd., 2015.
8. https://nptel.ac.in/courses/106106182
9. https://www.learnpython.org/
10. https://www.codeacademy.com/learn/learn-python

REQUIREMENTS: (A batch of 30 students)

Hardware Requirements: Standalone Desktop Computer or Server Supporting
Software Requirements: Python Interpreter Version 3

	ADVANCED ENGLISH COMMUNICATION	L	T	P	C
		2	0	0	2

COURSEOBJECTIVES:

1. Tounderstandthe basics of communication skills.
2. Tospeak English fluently in public places.
3. Toread and write legibly in English.
4. To understand the verbal and non-verbal communication.

COURSEOUTCOMES:

At the end of this course, Students will be able to,

CO1:	Understand the importance of oral and written communication in day-to-day working of the organisation
CO2:	Develop their inter personal skills and problem-solving skills.
CO3:	Understand the role of body language in effective communicate
CO4:	Implement the soft skills in theoretical and practical ways.
CO5:	Adapt the techniques of personality development.

COsVs POsMAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	3	-	-
CO2	-	-	-	-	-	-	-	-	-	3	-	-
CO3	-	-	-	-	-	-	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	-	-	3	-	-
CO5	-	-	-	-	-	-	-	-	-	3	-	-

COURSECONTENTS:

MODULEI	COMMUNICATION AND WRITING SKILLS	12 Hours

Over view of communication skills, Barriers of communication skills, Effective communication skills - Verbal and non – verbal and Pronunciation - Story writing -Email writing: Formal and informal emails, activity-Build your CV– start writing your comprehensive CV including every achievement in your life.

MODULEII	VOCABULARY BUILDING	12 Hours

Technical specific terms related to the field of technology, Phrasal verbs, Idioms, Significant abbreviations and acronyms- Formal business vocabulary, Synonyms and antonyms-Technical vocabulary.

MODULEIII	LISTENING SKILLS	12 Hours

Importance of listening skills, Difference between listening and hearing, Types of listening, Listen to recording and answer questions based on them. Listening and note taking.

MODULEIV	READING AND SPEAKING SKILLS	12 Hours

Reading and comprehension of general and technical articles, Precise writing, Summarizing, Abstracting; Individual and group presentations, Impromptu presentation, Public speaking; Interview skills and Group discussion.

MODULEV	COMPONENTS OF PERSONALITY DEVELOPMENT	12 Hours

Personality development - Self-perception, Self-concept, Self-esteem, Stress management, Time management, Emotional intelligence, Aspirations, Achievements and fulfillment.

PRACTICAL

Listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures. Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting; individual and group presentations. Developing questionnaire to study impact of physique, educational institutions, aspirations on personality; developing questionnaire to study social prescriptions, gender and family on personality, aspirations and achievements. Collecting data through the questionnaires on small samples. Report writing and presentation.

	TOTAL:60HOURS

TEXT BOOKS:

1. 1. Raman, Meenakshi and Sangeetha Sharma. 2011. Technical Communication: Principles and Practice, Oxford University Press, New Delhi.

2. Rizvi and Ashraf M. 2005. Effective Technical Communication, Tata McGraw-Hill, New Delhi.

REFERENCES:

1. Regional Institute of English. 2006. English for Engineers, Cambridge University Press, New Delhi.

2. Rutherford and Andrea. 2001. Basic Communication Skills for Technology, Pearson, New Delhi.

3. Viswamohan A. 2008. English for Technical Communication, Tata McGraw-Hill, New Delhi.

2301TA201	தமிழரும்தொழில்நுட்பமும்/	L	T	P	C
	Tamils and Technology	1	0	0	1

PRE REQUISITE:

The Tamils living in different parts of the World need to keep in touch with the motherland and the mother tongue and be knowledgeable about their heritage in order to preserve their cultural identity and observe their traditional and cultural activities.

Recognizing this fact and for meeting the felt and emerging needs of the Tamil Communities and others interested in Tamil studies

COURSE OBJECTIVES:

Tamil Literature is way of a life. It focuses on the historical significance of ethics, moral culture in the Tamil context.

Tamil Modern literature emphasizes on the modern development of the behavioral, moral and ethical

Technology is the important key for a language and a new sector for the students to voice out for a social cause

COURSE OUTCOMES:

At the end of this course, Students will be able to,

CO1:	Develop a spirit of patriotism.
CO2:	Understand the plight of the people living in the society and Biological Struggles.
CO3:	Remember the life style of the Sangam people and To recognize the heroic spirit of the ancient Tamil kings
CO4:	Evaluate the quality and morals of local life through Tamil literature
CO5:	Introducing the various Literary Genres and dramas and enable them to produce innovative ideas in modern literary theories

COURSE CONTENTS:

MODULE I	WEAVING AND CERAMIC TECHNOLOGY	3 Hours

Weaving Industry during Sangam Age–Ceramic technology–Black and Red Ware Potteries (BRW) Graffition Potteries.

அலகு I	நெசவு மற்றும் பானைத் தொழில்நுட்பம்:	3

சங்க காலத்தில் நெசவுத் தொழில் – பானைத் தொழில்நுட்பம் - கருப்பு சிவப்பு பாண்டங்கள் – பாண்டங்களில் கீறல் குறியீடுகள்.

MODULE II	DESIGN AND CONSTRUCTION TECHNOLOGY	3 Hours

Designing and Structural construction House & Designs in house hold 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.

அலகு II	வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்:	3

சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு- சங்க காலத்தில் கட்டுமான பொருட்களும் நடுகல்லும் – சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் - மாமல்லபுரச் சிற்பங்களும், கோவில்களும் – சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள் – நாயக்கர் காலக் கோயில்கள் - மாதிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால் – செட்டிநாட்டு வீடுகள் – பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ-சாரோசெனிக் கட்டிடக் கலை.

MODULE III	MANUFACTURING TECHNOLOGY	3 Hours

Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting, steel - Copper and gold - Coins as source of history - Minting of Coins – Beads making – industries Stone beads - Glass beads – Terra-cotta beads – Shell beads/bone beats – Archeological evidences –Gems tone types described in Silappathikaram.

அலகு III	உற்பத்தித் தொழில் நுட்பம்:	3

கப்பல் கட்டும் கலை – உலோகவியல் – இரும்புத் தொழிற்சாலை – இரும்பை உருக்குதல், எஃகு – வரலாற்றுச் சான்றுகளாக செம்பு மற்றும் தங்க நாணயங்கள் – நாணயங்கள் அச்சடித்தல் – மணி உருவாக்கும் தொழிற்சாலைகள் – கல்மணிகள்,

அலகு IV	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் நுட்பம்:	3

அணை, ஏரி, குளங்கள், மதகு – சோழர்காலக் குமுழித் தூம்பின் முக்கியத்துவம் – கால்நடை பராமரிப்பு – கால்நடைகளுக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளாண்மை மற்றும் வேளாண்மைச் சார்ந்த செயல்பாடுகள் – கடல்சார் அறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குளித்தல் – பெருங்கடல் குறித்த பண்டைய அறிவு – அறிவுசார் சமூகம்.

MODULE V	SCIENTIFIC TAMIL & TAMIL COMPUTING	3 Hours

Development of Scientific Tamil – Tamil computing – Digitalization of Tamil Books –Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries –Sorkuvai Project.

அலகு V	அறிவியல் தமிழ் மற்றும் கணித்தமிழ்:	3

அறிவியல் தமிழின் வளர்ச்சி –கணித்தமிழ் வளர்ச்சி - தமிழ் நூல்களை மின்பதிப்பு செய்தல் – தமிழ் மென்பொருட்கள் உருவாக்கம் – தமிழ் இணையக் கல்விக்கழகம் – தமிழ் மின் நூலகம் – இணையத்தில் தமிழ் அகராதிகள் – சொற்குவைத் திட்டம்.

TOTAL:15HOURS

REFERENCES:

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

2. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.

3. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).

4. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)

5. 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)

6. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)

7. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)

8. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

Laboratory

2302EC251	ELECTRON DEVICES LABORATORY	L	T	P	C
		0	0	2	1

PREREQUISITE: Semiconductor Physics

COURSE OBJECTIVES:

1. To Describe the principal of operation, analysis and design of junction diode BJT and FET transistors and amplifier circuits.
2. To understand various special devices and its applications
3. To explain the basics of PN junction fabrication

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO1:	DescribeaboutPNJunctiondiode and its characteristics
CO2:	Examine theoperationandcharacteristicfeaturesofBJT
CO3:	Construct various JFET and MOSFET models
CO4:	Test various Special semiconductor devices and its applications

COs Vs POs MAPPING:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	-	-	-	-	-	2	1	-	1
CO2	3	2	1	-	-	-	-	-	2	1	-	1
CO3	3	2	1	-	-	-	-	-	2	1	-	1
CO4	3	2	1	-	3	-	-	-	2	1	-	1

COs Vs PSOs MAPPING

COs	PSO1	PSO2
CO1	3	-
CO2	3	-
CO3	3	-
CO4	3	-

1. Construct and demonstrate Characteristics of PN Junction Diode, Zener diode
2. Construct and demonstrate Characteristics of Full Wave Rectifier using diode with and without filter
3. Construct and demonstrate input and output Characteristics of BJT in CE and CB Configuration
4. Construct and demonstrate Drain transfer Characteristics of JFET
5. Construct and demonstrate Characteristics of SCR
6. Construct and demonstrate Characteristics of UJT
7. Construct and demonstrate Characteristics of clippers and clampers.
8. Simulation of any five experiments from the above in Multi-Sim software
9. Study and Construct series and shunt voltage regulator
10. Study and Construct SMPS using electronics devices

Total Hours - 30

REFERENCES:

1. Salivahanan .S and Sureshkumar .N ―Electronic Devices & Circuits, 3rd Edition, Tata McGraw- Hill, New Delhi, 2011, ISBN : 9781259006418
2. Jacob Millman, Christos C. Halkias―Electronic Devices and Circuits, 3rd Edition, McGraw Hill Education (India) Private Limited, 2010, ISBN :9780070700215
3. Allen Mottershead ―Electronic Devices and Circuits-An Introduction, 1st Edition, PHI, New Delhi, 1990, ISBN : 9788120301245.
4. Electronic Devices and Circuits Theory, Boylsted, Prentice Hall Publications.
5. https://www.youtube.com/watch?v=oqOG6XErAl8
6. https://www.youtube.com/watch?v=Kp-jS6NHsB8&list=PLF178600D851B098F

2301GEX51	COMPUTER PRACTICES LABORATORY	L	T	P	C
		0	0	2	1

PREREQUISITE:

There is no prerequisite for the course

COURSE OBJECTIVES:

1.	To be familiar with Computer Hardware Components and installation of software.
2.	Make use of office package and to be familiar with the use of Office software.
3.	To learn about searching, downloading, and storing contents in the Cloud Network.

COURSE OUTCOMES:

Upon the successful completion of the course, students will be able to

CO1	Perform assembling and disassembling of desktop machine with different peripheral and software installation and servicing.
CO2	Simulate data using MS office for Presentation and Visualization.
CO3	Use browsers for searching & accessing/storing the contents to/from cloud.

LIST OF EXPERIMENTS:

1. Familiarization of Computers & Computer Hardware Components
2. Familiarization of major types of storage/memory technology
3. Installing various operating systems including software download/installation, Familiarization of basic software/tools
4. Working with MS-Office: MS Word, MS Excel, MS Powerpoint
5. Familiarization of Computer Shortcut keys
6. **Mini Project-1**: Assemble your computer and install an Operating System
7. Basics of Internet, Web browsers and Content Searching & accessing/storing the contents to/from cloud including DropBox
8. Familiarization of various types of security threats including virus
9. Computer Ethics; Open Source way
10. **Mini Project-2**: Document preparation using MS Word, Data Processing using MS Excel and Presentation using MS Powerpoint

TOTAL: 30 HOURS

COs Vs POs & PSOs MAPPING:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	-	-	-	2	2	-	-	1	1	1	1
CO2	3	3	2	2	2	-	-	-	-	1	-	1	1	1	1
CO3	3	3	2	1	-	-	-	2	-	-	-	1	1	1	1

HARDWARE/SOFTWARE REQUIREMENT

1. Standalone Desktop Computers with Internet Connectivity
2. Office Package
3. Operating System Packages

REFERENCES:

1. Kevin Wilson, "Computer Hardware: The Illustrated Guide to Understanding Computer Hardware", 2021
2. Kumar Bittu, "Mastering MS Office", 2020
3. Ajay Mittal & Anitha Goel, "Computer Fundamentals and Programming in C", 2017
4. https://nptel.ac.in/courses/106103068
5. https://docs.oracle.com/cd/E19121-01/sf.x2100m2/819-6592-13/Chap1.html
6. https://www.linkedin.com/learning/topics/microsoft-office