



K.L.N. COLLEGE OF ENGINEERING



DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

(Approved by AICTE, New Delhi, Recognized Research Center, and
permanently Affiliated to Anna University, Chennai)

(Three times Accredited by NBA, New Delhi)

B.E. – EEE – I – Semester - Students Hand book – ODD Semester of 2016 – 2017

This Hand book contains the following:

1. Vision and Mission of the College and Department, Program Educational Objectives, Program Specific Outcomes, Program Outcomes.
2. Outcome Based Education, Benefits and Significance of accreditation.
3. Engineering Ethics.
4. Blooms Taxonomy.
5. Academic Calendar – 2016 – 2017 (Odd semester).
6. Class Time Table.
7. B.E. – EEE – Syllabus – I Semester.
8. Lecture Schedule, Tutorial, Assignment questions, Seminar topics (CP).
9. Malpractices & Punishments in Anna University Examination.
10. On duty Requisition form.
11. Salient features of the College & Department
12. Reminders on Placement and Career Guidance.
13. General Reminders
14. Skill Development - General tips for effective communication and Leadership skills.
15. All India Installed capacity (in MW) of power stations.
16. Advanced Training Institute – Guindy Industrial Estate-Chennai – Training Schedule.
17. List of PSUs through GATE Exams.
18. Selected software companies and their profiles
19. Selected Core companies and their profiles
20. Bonafide Certificate & Leave Letter Format.
21. Anna University question papers (Previous years).

K.L.N. COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

VISION AND MISSION OF THE COLLEGE

VISION:

To become a Premier Institute of National Repute by Providing Quality Education, Successful Graduation, Potential Employability and Advanced Research & Development through Academic Excellence.

MISSION:

To Develop and Make Students Competent Professional in the Dynamic Environment in the field of Engineering, Technology and Management by emphasizing Research, Social Concern and Ethical Values through Quality Education System.

VISION AND MISSION OF THE DEPARTMENT

VISION:

To become a high standard of excellence in Education, Training and Research in the field of Electrical & Electronics Engineering and allied applications.

MISSION:

To produce excellent, innovative and Nationalistic Engineers with Ethical Values and to advance in the field of Electrical & Electronics Engineering and allied areas.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The Educational Objectives of the Electrical and Electronics Engineering (EEE) Programme represent major accomplishments that we expect our graduates to achieve after three to five years of graduation. More specifically our graduates are expected:

PEO1: to excel in industrial or graduate work in Electrical and Electronics Engineering and allied fields

PEO2: to practice their Professions conforming to Ethical Values and Environmentally friendly policies

PEO3: to work in international and multi-disciplinary Environments

PEO4: to successfully adapt to evolving Technologies and stay current with their Professions

PROGRAM SPECIFIC OUTCOMES (PSOs)

Electrical and Electronics Engineering Graduates will be able to:

PSO1:

Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design and investigate complex engineering problems of electric circuits, analog and digital electronic circuits, electrical machines and power systems.

PSO2:

Apply appropriate techniques and modern Engineering hardware and software tools in power systems to engage in life- long learning and to successfully adapt in multi disciplinary environments.

PSO3:

Understand the impact of Professional Engineering solutions in societal and environmental context, commit to professional ethics and communicate effectively.

PROGRAM OUTCOMES (POs)

Electrical and Electronics Engineering Graduates will be able to:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

OUTCOME BASED EDUCATION (OBE)

In a traditional education system, students are given grades and rankings compared to each other. Content and performance expectations are based primarily on what was taught in the past to students of a given age. The goal of traditional education was to present the knowledge and skills of an older generation to the new generation of students, and to provide students with an environment in which to learn. The process paid little attention (beyond the classroom teacher) to whether or not students learn any of the material.

An outcome is a culminating demonstration of learning; it is what the student should be able to do, at the end of a course/program, in-terms of the knowledge, skill and behavior.

Outcome-based education is an approach to education in which decisions about the curriculum are driven by the exit learning outcomes that the students should display at the end of the course. In outcome-based education, product defines process. Outcome-based education can be summed up as results-oriented thinking and is the opposite of input-based education where the emphasis is on the educational process. Outcome-based education promotes fitness for practice and education for capability.

BENEFITS AND SIGNIFICANCE OF ACCREDITATION

The process of accreditation helps in realizing a number of benefits, such as:

- Helps the Institution to know its strengths, weaknesses and opportunities
- Initiates Institutions into innovative and modern methods of pedagogy
- Gives Institutions a new sense of direction and identity
- Provides society with reliable information on quality of education offered
- Promotes intra and inter-Institutional interactions

Accreditation signifies different things to different stakeholders. These are:

Benefits to Institutions

Accreditation is market-driven and has an international focus. It assesses the characteristics of an Institution and its programmes against a set of criteria established by National Board of Accreditation. NBA's key objective is to contribute to the significant improvement of the Institutions involved in the accreditation process. Accreditation process quantifies the strengths, weaknesses in the processes adopted by the Institution and provides directions and opportunities for future growth. NBA provides a quality seal or label that differentiates the Institutions from its peers at the national level. This leads to a widespread recognition and greater appreciation of the brand name of Institutions and motivates the Institutions to strive for more.

Benefits to Students

Students studying in NBA accredited Institutions can be assured that they will receive education which is a balance between high academic quality and professional relevance and that the needs of the corporate world are well integrated into programmes, activities and processes. It signifies that he has entered the portals of an Institution, which has the essential and desirable features of quality professional education.

Benefits to Employers

Accreditation assures prospective employers that students come from a programme where the content and quality have been evaluated, satisfying established standards. It also signifies that the students passing out have acquired competence based on well established technical inputs.

Benefits to the Public

Accredited status represents the commitment of the programme and the Institution to quality and continuous improvement.

Catalyst for International Accreditations

Due to accreditation from NBA, the Institution's systems and procedures get aligned with the Institution's Mission and Vision. All essential prerequisites for international accreditation are included in the accreditation process of NBA. Therefore, NBA acts as a catalyst for the Institutions planning to acquire International Accreditation.

Benefits to Industry and Infrastructure Providers

It signifies identification of quality of Institutional capabilities, skills and knowledge.

Benefits to Parents

It signifies that their ward goes through a teaching-learning environment as per accepted good practices.

Benefits to Alumni

It reassures alumni that alumni are products of an institute with a higher standing in terms of learning.

Benefits to Country

Accreditation helps in gaining confidence of stakeholders and in giving a strong message that as a country, our technical manpower is of international standards and can be very useful in enhancing the global mobility for our technical manpower.

ENGINEERING ETHICS

Engineering Ethics is the set of rules and guidelines that engineers adhere to as a moral obligation to their profession and to the world. Engineering is a professional career that impact lives. When ethics is not followed, disaster often occurs; these disasters not only include huge monetary costs and environmental impacts, but also often result in the loss of human life. Engineering Ethics applies to every engineer and is very important.

The National Society of Professional Engineers (NSPE) decides the overall standards and codes of ethics for all the engineering professions. The Preamble of the NSPE *Code of Conduct for Engineers* (2007) states: "*Engineers shall at all times recognize that their primary obligation is to protect the safety, health, property, and welfare of the public. If their professional judgment is overruled under circumstances where the safety, health, property, or welfare of the public are endangered, they shall notify their employer or client and such other authority as may be appropriate.*"

Electrical Engineering Ethics

Electrical Engineering is a type of engineering profession that deals with the creation of better electronics. Since our society is heading towards an era of technology, where all members of society will be affected, it is especially important for electrical engineers to follow a code of engineering ethics. For electrical engineers, an important set of guidelines is the [*Electrical Engineering Code of Ethics*](#), published by IEEE.

IEEE code of Ethics

We, the members of the IEEE, in recognition of the importance of our technologies in affecting the quality of life throughout the world, and in accepting a personal obligation to our profession, its members and the communities we serve, do hereby commit ourselves to the highest ethical and professional conduct and agree:

1. to accept responsibility in making decisions consistent with the safety, health, and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;

2. to avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;
3. to be honest and realistic in stating claims or estimates based on available data;
4. to reject bribery in all its forms;
5. to improve the understanding of technology; its appropriate application, and potential consequences;
6. to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations;
7. to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others;
8. to treat fairly all persons and to not engage in acts of discrimination based on race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression;
9. to avoid injuring others, their property, reputation, or employment by false or malicious action;
10. to assist colleagues and co-workers in their professional development and to support them in following this code of ethics.

Engineering Ethics in College/Education

The main engineering ethics problem that college students are face with is academic integrity. Academic integrity can show itself in the form of cheating by copying someone's work, intentional cheating, plagiarism, and/or self-plagiarism.

However, professional ethics is something that can be learned even when it conflicts with personal ethics, as for example, a situation where you are personally okay with building a product that can harm the environment, yet save lives. You can learn professional ethics and realize that something that is harmful to the environment is not okay. Ethics codes can even help you see the bigger picture. For example, in the previous scenario, these codes can help you re-evaluate your ethics and realize that something that is harmful to the environment will eventually be harmful to the people around you and yourself.

Engineering Ethics in the Professional World

In the professional world, ethical engineering problems come up in many cases. One of these includes the case of a professional using someone else's work that is published in the widespread market of publication. Another is the case of a professional using someone else's work that is not published yet and stealing their idea. Engineers who have good engineering ethics often have a good sense of the value of life. They don't hesitate to admit that they made a mistake because they know that the cost of not owning up to your mistakes can have disastrous consequences. It might even cost a human life.

Engineering Ethics in Companies

Not only do individual engineers have to be conscious of engineering ethics, but also companies. Companies have to be aware of their Corporate Social Responsibility and Environmental Responsibility. Corporate Social Responsibility is a company's responsibility to give back to the community that they profit from and to behave ethically so that both they and their community can benefit. Environmental Responsibility is a business's initiative to leave the environment (where it is taking its resources from) the same, if not better, that it is found it.

BLOOM'S TAXONOMY

Definitions of the different levels of thinking skills in Bloom's taxonomy

1. **Remember** – recalling relevant terminology, specific facts, or different procedures related to information and/or course topics. At this level, a student can remember something, but may not really understand it.
2. **Understand** – the ability to grasp the meaning of information (facts, definitions, concepts, etc.) that has been presented.
3. **Apply** – being able to use previously learned information in different situations or in problem solving.
4. **Analyze** – the ability to break information down into its component parts. Analysis also refers to the process of examining information in order to make conclusions regarding cause and effect, interpreting motives, making inferences, or finding evidence to support statements/arguments.
5. **Evaluate** – being able to judge the value of information and/or sources of information based on personal values or opinions.
6. **Create** – the ability to creatively or uniquely apply prior knowledge and/or skills to produce new and original thoughts, ideas, processes, etc. At this level, students are involved in creating their own thoughts and ideas.

List of Action Words Related to Critical Thinking Skills

REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
Count	Associate	Add	Analyze	Appraise	Categorize
Define	Compute	Apply	Arrange	Assess	Combine
Describe	Convert	Calculate	Breakdown	Compare	Compile
Draw	Defend	Change	Combine	Conclude	Compose
Identify	Discuss	Classify	Design	Contrast	Create
Label	Distinguish	Complete	Detect	Criticize	Drive
List	Estimate	Compute	Develop	Critique	Design
Match	Explain	Demonstrate	Diagram	Determine	Devise
Name	Extend	Discover	Differentiate	Grade	Explain
Outline	Extrapolate	Divide	Discriminate	Interpret	Generate
Point	Generalize	Examine	Illustrate	Judge	Group
Quote	Give	Graph	Infer	Justify	Integrate
Read	examples	Interpolate	Outline	Measure	Modify
Recall	Infer	Manipulate	Point out	Rank	Order
Recite	Paraphrase	Modify	Relate	Rate	Organize
Recognize	Predict	Operate	Select	Support	Plan
Record	Rewrite	Prepare	Separate	Test	Prescribe
Repeat	Summarize	Produce	Subdivide		Propose
Reproduce		Show	Utilize		Rearrange
Select		Solve			Reconstruct
State Write		Subtract			Related
		Translate			Reorganize
		Use			Revise
					Rewrite
					Summarize
					Transform
					Specify

K.L.N.COLLEGE OF ENGINEERING, POTTAPALAYAM POST-630 612
ACADEMIC CALENDAR - ODD Semester of 2016 - 2017.
First Semester - B.E./B.Tech Courses – SUMMARY (Revised as on .0108.2016)

K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM, SIVANGANGAI DISTRICT - 630 612											
ACADEMIC CALENDAR - 2016-2017 - First Semester - B.E./B.Tech Courses											
August - 2016			September - 2016			October - 2016			November - 2016		
Day	Dt	wd	Dt	wd	Dt	wd	Dt	wd	Dt	wd	Dt
Mon	1		1		31		66				
Tue	2										1
Wed	3										2
Thu	4										3
Fri	5										4
Sat	6										5
Sun	7										6
Mon	8										7
Tue	9										8
Wed	10										9
Thu	11										10
Fri	12										11
Sat	13										12
Sun	14										13
Mon	15										14
Tue	16										15
Wed	17										16
Thu	18										17
Fri	19										18
Sat	20										19
Sun	21										20
Mon	22										21
Tue	23										22
Wed	24										23
Thu	25										24
Fri	26										25
Sat	27										26
Sun	28										27
Mon	29										28
Tue	30										29
Wed	31										30
Thu											
Fri											
Sat											
Sun											

Principal
 9/12/2016
 2016

Reopening day for the staff after Winter Vacation: 19.12.2016 (Monday)
 Reopening day for the Even semester of 2016 – 2017: 26.12.2016 (Monday).

Note : conduct a class test in Unit III between Oct 3 - 8 in respective class hours with out over lapping
 Commencement of II Semester classes: 26.12.2016 (Monday)
 Cc to All HODs, Directors, E.O (S & PR), E.O (Admin & HR), Librarian (UG/PG), ISSG, TPO, PD, SM, Student section

K.L.N.COLLEGE OF ENGINEERING, POTTAPALAYAM-630612.

Department of Electrical and Electronics Engineering

CLASS WISE TIME TABLE -2016-2017 (ODD)

Year/Sem/Sec : I / I / A

Faculty In-charge : M.S.C. Sujitha

TIME DAY	09.00 – 09.50	09.50 – 10.40	B R E A K	10.55-11.45	11.45-12.35	L U N C H	01.15-02.05	02.05-02.55	02.55-03.45
MON	CP	CHE		ENG	MATHS		PHY LAB / CHE LAB		
TUE	PHY	EG		EG	ENG		MATHS	CP	
WED	MATHS	EP LAB		EP LAB	PHY / CHE		ENG	PHY	
THU	CHE	MATHS		PHY	CP		CP LAB		
FRI	ENG	CP		MATHS	CHE		EG		

Year/Sem/Sec : I / I / B

Faculty In-charge : R. Divya

TIME DAY	09.00 – 09.50	09.50 – 10.40	B R E A K	10.55-11.45	11.45-12.35	L U N C H	01.15-02.05	02.05-02.55	02.55-03.45
MON	ENG	CP		MATHS	CHE		PHY LAB / CHE LAB		
TUE	CHE	PHY		CP	MATHS		EG		
WED	CP	MATHS		PHY	ENG		CP LAB		
THU	PHY	EG		EG	MATHS		CHE	ENG	
FRI	MATHS	EP LAB		EP LAB	ENG		PHY/CHE	CP	

STAFF NAME		SUB CODE	SUBJECT NAME	ABBREVIATION
A -Sec	B – Sec			
T. Sivapriya	P. Pandiarajammal	HS6151	Technical English-I	ENG
T. Kokila	G. Pushparajan	MA6151	Mathematics-I	MATHS
K. Poovendran	V. Revathy	PH6151	Engineering Physics-I	PHY
R. Rajalakshmi	K. Ayyampandi	CY6151	Engineering Chemistry-I	CHE
M.S.C. Sujitha	R. Divya	GE6151	Computer Programming	CP
Dr. A.N. Balaji	C. Anbu Meenakshi	GE6152	Engineering Graphics	EG
M.S.C. Sujitha	R. Divya	GE6161	Computer Practices Laboratory	CP LAB
R. Sridevi	R. Sridevi	GE6152	Engineering Practices Laboratory	EP LAB
K. Poovendran R. Rajalakshmi	V. Revathy K. Ayyampandi	GE6163	Physics and Chemistry Laboratory-I	PHY LAB CHE LAB

**ANNA UNIVERSITY, CHENNAI
AFFILIATED INSTITUTIONS**

R - 2013

**B. E. ELECTRICAL AND ELECTRONICS ENGINEERING
I SEMESTER CURRICULUM AND SYLLABUS**

SEMESTER I

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	HS6151	Technical English - I	3	1	0	4
2.	MA6151	Mathematics - I	3	1	0	4
3.	PH6151	Engineering Physics - I	3	0	0	3
4.	CY6151	Engineering Chemistry - I	3	0	0	3
5.	GE6151	Computer Programming	3	0	0	3
6.	GE6152	Engineering Graphics	2	0	3	4
PRACTICAL						
7.	GE6161	Computer Practices Laboratory	0	0	3	2
8.	GE6162	Engineering Practices Laboratory	0	0	3	2
9.	GE6163	Physics and Chemistry Laboratory - I	0	0	2	1
			17	2	11	26

HS6151 TECHNICAL ENGLISH – I

**L T P C
3 1 0 4**

OBJECTIVES:

- To enable learners of Engineering and Technology develop their basic communication skills in English.
- To emphasize specially the development of speaking skills amongst learners of Engineering and Technology.
- To ensure that learners use the electronic media such as internet and supplement the learning materials used in the classroom.
- To inculcate the habit of reading and writing leading to effective and efficient communication.

UNIT I

9+3

Listening - Introducing learners to GIE - Types of listening - Listening to audio (verbal & sounds); Speaking - Speaking about one's place, important festivals etc. – Introducing oneself, one's family /friend; Reading - Skimming a reading passage – Scanning for specific information - Note-making; Writing - Free writing on any given topic (My favourite place / Hobbies / School life, etc.) – Sentence completion - Autobiographical writing (writing about one's leisure time activities, hometown, etc.); Grammar - Prepositions - Reference words - Wh-questions - Tenses (Simple); Vocabulary – Word formation - Word expansion (root words / etymology); E-materials - Interactive exercises for Grammar & Vocabulary - Reading comprehension exercises - Listening to audio files and answering questions.

UNIT II

9+3

Listening - Listening and responding to video lectures / talks; Speaking - Describing a simple process (filling a form, etc.) - Asking and answering questions - Telephone skills – Telephone etiquette; Reading – Critical reading - Finding key information in a given text - Sifting facts from opinions; Writing - Biographical writing (place, people) - Process descriptions (general/specific) - Definitions - Recommendations – Instructions; Grammar - Use of imperatives - Subject-verb agreement; Vocabulary - Compound words - Word Association (connotation); E-materials - Interactive exercises for Grammar and Vocabulary - Listening exercises with sample telephone conversations / lectures – Picture-based activities.

UNIT III**9+3**

Listening - Listening to specific task - focused audio tracks; Speaking - Role-play – Simulation - Group interaction - Speaking in formal situations (teachers, officials, foreigners); Reading – Reading and interpreting visual material; Writing - Jumbled sentences - Coherence and cohesion in writing - Channel conversion (flowchart into process) - Types of paragraph (cause and effect / compare and contrast / narrative / analytical) - Informal writing (letter/e-mail/blogs) - Paraphrasing; Grammar - Tenses (Past) - Use of sequence words - Adjectives; Vocabulary - Different forms and uses of words, Cause and effect words; E-materials - Interactive exercises for Grammar and Vocabulary - Excerpts from films related to the theme and follow up exercises - Pictures of flow charts and tables for interpretations.

UNIT IV**9+3**

Listening - Watching videos / documentaries and responding to questions based on them; Speaking - Responding to questions - Different forms of interviews - Speaking at different types of interviews; Reading - Making inference from the reading passage - Predicting the content of a reading passage; Writing - Interpreting visual materials (line graphs, pie charts etc.) - Essay writing – Different types of essays; Grammar - Adverbs – Tenses – future time reference; Vocabulary - Single word substitutes - Use of abbreviations and acronyms; E-materials - Interactive exercises for Grammar and Vocabulary -Sample interviews - film scenes - dialogue writing.

UNIT V**9+3**

Listening - Listening to different accents, Listening to Speeches/Presentations, Listening to broadcast and telecast from Radio and TV; Speaking - Giving impromptu talks, Making presentations on given topics; Reading - Email communication - Reading the attachment files having a poem/joke/proverb - Sending their responses through email; Writing - Creative writing, Poster making; Grammar – Direct and indirect speech; Vocabulary - Lexical items (fixed / semi fixed expressions); E-materials - Interactive exercises for Grammar and Vocabulary - Sending emails with attachment – Audio / video excerpts of different accents - Interpreting posters.

TOTAL (L:45+T:15): 60 PERIODS**OUTCOMES:**

Learners should be able to

- speak clearly, confidently, comprehensibly, and communicate with one or many listeners using appropriate communicative strategies.
- write cohesively and coherently and flawlessly avoiding grammatical errors, using a wide vocabulary range, organizing their ideas logically on a topic.
- read different genres of texts adopting various reading strategies.
- listen/view and comprehend different spoken discourses/excerpts in different accents

TEXTBOOKS:

1. Department of English, Anna University. Mindscapes: English for Technologists and Engineers. Orient Blackswan, Chennai. 2012
2. Dhanavel, S.P. English and Communication Skills for Students of Science and Engineering. Orient Blackswan, Chennai. 2011

REFERENCES:

1. Raman, Meenakshi & Sangeetha Sharma. Technical Communication: Principles and Practice. Oxford University Press, New Delhi. 2011.
2. Regional Institute of English. English for Engineers. Cambridge University Press, New Delhi. 2006.
3. Rizvi, Ashraf. M. Effective Technical Communication. Tata McGraw-Hill, New Delhi. 2005
4. Rutherford, Andrea. J Basic Communication Skills for Technology. Pearson, New Delhi. 2001.
5. Viswamohan, Aysha. English for Technical Communication. Tata McGraw-Hill, New Delhi. 2008.

EXTENSIVE Reading (Not for Examination)

1. Kalam, Abdul. Wings of Fire. Universities Press, Hyderabad. 1999.

WEBSITES:

1. <http://www.usingenglish.com>
2. <http://www.uefap.com>

TEACHING METHODS:

- Lectures
- Activities conducted individually, in pairs and in groups like self introduction, peer introduction, group poster making, grammar and vocabulary games, etc.
- Discussions
- Role play activities
- Short presentations
- Listening and viewing activities with follow up activities like discussion, filling up worksheets, writing exercises (using language lab wherever necessary/possible) etc.

EVALUATION PATTERN:**Internal assessment: 20%**

3 tests of which two are pen and paper tests and the other is a combination of different modes of assessment like

- Project
- Assignment
- Reviews
- Creative writing
- Poster making, etc.

All the four skills are to be tested with equal weightage given to each.

- Speaking assessment: Individual speaking activities, Pair work activities like role play, Interview, Group discussions
- Reading assessment: Reading passages with comprehension questions graded from simple to complex, from direct to inferential
- Writing assessment: Writing paragraphs, essays etc. Writing should include grammar and vocabulary.
- Listening/Viewing assessment: Lectures, dialogues, film clippings with questions on verbal as well as audio/visual content.

End Semester Examination: 80%**MA6151****MATHEMATICS – I****L T P C
3 1 0 4****OBJECTIVES:**

- To develop the use of matrix algebra techniques this is needed by engineers for practical applications.
- To make the student knowledgeable in the area of infinite series and their convergence so that he/ she will be familiar with limitations of using infinite series approximations for solutions arising in mathematical modeling.
- To familiarize the student with functions of several variables. This is needed in many branches of engineering.
- To introduce the concepts of improper integrals, Gamma, Beta and Error functions which are needed in engineering applications. To acquaint the student with mathematical tools needed in evaluating multiple integrals and their usage.

UNIT I**MATRICES****9+3**

Eigenvalues and Eigenvectors of a real matrix – Characteristic equation – Properties of eigenvalues and eigenvectors – Statement and applications of Cayley-Hamilton Theorem – Diagonalization of matrices – Reduction of a quadratic form to canonical form by orthogonal transformation – Nature of quadratic forms.

UNIT II SEQUENCES AND SERIES 9+3

Sequences: Definition and examples – Series: Types and Convergence – Series of positive terms – Tests of convergence: Comparison test, Integral test and D'Alembert's ratio test – Alternating series – Leibnitz's test – Series of positive and negative terms – Absolute and conditional convergence.

UNIT III APPLICATIONS OF DIFFERENTIAL CALCULUS 9+3

Curvature in Cartesian co-ordinates – Centre and radius of curvature – Circle of curvature Evolutes – Envelopes - Evolute as envelope of normals.

UNIT IV DIFFERENTIAL CALCULUS OF SEVERAL VARIABLES 9+3

Limits and Continuity – Partial derivatives – Total derivative – Differentiation of implicit functions – Jacobian and properties – Taylor's series for functions of two variables – Maxima and minima of functions of two variables – Lagrange's method of undetermined multipliers.

UNIT V MULTIPLE INTEGRALS 9+3

Double integrals in cartesian and polar coordinates – Change of order of integration – Area enclosed by plane curves – Change of variables in double integrals – Area of a curved surface - Triple integrals – Volume of Solids.

TOTAL (L:45+T:15): 60 PERIODS**OUTCOMES:**

- This course equips students to have basic knowledge and understanding in one fields of materials, integral and differential calculus.

TEXT BOOKS:

1. Bali N. P and Manish Goyal, "A Text book of Engineering Mathematics", Eighth Edition, Laxmi Publications Pvt Ltd., 2011.
2. Grewal. B.S, "Higher Engineering Mathematics", 41st Edition, Khanna Publications, Delhi,2011.

REFERENCES:

1. Dass, H.K., and Er. Rajnish Verma," Higher Engineering Mathematics", S. Chand Private Ltd., 2011.
2. Glyn James, "Advanced Modern Engineering Mathematics", 3rd Edition, Pearson Education, 2012.
3. Peter V. O'Neil," Advanced Engineering Mathematics", 7th Edition, Cengage learning, 2012.
4. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi, 2008.
5. Sivarama Krishna Das P. and Rukmangadachari E., "Engineering Mathematics", Volume I, Second Edition, PEARSON Publishing, 2011.

OBJECTIVES:

- To enhance the fundamental knowledge in Physics and its applications relevant to various streams of Engineering and Technology.

UNIT I**CRYSTAL PHYSICS****9**

Lattice – Unit cell – Bravais lattice – Lattice planes – Miller indices – d spacing in cubic lattice – Calculation of number of atoms per unit cell – Atomic radius – Coordination number – Packing factor for SC, BCC, FCC and HCP structures – Diamond and graphite structures (qualitative treatment) - Crystal growth techniques –solution, melt (Bridgman and Czochralski) and vapour growth techniques (qualitative)

UNIT II**PROPERTIES OF MATTER AND THERMAL PHYSICS****9**

Elasticity- Hooke's law - Relationship between three moduli of elasticity (qualitative) – stress – strain diagram – Poisson's ratio –Factors affecting elasticity –Bending moment – Depression of a cantilever –Young's modulus by uniform bending- I-shaped girders Modes of heat transfer- thermal conductivity- Newton's law of cooling - Linear heat flow – Lee's disc method – Radial heat flow – Rubber tube method – conduction through compound media (series and parallel)

UNIT III**QUANTUM PHYSICS****9**

Black body radiation – Planck's theory (derivation) – Deduction of Wien's displacement law and Rayleigh – Jeans' Law from Planck's theory – Compton effect. Theory and experimental verification – Properties of Matter waves – G.P Thomson experiment -Schrödinger's wave equation – Time independent and time dependent equations – Physical significance of wave function – Particle in a one dimensional box - Electron microscope - Scanning electron microscope - Transmission electron microscope.

UNIT IV**ACOUSTICS AND ULTRASONICS****9**

Classification of Sound- decibel- Weber–Fechner law – Sabine's formula- derivation using growth and decay method – Absorption Coefficient and its determination –factors affecting acoustics of buildings and their remedies. Production of ultrasonics by magnetostriction and piezoelectric methods - acoustic grating –Non Destructive Testing – pulse echo system through transmission and reflection modes - A,B and C – scan displays, Medical applications - Sonogram

UNIT V**PHOTONICS AND FIBRE OPTICS****9**

Spontaneous and stimulated emission- Population inversion -Einstein's A and B coefficients - derivation. Types of lasers – Nd:YAG, CO₂, Semiconductor lasers (homojunction & heterojunction)- Industrial and Medical Applications. Principle and propagation of light in optical fibres – Numerical aperture and Acceptance angle – Types of optical fibres (material, refractive index, mode) – attenuation, dispersion, bending - Fibre Optical Communication system (Block diagram) - Active and passive fibre sensors- Endoscope.

TOTAL: 45 PERIODS**OUTCOMES:**

- The students will have knowledge on the basics of physics related to properties of matter, optics, acoustics etc., and they will apply these fundamental principles to solve practical problems related to materials used for engineering applications.

TEXT BOOKS:

- Arumugam M. Engineering Physics. Anuradha publishers, 2010
- Gaur R.K. and Gupta S.L. Engineering Physics. Dhanpat Rai publishers, 2009
- Mani Naidu S. Engineering Physics, Second Edition, PEARSON Publishing, 2011.

REFERENCES:

- Searls and Zemansky. University Physics, 2009
- Mani P. Engineering Physics I. Dhanam Publications, 2011
- Marikani A. Engineering Physics. PHI Learning Pvt., India, 2009

4. Palanisamy P.K. Engineering Physics. SCITECH Publications, 2011
5. Rajagopal K. Engineering Physics. PHI, New Delhi, 2011
6. Senthilkumar G. Engineering Physics I. VRB Publishers, 2011.

CY6151

ENGINEERING CHEMISTRY - I

**L T P C
3 0 0 3**

OBJECTIVES:

- To make the students conversant with basics of polymer chemistry.
- To make the student acquire sound knowledge of second law of thermodynamics and second law based derivations of importance in engineering applications in all disciplines.
- To acquaint the student with concepts of important photophysical and photochemical processes and spectroscopy.
- To develop an understanding of the basic concepts of phase rule and its applications to single and two component systems and appreciate the purpose and significance of alloys.
- To acquaint the students with the basics of nano materials, their properties and applications.

UNIT I

POLYMER CHEMISTRY

9

Introduction: Classification of polymers – Natural and synthetic; Thermoplastic and Thermosetting. Functionality – Degree of polymerization. Types and mechanism of polymerization: Addition (Free Radical, cationic and anionic); condensation and copolymerization. Properties of polymers: T_g, Tacticity, Molecular weight – weight average, number average and polydispersity index. Techniques of polymerization: Bulk, emulsion, solution and suspension. Preparation, properties and uses of Nylon 6,6, and Epoxy resin.

UNIT II

CHEMICAL THERMODYNAMICS

9

Terminology of thermodynamics - Second law: Entropy - entropy change for an ideal gas, reversible and irreversible processes; entropy of phase transitions; Clausius inequality. Free energy and work function: Helmholtz and Gibbs free energy functions (problems); Criteria of spontaneity; Gibbs-Helmholtz equation (problems); Clausius-Clapeyron equation; Maxwell relations – Van't Hoff isotherm and isochore(problems).

UNIT III

PHOTOCHEMISTRY AND SPECTROSCOPY

9

Photochemistry: Laws of photochemistry - Grotthuss-Draper law, Stark-Einstein law and Lambert-Beer Law. Quantum efficiency – determination- Photo processes - Internal Conversion, Intersystem crossing, Fluorescence, Phosphorescence, Chemiluminescence and Photo sensitization. Spectroscopy: Electromagnetic spectrum - Absorption of radiation – Electronic, Vibrational and rotational transitions. UV-visible and IR spectroscopy – principles, instrumentation (Block diagram only).

UNIT IV

PHASE RULE AND ALLOYS

9

Phase rule: Introduction, definition of terms with examples, One Component System- water system - Reduced phase rule - Two Component Systems- classification – lead-silver system, zinc magnesium system. Alloys: Introduction- Definition- Properties of alloys- Significance of alloying, Functions and effect of alloying elements- Ferrous alloys- Nichrome and Stainless steel – heat treatment of steel; Non-ferrous alloys – brass and bronze.

UNIT V

NANOCHEMISTRY

9

Basics - distinction between molecules, nanoparticles and bulk materials; size-dependent properties. Nanoparticles: nano cluster, nano rod, nanotube(CNT) and nanowire. Synthesis: precipitation, thermolysis, hydrothermal, solvothermal, electrode position, chemical vapour deposition, laser ablation; Properties and applications

TOTAL :45 PERIODS

OUTCOMES:

- The knowledge gained on polymer chemistry, thermodynamics. spectroscopy, phase rule and nano materials will provide a strong platform to understand the concepts on these subjects for further learning.

TEXT BOOKS:

1. Jain P.C. and Monica Jain, "Engineering Chemistry", Dhanpat Rai Publishing Company (P) Ltd., New Delhi, 2010
2. Kannan P., Ravikrishnan A., "Engineering Chemistry", Sri Krishna Hi-tech Publishing Company Pvt. Ltd. Chennai, 2009

REFERENCES:

1. Dara S.S, Umare S.S, "Engineering Chemistry", S. Chand & Company Ltd., New Delhi 2010
2. Sivasankar B., "Engineering Chemistry", Tata McGraw-Hill Publishing Company, Ltd., New Delhi, 2008.
3. Gowariker V.R. , Viswanathan N.V. and Jayadev Sreedhar, "Polymer Science", New Age International P (Ltd.), Chennai, 2006.
4. Ozin G. A. and Arsenault A. C., "Nanotechnology: A Chemical Approach to Nanomaterials", RSC Publishing, 2005.

GE6151**COMPUTER PROGRAMMING****L T P C
3 0 0 3****OBJECTIVES:****The students should be made to:**

- Learn the organization of a digital computer.
- Be exposed to the number systems.
- Learn to think logically and write pseudo code or draw flow charts for problems.
- Be exposed to the syntax of C.
- Be familiar with programming in C.
- Learn to use arrays, strings, functions, pointers, structures and unions in C.

UNIT I**INTRODUCTION****8**

Generation and Classification of Computers- Basic Organization of a Computer –Number System – Binary – Decimal – Conversion – Problems. Need for logical analysis and thinking – Algorithm – Pseudo code – Flow Chart.

UNIT II**C PROGRAMMING BASICS****10**

Problem formulation – Problem Solving - Introduction to 'C' programming –fundamentals – structure of a 'C' program – compilation and linking processes – Constants, Variables – Data Types – Expressions using operators in 'C' – Managing Input and Output operations – Decision Making and Branching – Looping statements – solving simple scientific and statistical problems.

UNIT III**ARRAYS AND STRINGS****9**

Arrays – Initialization – Declaration – One dimensional and Two dimensional arrays. String-String operations – String Arrays. Simple programs- sorting- searching – matrix operations.

UNIT IV**FUNCTIONS AND POINTERS****9**

Function – definition of function – Declaration of function – Pass by value – Pass by reference – Recursion – Pointers - Definition – Initialization – Pointers arithmetic – Pointers and arrays- Example Problems.

UNIT V**STRUCTURES AND UNIONS****9**

Introduction – need for structure data type – structure definition – Structure declaration – Structure within a structure - Union - Programs using structures and Unions – Storage classes, Pre-processor directives.

TOTAL: 45 PERIODS**OUTCOMES:****At the end of the course, the student should be able to:**

- Design C Programs for problems.
- Write and execute C programs for simple applications.

TEXTBOOKS:

1. Anita Goel and Ajay Mittal, "Computer Fundamentals and Programming in C", Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.
2. Pradip Dey, Manas Ghosh, "Fundamentals of Computing and Programming in C", First Edition, Oxford University Press, 2009
3. Yashavant P. Kanetkar. "Let Us C", BPB Publications, 2011.

REFERENCES:

1. Byron S Gottfried, "Programming with C", Schaum's Outlines, Second Edition, Tata McGraw-Hill, 2006.
2. Dromey R.G., "How to Solve it by Computer", Pearson Education, Fourth Reprint, 2007.
3. Kernighan, B.W and Ritchie, D.M, "The C Programming language", Second Edition, Pearson Education, 2006.

GE6152**ENGINEERING GRAPHICS****L T P C
2 0 3 4****OBJECTIVES:**

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

CONCEPTS AND CONVENTIONS (Not for Examination)**1**

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 AND FREE HAND SKETCHING**5+9**

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, Scales: Construction of Diagonal and Vernier scales. Visualization concepts and Free Hand sketching: Visualization principles –Representation of Three Dimensional objects – Layout of views- Free hand sketching of multiple views from pictorial views of objects

UNIT II PROJECTION OF POINTS, LINES AND PLANE SURFACES**5+9**

Orthographic projection- principles-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**5 + 9**

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

UNIT IV PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES**5+9**

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. Development of lateral surfaces of solids with cut-outs and holes

UNIT V ISOMETRIC AND PERSPECTIVE PROJECTIONS**6 + 9**

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. Perspective projection of simple solids-Prisms, pyramids and cylinders by visual ray method .

COMPUTER AIDED DRAFTING (Demonstration Only)**3**

Introduction to drafting packages and demonstration of their use.

TOTAL : 75 PERIODS

OUTCOMES:

On Completion of the course the student will be able to

- perform free hand sketching of basic geometrical constructions and multiple views of objects.
- do orthographic projection of lines and plane surfaces.
- draw projections and solids and development of surfaces.
- prepare isometric and perspective sections of simple solids.
- demonstrate computer aided drafting.
-

TEXT BOOK:

1. Bhatt N.D. and Panchal V.M., "Engineering Drawing", Charotar Publishing House, 50th Edition, 2010.

REFERENCES:

1. Gopalakrishna K.R., "Engineering Drawing" (Vol. I&II combined), Subhas Stores, Bangalore, 2007.
2. Luzzader, Warren.J. and Duff,John M., "Fundamentals of Engineering Drawing with an introduction to Interactive Computer Graphics for Design and Production, Eastern Economy Edition, Prentice Hall of India Pvt. Ltd, New Delhi, 2005.
3. Shah M.B., and Rana B.C., "Engineering Drawing", Pearson, 2nd Edition, 2009.
4. Venugopal K. and Prabhu Raja V., "Engineering Graphics", New Age International (P) Limited, 2008.
5. Natrajan K.V., "A text book of Engineering Graphics", Dhanalakshmi Publishers, Chennai, 2009.
6. Basant Agarwal and Agarwal C.M., "Engineering Drawing", Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.

Publication of Bureau of Indian Standards:

1. IS 10711 – 2001: Technical products Documentation – Size and lay out of drawing sheets.
2. IS 9609 (Parts 0 & 1) – 2001: Technical products Documentation – Lettering.
3. IS 10714 (Part 20) – 2001 & SP 46 – 2003: Lines for technical drawings.
4. IS 11669 – 1986 & SP 46 – 2003: Dimensioning of Technical Drawings.
5. IS 15021 (Parts 1 to 4) – 2001: Technical drawings – Projection Methods.

Special points applicable to University Examinations on Engineering Graphics:

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 of A3 size only. The students will be permitted to use appropriate scale to fit solution within A3 size.
4. The examination will be conducted in appropriate sessions on the same day

GE6161**COMPUTER PRACTICES LABORATORY****L T P C
0 0 3 2****OBJECTIVES:**

The student should be made to:

- Be familiar with the use of Office software.
- Be exposed to presentation and visualization tools.
- Be exposed to problem solving techniques and flow charts.
- Be familiar with programming in C.
- Learn to use Arrays, strings, functions, structures and unions.

LIST OF EXPERIMENTS:

1. Search, generate, manipulate data using MS office/ Open Office
2. Presentation and Visualization – graphs, charts, 2D, 3D
3. Problem formulation, Problem Solving and Flowcharts
4. C Programming using Simple statements and expressions
5. Scientific problem solving using decision making and looping.
6. Simple programming for one dimensional and two dimensional arrays.
7. Solving problems using String functions

8. Programs with user defined functions – Includes Parameter Passing
9. Program using Recursive Function and conversion from given program to flow chart.
10. Program using structures and unions.

TOTAL : 45 PERIODS

OUTCOMES:

At the end of the course, the student should be able to:

- Apply good programming design methods for program development.
- Design and implement C programs for simple applications.
- Develop recursive programs.

LIST OF EQUIPMENTS FOR A BATCH OF 30 STUDENTS:

Standalone desktops with C compiler 30 Nos. (or) Server with C compiler supporting 30 terminals or more.

GE6162

ENGINEERING PRACTICES LABORATORY

**L T P C
0 0 3 2**

OBJECTIVES:

- To provide exposure to the students with hands on experience on various basic engineering practices in Civil, Mechanical, Electrical and Electronics Engineering.

GROUP A (CIVIL & MECHANICAL) I CIVIL ENGINEERING PRACTICE

9

Buildings:

(a) Study of plumbing and carpentry components of residential and industrial buildings. Safety aspects.

Plumbing Works:

- (a) Study of pipeline joints, its location and functions: valves, taps, couplings, unions, reducers, elbows in household fittings.
- (b) Study of pipe connections requirements for pumps and turbines.
- (c) Preparation of plumbing line sketches for water supply and sewage works.
- (d) Hands-on-exercise:
Basic pipe connections – Mixed pipe material connection – Pipe connections with different joining components.
- (e) Demonstration of plumbing requirements of high-rise buildings.

Carpentry using Power Tools only:

- (a) Study of the joints in roofs, doors, windows and furniture.
- (b) Hands-on-exercise:
Wood work, joints by sawing, planing and cutting.

II MECHANICAL ENGINEERING PRACTICE

13

Welding:

- (a) Preparation of arc welding of butt joints, lap joints and tee joints.
- (b) Gas welding practice

Basic Machining:

- (a) Simple Turning and Taper turning
- (b) Drilling Practice

Sheet Metal Work:

- (a) Forming & Bending:
- (b) Model making – Trays, funnels, etc.
- (c) Different type of joints.

Machine assembly practice:

- (a) Study of centrifugal pump
- (b) Study of air conditioner

Demonstration on:

- (a) Smithy operations, upsetting, swaging, setting down and bending. Example – Exercise – Production of hexagonal headed bolt.
- (b) Foundry operations like mould preparation for gear and step cone pulley.
- (c) Fitting – Exercises – Preparation of square fitting and vee – fitting models.

GROUP B (ELECTRICAL & ELECTRONICS)

III ELECTRICAL ENGINEERING PRACTICE 10

1. Residential house wiring using switches, fuse, indicator, lamp and energy meter.
2. Fluorescent lamp wiring.
3. Stair case wiring
4. Measurement of electrical quantities – voltage, current, power & power factor in RLC circuit.
5. Measurement of energy using single phase energy meter.
6. Measurement of resistance to earth of an electrical equipment.

IV ELECTRONICS ENGINEERING PRACTICE 13

1. Study of Electronic components and equipments – Resistor, colour coding measurement of AC signal parameter (peak-peak, rms period, frequency) using CR.
2. Study of logic gates AND, OR, EOR and NOT.
3. Generation of Clock Signal.
4. Soldering practice – Components Devices and Circuits – Using general purpose PCB.
5. Measurement of ripple factor of HWR and FWR.

TOTAL: 45 PERIODS

OUTCOMES:

- ability to fabricate carpentry components and pipe connections including plumbing works.
- ability to use welding equipments to join the structures.
- ability to fabricate electrical and electronics circuits.

REFERENCES:

1. Jeyachandran K., Natarajan S. & Balasubramanian S., "A Primer on Engineering Practices Laboratory", Anuradha Publications, 2007.
2. Jeyapooan T., Saravanapandian M. & Pranitha S., "Engineering Practices Lab Manual", Vikas Pupliching House Pvt.Ltd, 2006.
3. Bawa H.S., "Workshop Practice", Tata McGraw – Hill Publishing Company Limited, 2007.
4. Rajendra Prasad A. & Sarma P.M.M.S., "Workshop Practice", Sree Sai Publication, 2002.
5. Kannaiah P. & Narayana K.L., "Manual on Workshop Practice", Scitech Publications, 1999.

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS:

CIVIL

1. Assorted components for plumbing consisting of metallic pipes, plastic pipes, flexible pipes, couplings, unions, elbows, plugs and other fittings. 15 Sets.
2. Carpentry vice (fitted to work bench) 15 Nos.
3. Standard woodworking tools 15 Sets.
4. Models of industrial trusses, door joints, furniture joints 5 each
5. Power Tools: (a) Rotary Hammer 2 Nos
(b) Demolition Hammer 2 Nos
(c) Circular Saw 2 Nos
(d) Planer 2 Nos
(e) Hand Drilling Machine 2 Nos
(f) Jigsaw 2 Nos

MECHANICAL

1. Arc welding transformer with cables and holders 5 Nos.
2. Welding booth with exhaust facility 5 Nos.
3. Welding accessories like welding shield, chipping hammer, wire brush, etc. 5 Sets.
4. Oxygen and acetylene gas cylinders, blow pipe and other welding outfit. 2 Nos.
5. Centre lathe 2 Nos.
6. Hearth furnace, anvil and smithy tools 2 Sets.
7. Moulding table, foundry tools 2 Sets.
8. Power Tool: Angle Grinder 2 Nos
9. Study-purpose items: centrifugal pump, air-conditioner One each.

ELECTRICAL

1. Assorted electrical components for house wiring 15 Sets
2. Electrical measuring instruments 10 Sets
3. Study purpose items: Iron box, fan and regulator, emergency lamp 1 each
4. Megger (250V/500V) 1 No.
5. Power Tools: (a) Range Finder 2 Nos
(b) Digital Live-wire detector 2 Nos

ELECTRONICS

1. Soldering guns 10 Nos.
2. Assorted electronic components for making circuits 50 Nos.
3. Small PCBs 10 Nos.
4. Multimeters 10 Nos.
5. Study purpose items: Telephone, FM radio, low-voltage power supply

GE6163

PHYSICS AND CHEMISTRY LABORATORY – I

L T P C
0 0 2 1

PHYSICS LABORATORY – I

OBJECTIVES:

- To introduce different experiments to test basic understanding of physics concepts applied in optics, thermal physics and properties of matter.

LIST OF EXPERIMENTS

(Any FIVE Experiments)

1. (a) Determination of Wavelength, and particle size using Laser
(b) Determination of acceptance angle in an optical fiber.
2. Determination of velocity of sound and compressibility of liquid – Ultrasonic interferometer.
3. Determination of wavelength of mercury spectrum – spectrometer grating
4. Determination of thermal conductivity of a bad conductor – Lee's Disc method.
5. Determination of Young's modulus by Non uniform bending method
6. Determination of specific resistance of a given coil of wire – Carey Foster's Bridge

OUTCOMES:

- The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS:

1. Diode laser, lycopodium powder, glass plate, optical fiber.
2. Ultrasonic interferometer
3. Spectrometer, mercury lamp, grating
4. Lee's Disc experimental set up
5. Traveling microscope, meter scale, knife edge, weights
6. Carey foster's bridge set up
(vernier Caliper, Screw gauge, reading lens are required for most of the experiments)

CHEMISTRY LABORATORY- I

OBJECTIVES:

- To make the student to acquire practical skills in the determination of water quality parameters through volumetric and instrumental analysis.
- To acquaint the students with the determination of molecular weight of a polymer by vacometry.

LIST OF EXPERIMENTS

(Any FIVE Experiments)

- 1 Determination of DO content of water sample by Winkler's method.
- 2 Determination of chloride content of water sample by argentometric method.
- 3 Determination of strength of given hydrochloric acid using pH meter.
- 4 Determination of strength of acids in a mixture using conductivity meter.

- 5 Estimation of iron content of the water sample using spectrophotometer. (1,10- phenanthroline / thiocyanate method).
- 6 Determination of molecular weight of polyvinylalcohol using Ostwald viscometer.
- 7 Conductometric titration of strong acid vs strong base.

TOTAL: 30 PERIODS

OUTCOMES:

- The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.

REFERENCES:

1. Daniel R. Palleros, "Experimental organic chemistry" John Wiley & Sons, Inc., New York 2001.
2. Furniss B.S. Hannaford A.J, Smith P.W.G and Tatchel A.R., "Vogel's Textbook of practical organic chemistry", LBS Singapore 1994.
3. Jeffery G.H., Bassett J., Mendham J.and Denny vogel's R.C, "Text book of quantitative analysis chemical analysis", ELBS 5th Edn. Longman, Singapore publishers, Singapore, 1996.
4. Kolthoff I.M., Sandell E.B. et al. "Quantitative chemical analysis", Mcmillan, Madras 1980.

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS:

1. Iodine flask - 30 Nos
2. pH meter - 5 Nos
3. Conductivity meter - 5 Nos
4. Spectrophotometer - 5 Nos
5. Ostwald Viscometer - 10 Nos

Common Apparatus : Pipette, Burette, conical flask, porcelain tile, dropper (each 30 Nos.)

K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM - 630 612
Lecture Schedule

Format No.:11
Issue No.: 02
Revision No.: 01
Date: 23/06/12

Course/Branch : B.E / EEE	Subject : Computer Programming
Duration : August-November 2016	Subject Code : GE6151
Semester : I Section : A & B	Staff Handling : M.S.C. Sujitha & R. Divya
Regulation : 2013 [AUC]	

AIM

To Enrich the Knowledge of Computer and to code the Program logically.

OBJECTIVES

The students should be made to:

- Learn the organization of a digital computer.
- Be exposed to the number systems.
- Learn to think logically and write pseudo code or draw flow charts for problems.
- Be exposed to the syntax of C.
- Be familiar with programming in C.
- Learn to use arrays, strings, functions, pointers, structures and unions in C.

COURSE OUTCOMES: After the course, the student should be able to:

Course	Course Outcome	POs	PSOs
C105.1	Explain the basic organization of computers, the number systems and write the pseudo code for algorithms and flow chart.	1,2,5,6	1
C105.2	Develop 'C' Programming fundamentals, looping statements and solve problems.	1,2,5,12	1,2
C105.3	Design 'C' Programs for arrays and strings.	1,2,12	1,2
C105.4	Use functions with pass by value and reference, pointers in programs.	1,2,12	1,2
C105.5	Develop codings in 'C' for structures and unions with storage classes and preprocessor.	1,2,5,12	1,2

Target Periods - 45 Periods

Curriculum: 3L - 0T- 0P

S.No.	Date	Period Number	Topics to be Covered	Book No [Page No]
UNIT I			INTRODUCTION	Target Periods : 9 + 1
1.			Introduction - Generation of Computers	T1[1.4 - 1.9]
2.				
3.			Classification of Computers	T1[1.9 - 1.12]
4.			Basic Organization of a computer	T1[1.13 - 1.20]
5.			Number System	T1[2.1 - 2.4]
6.			Binary – Decimal - Conversion Problems	T1[2.5 - 2.13]
7.			Need for logical analysis and thinking	T1[2.25 - 2.27]
8.			Algorithm	T1[2.27]
9.			Pseudo code – Flowchart	T1[2.28 - 2.32],
10.			<i>Content beyond the syllabus : Computer Booting Process and its functionalities</i>	
<i>Assignment I</i>		<i>Date of Announcement : 17.08.16</i>		<i>Date of Submission : 24.08.16</i>
UNIT II			C PROGRAMMING BASICS	Target periods : 12 + 1
11.			Problem Formulation – Problem Solving	T1[2.33 - 2.35], R2[3 – 7]
12.			Introduction to C Programming-Fundamentals	T1[3.4 – 3.7]
13.			Structure of a C program	T1[3.16 - 3.18]
14.			Compilation and Linking Processes	T1[3.18 - 3.19], R1[106 – 119]
15.			Constants and Variables	T1[3.12 - 3.16]
16.			Data types	T1[3.8 - 3.12]
17.			Expressions using Operators in C	T1[4.1 - 4.32], R1[46 – 61]

18.				
19.			Managing Input and Output operations	R1[68 – 90]
20.			Decision Making and Branching Statements	T1[5.2 – 5.22]
21.			Looping Statements	T1[5.22 – 5.32]
22.			Solving Simple Scientific and Statistical Problems	T1[5.65 – 5.75]
23.			Technical Quiz – I	
<i>Assignment II</i>		<i>Date of Announcement: 01.09.16</i>		<i>Date of Submission : 15.09.16</i>
<i>Centralized Internal Test I : (07.09.16 – 14.09.16)</i>				
UNIT-III		ARRAYS AND STRINGS		Target Periods : 9
24.			Arrays – Initialization	T1[6.4 – 6.5]
25.			Arrays – Declaration	R1[241 – 245]
26.			1D and 2D dimensional Arrays	T1[6.6 – 6.11], T1[6.23 – 6.28]
27.			String- String Operations	T1[7.1 – 7.24]
28.				
29.			String Arrays	T1[7.24 – 7.26]
30.			Simple Programs – Sorting - Searching	T1[6.31 – 6.57], R2[181 – 227]
31.				
32.			Matrix Operations	T1[6.91 – 6.99]
<i>Assignment III</i>		<i>Date of Announcement: 22.09.16</i>		<i>Date of Submission : 03.10.16)</i>
UNIT IV		FUNCTIONS AND POINTERS		Target Periods: 9 + 1
33.			Function	T1[8.4], R1[174 – 175]
34.			Definition of Function	R1[176 – 179]
35.			Declaration of Function	R1[179 – 181]
36.			Call by Value Call by Reference	T1[8.19 – 8.21]
37.			Recursion	T1[8.28 – 8.37]
38.			Pointers – Definition – Initialization	T1[6.12 – 6.14], R1[280 – 284]
39.			Pointers Arithmetic	T1[6.14 – 6.20]
40.			Pointers and Arrays	T1[6.22-6.23]
41.			Example Problems	T1[8.74 – 8.82]
42.			Technical Quiz - II	
<i>Centralized Internal Test II : (17.10.16 – 22.10.16)</i>				
UNIT V		STRUCTURES AND UNIONS		Target Periods: 9 + 1
43.			Introduction – Need for Structure data type	R1[338 – 343]
44.			Structure Definition - Declaration	T1[9.4 – 9.12]
45.			Structure within a Structure	T1[9.29 – 9.31]
46.			Union	T1[9.38 – 9.41]
47.			Programs using Structures and Unions	T1[9.87 – 9.95]
48.				
49.			Storage Classes	T1[10.3-10.9], R1[207 – 227]
50.				
51.			The Pre-processor Directives	T1[10.10], R1[466-469]
52.			Technical Seminar - I	
<i>Centralized Internal Test – III : (02.11.16 – 04.11.16)</i>		<i>Model Exam : (07.11.16 -12.11.16)</i>		

Books: Text/Reference

S.No.		Title of the Book	Author	Publisher	Year
1.	T1	Computer Fundamentals and Programming in C	Anita Goel and Ajay Mittal	Pearson Education	2011
2.	T2	Fundamentals of Computing & Programming in C	Pradip Dey and Manas Ghosh	Oxford Univ. Press	2009
3.	T3	Let Us C	Yashavant P. Kanetkar	BPB Publications	2011
4.	R1	Programming with C	Byron S Gottfried	Tata McGraw-Hill	2006
5.	R2	How to Solve it by Computer	Dromey R.G	Pearson Education	2007
6.	R3	The C Programming Language	Kernighan B.W & Ritchie D.M	Pearson Education	2006

NPTEL LECTURES

S. No	UNIT	Date[Period]	TOPIC	Ref / Link
1	I		Computer Organization	https://www.youtube.com/watch?feature=player_embedded&v=leWKvuZVUE8
2	II		Introduction to Programming in C	https://www.youtube.com/watch?feature=player_embedded&v=XpugX0ypBfA

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C105.1	3	3	-	-	1	1	-	-	-	-	-	-	2	-	-
C105.2	3	3	-	-	1	-	-	-	-	-	-	1	2	1	-
C105.3	2	3	-	-	-	-	-	-	-	-	-	2	1	1	-
C105.4	2	3	-	-	-	-	-	-	-	-	-	2	1	1	-
C105.5	2	3	-	-	1	-	-	-	-	-	-	2	1	1	-
C105	2	3	-	-	1	-	-	-	-	-	-	1	1	1	-

Content Beyond Syllabus Added(CBS)	POs strengthened / vacant filled	CO / Unit
Computer Booting Process and its functionalities	PO3(1) & PO12(1)(vacant filled)	C105.1 / I

K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM
Department of Electrical & Electronics Engineering

Course : **B.E** Subject Code : **GE6151**
 Branch : **EEE** Subject Name : **Computer Programming**
 Academic Year : **2016 – 2017 [ODD]** Semester : **I**
 Regulation : **2013 [AUC]**

ASSIGNMENT QUESTIONS

S. No.	Questions	COs	POs
<u>UNIT – I INTRODUCTION</u>			
A.1.1	Convert the following decimal numbers into Binary, Octal & Hexa decimal. (a) $(24)_{10}$ (b) $(0.29)_{10}$ (c) $(150.64)_{10}$	C105.1	1, 2
A.1.2	Convert the following Binary numbers into Decimal, Octal & Hexa decimal. (a) $(110000111)_2$ (b) $(1010.10101)_2$ (c) $(101.0111)_2$	C105.1	1, 2
A.1.3	Convert the following Hexa decimal numbers into Decimal, Octal & Binary. (a) $(FF)_{16}$ (b) $(389)_{16}$ (c) $(AC.BD)_{16}$	C105.1	1, 2
A.1.4	Convert the following Octal numbers into Decimal, Binary & Hexa decimal. (a) $(456)_8$ (b) $(65.34)_8$ (c) $(267.12)_8$	C105.1	1, 2
A.1.5	Draw a flow chart and write an algorithm to find biggest among three numbers.	C105.1	1,2,5,6
A.1.6	Draw a flow chart & write a pseudo code to check whether the given number is prime or not.	C105.1	1,2,5,6
A.1.7	Draw a flow chart and write an algorithm to check whether the given number is even or not.	C105.1	1,2,5,6
<u>UNIT – II C PROGRAMMING BASICS</u>			
A.2.1	Generate numbers between 1 and 100 which are divisible by 2 and not divisible by 3 and 5.	C105.2	1,2,5
A.2.2	Print pyramid of digits as shown below for n number of lines <div style="text-align: center;"> 1 2 3 2 3 4 5 4 3 4 5 6 7 6 5 4 </div>	C105.2	1,2,5
A.2.3	Making use of sine series, evaluate the value of $\sin(x)$, where x is in radians.	C105.2	1,2,5
<u>UNIT – III ARRAYS & STRINGS</u>			
A.3.1	Calculate arithmetic mean, variance and standard deviation of n elements using arrays.	C105.3	1, 2
A.3.2	Write a C program to evaluate transpose of a matrix using array concept.	C105.3	1, 2
A.3.3	Determine the output of the following code snippets. main()	C105.3	1, 2

	<pre>{ char str[]='Hello Readers!'; Printf("%c %c %c", str[6], 6[str], *(str+6)); }</pre>		
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IMPORTANT QUESTIONS

UNIT I – INTRODUCTION

Q.1.1	Describe in detail about the evolution and various generations of computers.	C105.1	1,6
Q.1.2	<p>(a) Convert the decimal number 681.75 into binary, octal and hexadecimal equivalent.</p> <p>(b) Perform the following:</p> <p>(i) $(1011.11011)_2 = ()_{10}$</p> <p>(ii) $(10111)_2 \times (1011)_2 = ?$</p> <p>(iii) $(D8BC)_H = (?)_2$</p> <p>(iv) $(4871)_{10} = (?)_8$</p> <p>(v) $(FAC)_{16} = (?)_2$</p> <p>(vi) $(561)_8 = (?)_2$</p> <p>(vii) $(101.01)_2 = (?)_{10}$</p> <p>(viii) $(245.14)_8 = (?)_{10}$</p>	C105.1	1,2
Q.1.3	Explain in detail with block diagram about the digital computer organization and discuss the function of each block.	C105.1	1
Q.1.4	<p>(a) Draw a flowchart to check whether the given number is zero, positive or negative.</p> <p>(b) Draw the flowchart to solve the quadratic equation.</p>	C105.1	1,2,5,6
Q.1.5	Define pseudo code. Explain its guidelines and benefits.	C105.1	1
Q.1.6	Give a brief note on how to write an algorithm and flow chart to solve problem.	C105.1	1
Q.1.7	<p>(a) Draw a flow chart to find factorial of a number.</p> <p>(b) Draw a flow chart to find sum of first 100 natural numbers.</p>	C105.1	1,2,5,6
Q.1.8	Explain the characteristics and various applications of computers.	C105.1	1

UNIT II – C PROGRAMMING BASICS

Q.2.1	List the various operators available in C. Discuss each one of them with suitable examples.	C105.2	1
Q.2.2	Explain in detail about various decision making structures available in C with illustrative examples.	C105.2	1
Q.2.3	Define constants. Explain the various types of constants in C.	C105.2	1
Q.2.4	Describe the various looping statements used in C with suitable examples.	C105.2	1
Q.2.5	<p>(a) Write a C program to solve the quadratic equation.</p> <p>(b) Write a C program to print the Fibonacci series of a given number.</p>	C105.2	1,2,5

Q.2.6	Discuss the basic data types in C.	C105.2	1
Q.2.7	Describe the various input and output statements in C with suitable examples.	C105.2	1
Q.2.8	(a) Write a C program for the following series: $1 + 2 + 3 + 4 + \dots + n$. (b) Write a C program to reverse a string. (c) Write a C program to find sum of digits of an integer.	C105.2	1,2,5
Q.2.9	(a) Write a C program to print ten prime numbers. (b) Write a C program to find the given number is Armstrong or not.	C105.2	1,2,5
Q.2.10	Differentiate entry and exit checked conditional constructs with an example.	C105.2	1
UNIT III – ARRAYS & STRINGS			
Q.3.1	Write a C program for finding the largest element and smallest element in a matrix.	C105.3	1,2
Q.3.2	Write a C program to multiply two matrices.	C105.3	1,2
Q.3.3	Write a C program to add and subtract two matrices.	C105.3	1,2
Q.3.4	Write a C program to search a given number in an array of elements.	C105.3	1,2
Q.3.5	Write a C program to arrange the given 10 numbers in ascending order.	C105.3	1,2
Q.3.6	Write a C program to count the number of vowels in your name.	C105.3	1,2
Q.3.7	Write a C program to check whether the given string is palindrome or not.	C105.3	1,2
Q.3.8	Write a C program to arrange the given 10 numbers in descending order.	C105.3	1,2
Q.3.9	Explain the various string handling functions.	C105.3	1
UNIT IV – FUNCTIONS & POINTERS			
Q.4.1	Discuss in detail about functions in C.	C105.4	1
Q.4.2	Explain function with and without arguments with examples for each.	C105.4	1
Q.4.3	Explain the following with suitable examples. (i) Function declaration (ii) Call by reference, call by value.	C105.4	1
Q.4.4	Define recursion? Explain a recursive function with suitable example. Write a recursive function to find the factorial of a number.	C105.4	1
Q.4.5	Write a C program to exchange the values of two variables using pass by reference.	C105.4	1,2
Q.4.6	Write a C program to find the sum of the digits using recursive function.	C105.4	1,2
Q.4.7	Write a C program using pointers to read in an array of integers and print its elements in reverse order.	C105.4	1,2
Q.4.8	Write a C program to find the smallest and largest number from the given 10 numbers using functions.	C105.4	1,2
Q.4.9	Write a C program to count the number of words in a string using pointers.	C105.4	1,2
Q.4.10	Explain pointers to array and function returning pointer with an example.	C105.4	1
UNIT V – STRUCTURES & UNIONS			
Q.5.1	Define Structure. Create a structure with data members of various types and declare two structure variables. Write a program to read data in to these and print the same.	C105.5	1,2,5

Q.5.2	Define a structure called student containing name, register number and marks of five subjects and percentage. Write a program to read the details of name, register number and marks of five subjects for 25 students, calculate the percentage and display the name, register number, marks of 25 subjects, percentage of all the students and also the name of the student who got highest percentage among the 25 students.	C105.5	1,2,5
Q.5.3	Write short notes on: (i) Union (ii) Static storage class (iii) #include statement (iv) #ifndef...#endif	C105.5	1
Q.5.4	Define a structure called book with book name, author name and price. Write a C program to read the details of book name, author name and price of 200 books in a library and display the total cost of the books and the book details whose price is above Rs.500.	C105.5	1,2,5
Q.5.5	Define and declare a structure to store date, which includes day, month and year.	C105.5	1,2,5
Q.5.6	Write a C program to store the employee information using structure and search a particular employee using Employee number.	C105.5	1,2,5
Q.5.7	Explain the various storage classes in C.	C105.5	1
Q.5.8	Define union. Discuss with an example.	C105.5	1
Q.5.9	Describe about the preprocessors with suitable example.	C105.5	1



ANNA UNIVERSITY, CHENNAI -25.

OFFICE OF THE CONTROLLER OF EXAMINATIONS

RULES OF THE EXAMINATIONS

A candidate is permitted to use geometric tools, non-programmable calculators and approved tables and data books only during the theory and the practical examinations. No other material/gadget (including cell phone) should be brought inside the examination hall.

A candidate should neither possess/refer any forbidden material in any form nor should seek/obtain assistance in any form from any person/source towards answering the questions during the examinations. He/she should not assist other candidates in any form towards answering the questions during the examinations. The candidate should not reveal his/her identity in any form in the answer scripts. The candidate should not indulge in canvassing either directly or indirectly to award more than deserving marks in the examinations. The candidate should maintain discipline and decorum during the examinations.

Violation of the above rules in any form during the examinations will attract punishment ranging from levying fine to permanently debarring the candidate from continuing his/her studies as given below.

Sl.No.	Nature of Malpractice	Maximum Punishment
1	Appeal by the candidate in the answer script to show mercy by way of awarding more than deserving marks.	Fine of Rs. 1000/- per subject.
2	The candidate writing his/her name in the answer script.	
3	The candidate writing his/her registration number/college name in places other than specified in the answer script	
4	Any special marking in the answer script by the candidate.	
5	The candidate communicating with neighbouring candidate orally or non-verbally; the candidate causing suspicious movement of his/her body.	
6	Irrelevant writing by the candidate in the answer script.	
7	The candidate marking on the question paper or writing answer on his/her question paper or making use of his/her question paper for rough work	
8	The candidate possessing cell phones/programmable calculator(s)/any other electronic storage device(s) gadgets	Invalidating the examination of the particular subject written by the candidate
9	The Candidate facilitating the other candidate(s) to copy from his /her answer script	
10	The candidate possessing any incriminating material(s) (whether used or not). For example:- Written or printed materials, bits of papers containing written information, writings on scale, calculator, handkerchief, dress, part of the body, Hall Ticket, etc.	Invalidating the examinations of the subject concerned and all the theory and the practical subjects of the current semester registered by the candidate.
11	The candidate possessing cell phone(s)/programmable calculator(s)/any other electronic storage device(s) gadgets and containing incriminating materials (whether used or not).	
12	The Candidate possessing the question paper of another candidate with additional writing on it.	
13	The candidate passing his/her question paper to another candidate with additional writing on it	
14	The candidate passing incriminating materials brought	Further the candidate is not considered for revaluation of answer scripts of the arrears-subjects.

	into the examination hall in any medium (hard/soft) to other candidate(s).	If the candidate has registered for arrears – subjects only, invalidating the examinations of all the arrears – subjects registered by the candidate.
15	The candidate copying from neighbouring candidate.	
16	The candidate taking out of the examination hall answer booklet(s), used or unused	
17	Appeal by the candidate in the answer script coupled with a promise of any form of consideration.	
18	Candidate destroying evidence relating to an alleged irregularity.	Invalidating the examinations of the subject concerned and all the theory and the practical subjects of the current semester registered by the candidate. Further the candidate is not considered for reevaluation of answer scripts of the arrears-subjects. If the candidate has registered for arrears – subjects only, invalidating the examinations of all the arrears – subjects registered by the candidate. Additional Punishment: 1. if the candidate has not completed the programme, he/she is debarred from continuing his/her studies for one year i.e., for two subsequent semesters. However the student is permitted to appear for the examination in all the arrears-subjects up to the last semester during the debarred period. 2. if the candidate has completed the programme, he/she is prevented from writing the examinations of the arrears-subjects for two subsequent semesters.
19	Vulgar/offensive writings by the candidate in the answer script.	Invalidating the examinations of all the theory and practical subjects of the current semester and all the arrears –subjects registered by the candidate.
20	The candidate possessing the answering script of another candidate	
21	The candidate passing his /her answer script to another candidate	
22	Involved in any one or more of the malpractices of serial no. 8 to 21 for the second or subsequent times.	Invalidating the examinations of all the theory and practical subjects of the current semester and all the arrears –subjects registered by the candidate. Additional Punishment:
23	The candidate substituting an answer book let prepared outside the examination hall for the one already distributed to the candidate	(i) If the candidate has not completed the programme, he/she is debarred from continuing his/her studies for one year i.e., for two subsequent semesters. However the student is permitted to appear for the examination in all the arrears-subjects up to the last semester during the debarred period. (ii) If the candidate has completed the programme, he/she is prevented from writing the examinations of the arrears-subjects for two subsequent semesters.
24	The candidate indulge in any disruptive conduct including, but not limited to, shouting, assault of invigilator, officials	Invalidating the examinations of all the theory and practical subjects of the current

	or students using abusive and /or threatening language, destruction of property.	semester and all the arrears –subjects registered by the candidate. Additional Punishment: (i) if the candidate has not completed the programme, he/she is debarred from continuing his/her studies for two years i.e., for four subsequent semesters. However the student is permitted to appear for the examination in all the arrears-subjects up to the last semester during the debarred period. (ii) if the candidate has completed the programme, he/she is prevented from writing the examinations of the arrears-subjects for four subsequent semesters.
25	The candidate harass or engage others to harass on his/her behalf an invigilator, official, witnesses or any other person in relation to an irregularity by making telephone calls, visits, mails or by any other means.	
26	Candidate possessing any firearm/weapon inside the examination hall.	
27	Cases of Impersonation	(i)Handing over the impersonator to the police with a complaint to take appropriate action against the person involved in the impersonation by the Chief Supt. (ii)If a student of this University is found to impersonate a ‘bonafide student’, the impersonating student is debarred from continuing his/her studies and writing the examinations permanently . He/she is not eligible for any further admission to any programme of the University. (iii)Debarring the ‘bonafide student’ for whom the impersonation was done from continuing his/her studies and writing the examinations permanently . He/she is not eligible for any further admission to any programme of the University.

CONTROLLER OF EXAMINATIONS

K.L.N.COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

ON DUTY REQUISITION FORM – STUDENTS –

TO ATTEND SKILL DEVELOPMENT PROGRAMMES (Workshop / Seminar / Symposium etc.)

Date: _____

To,

The Principal,
 KLNCE.
 Pottapalayam.
 Respected Sir,

Sub.: Request for OD to attend _____

As, I am going to attend _____ **conducted by**
 _____ **from** _____ **to** _____. **Please**
permit me to attend the programme and also grant me O.D. for these days.

S. No	Roll No.	Name & Degree, Semester / Section)	No. of Programmes already attended & Days OD availed	No. of Arrears in AU Exam	No. of subjects failed in Class Test	No. of Subjects failed in CIT's	ATT % As on	Sign

Discipline / misbehavior, reported if any :

Clash with Internal test if any :

Recommended by		
Class co-ordinator	HOD	
	OD Permitted	OD Approved

K.L.N.COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
On duty (OD) norms for students – Reminder

1. Students who apply for OD should submit the filled in OD form, forwarded by class co-ordinator, to the Department office. Such OD should be applied, **atleast a day before** availing it. Only after getting permission from the HOD, students are permitted to avail OD.
2. Students are permitted to **apply** for OD for attending co-curricular and extra curricular activities, inside / outside the college, only after getting prior permission from the class co-ordinator and HOD. Permission will be granted, considering students port folio, (performance in the University examination, Class test / CITs and attendance). Also the relevance of the seminar / workshop / technical events / certificate courses etc. will be reviewed with the class co-ordinators to sanction OD.
3. On duty will be approved only after the submission of relevant certificates (Copies to submitted to the staff in-charge, Mr. S. Rajalingam, and to the college office).
4. Final year Students having more than 6 arrears, third year students having more than 4 arrears and Second year students having more than 3 arrears (cumulative) will not be permitted to attend the Co-curricular / extra curricular activities. This is to ensure them to concentrate more on academic subjects. However, this will be relaxed, at the request of parents and students, considering the students contribution in the co –curricular / extra curricular activities.
5. Students who failed in 3 and above subjects in class tests / CITs will not be permitted to participate in any inside / outside the college co curricular activities. This is to ensure them to concentrate on academic subjects.
6. Students with less than 90% of attendance will not be permitted to apply for OD.
7. Students with the history of indiscipline activities reported in the past in the class room / laboratories / campus etc. will not be permitted to apply for OD.
8. Status of Students who have applied for OD for attending Co-curricular / extra curricular activities inside / outside the college will be monitored. Their presence in the concerned venue will be constantly monitored. Non availability of students, in the concerned venue, is reported, if any, disciplinary action will be taken.
9. First and Second year students of B.E-EEE are not encouraged to participate in the Co-curricular / extra curricular activities, as subject content of first and second year is heavy and basics are to be studied in deep for successful career.
10. Curricular / co-curricular events, are planned and periodically conducted by the department. Also certificate / certification courses are regularly conducted by the department during summer / winter holidays. Students are encouraged to attend such courses / events organized by the department, as it will not affect the regular academics.
11. Students are encouraged to attend curricular / co-curricular events, inside / outside the college, after college working hours or during holidays, as it will not affect the regular academics.
12. Students will be selectively permitted to attend curricular / co-curricular events inside / outside the college, if it is highly recommended by the faculty. A maximum of 10% of the students from each class will be permitted for attending such events. Preference will be given for those students having no history of arrears and passed all the class test / CITs.
13. Students attending curricular / co-curricular events inside / outside the college should maintain highest order of discipline. Indiscipline reports received, if any, students will not be permitted for attending any events thereafter and suitable disciplinary action will be taken.
14. It was reported that students who involved in indiscipline activities, while participating in the curricular / co-curricular activities, outside the college, were not permitted to appear for the University Examinations, as such issues reported to the University. Hence students should be very cautious while attending events inside / outside the college.

Co-operation of the all the staff are solicited for better academic performance and successful career.

HOD / EEE

A Brief History of The College

K.L.N. College of Engineering is the first self-financing Co-educational Engineering College in Madurai, started in 1994 by Munificence of Philanthropist and well wishers in Sourashtra Community which is a linguistic minority in Tamilnadu. This college is sponsored by the committee of eminent industrialists and academicians led by enthusiastic, educationalist and industrialist (Late) Thiru K.L.N. Krishnan. This college has the approval of All India Council for Technical Education, New Delhi and is affiliated to Anna University, Chennai.

Thiru. K.L.N. Krishnan, Founder President of this Engineering College has rendered Yeoman service to Sourashtra Arts & Science College and Sourashtra Girls Higher Secondary School, Madurai for the past several years. He also promoted a Polytechnic under the name of K.L. Nagaswamy Memorial Polytechnic College in Viraganur, Madurai in 1983. This Engineering College, functioned in the premises of the above polytechnic during the academic years 1994-95 & 1995-96 was shifted to its own premises in the year 1996.

(Late) Thiru K.L.N. Krishnan is the Founder President, and the college is now under the management of Dr. K.N.K. Ganesh as Secretary & Correspondent and other executive committee members.

Campus :



This college is situated on the South Eastern outskirts of Madurai, 11th Km on Madurai – Nedungulam Road. It is built in an area of 53.8 acres. The Campus has multistoreyed buildings consisting of well provided class rooms, drawing halls, seminar halls, conference hall, library, Air-Conditioned Computer centres, staff rooms and student rest rooms. The infrastructure also consists of five double storeyed laboratory buildings and three single storeyed workshops and Machine shop, and an automobile workshop.

The Administrative block (2 storeyed) of 1,185 sq. metre with office in the ground floor, I.T. laboratory in the first floor & class rooms in the second floor has been constructed on the eastern side.

A two storeyed block of 1,185 sq. metre consisting class room has been constructed on the southern side of the administrative block.

A two storeyed block of 1,185 sq. metre with EIE laboratory in the ground floor, DSP laboratory in the first floor & class rooms in the second floor has been constructed on the western side of the administrative block.

A two storeyed block of 2,122 sq. metre with spacious library, video library & Electronic resource section in the ground floor, class rooms in the first floor & CSE laboratory in the second floor has been constructed near the administrative block.

A single storeyed block of 1,193 sq. metre with S.M. laboratory in the ground floor CAD, CAM laboratories in the first floor & class rooms in the second floor has been constructed on the north western side of the administrative block.



Three Mechanical sheds (occupied by three Mech. Engg. Laboratory) of 2460 sq. metre have been constructed on the northern side of the mechanical block. An automobile work shop of 2304 sq. metre has been constructed on the north western side of the administrative block.

An Indoor stadium cum Auditorium of 2,221 sq. metre has been constructed on the northern side of the administrative block.

A separate double storeyed post-Graduate block of 4,020 square metre for M.B.A. and M.C.A. departments has been constructed on the South Western side of the administrative Block.

A single storeyed block of two canteens with 2,485 square metre in the ground floor and ladies rest room in the first floor has been constructed on the south western side of the Administrative Block.



A single storeyed block of 1,289 square metre for Electrical & Electronics Engg., Laboratories & class rooms in the ground floor and Electronics & Communication Laboratory and Class rooms in the first floor has been constructed on the western side of the Administrative Block.

A two-storeyed block with an area of 2,956 sq. metre has been constructed as an extension to Block III Opposite the U.G. library Block. This block comprised Physics lab, Chemistry lab and EIE Lab. D.S.P. Lab & Class rooms.



A two-storeyed block with an area of 2076 square metre for the use of EEE Dept. in the ground floor & ECE Dept. in the first & 2nd floors is now under construction as an extension to the existing EEE & ECE block on the western side of the administrative block.

A two storeyed block with an area of 2,977 sq. metre for the use of Mechanical & Automobile depts. is now under construction, as an extension to the existing Mechanical block on the North-Western side of the administrative block.

A separate building with ground floor of area of 170 sq. metre for the installation of Generator on the South-eastern side (Opposite to the Vinayagar temple) of the administrative block is under construction & (nearing completion)

In order to facilitate the easy accessibility for the students, in all, 950 numbers of computers have been installed so far. This sounds the management's conviction in providing essential infrastructure for the learning purpose in our college.

An overhead Tank of 20,000 Litre Capacity at a height of 40 feet has been constructed at a cost of Rs.4 lakhs, donated by Rotary international, Rotary District-1240, Rotary club of LEIGH-ON-SEA. Treated drinking water plant at a cost of Rs.2 lakhs has been installed near the overhead tank.

Well-furnished Men's Hostel, Mess block and canteen block are also inside the campus. The college is a quiet retreat, ideal for concentrated study, away from distractions and disturbances of a large city.

A single storeyed block of 1,330 square metre with a spacious dining hall in the ground floor and 13 rooms in the first floor for men students has been constructed on the northern side of the administrative block and is already in use. A two storeyed hostel block of 2,034 square metre adjacent to the existing hostel for men students has been constructed.



Total expenditure incurred so far towards the cost of equipments & buildings & other assets is about Rs.22.50 crores.

A VINAYAGAR Temple on the eastern side of the administrative Block has been constructed Eight class rooms for I year B.E. / B.Tech 2 class room for M.E. (P.S.) students, and two staff rooms have been constructed in the ECE/EEE block.

A Ladies Hostel of 1460 sq.m. which can accommodate about 150 students in under construction within the campus.

SALIENT FEATURES OF THE DEPARTMENT

1. GENERAL

- Started offering B.E. in Electrical and Electronics Engineering in the year 1994 with an intake of 40 (No.- 732-50-8/RC/94, dated 11th August 1994, AICTE) with the latest intake of 120 in 2011 (F.No.Southern/1-400215781/2011/EOA, dated 01.09.2011, AICTE).
- Started offering M.E. in Power Systems Engineering in the year 2005 with an intake of 20 and increased intake to 24 in 2012 (F.No.Southern/1-687512981/2012/EOA, dated 10.05.2012, AICTE).
- Accredited in March 2004 (First time – F.No.NBA/ACCR-242/2003, dated 24/03/04) and Re-accredited (Second time – F.No.NBA/ACCR-242/2003, dated July 19, 2008) by National Board Accreditation, New Delhi.
Re-accredited (Third time - For 2 years w.e.f. 28-08-2012) by National Board Accreditation, New Delhi.
- Recognized Research Centre No.4490408, Approved by Anna University, Chennai with effect from December 2012, offering guidance for M.S & Ph.D.(Full time/Part time).
- Both UG and PG programs are permanently affiliated to Anna University, Chennai with effect from December 2012.
- MODROB fund of Rs.5 lakhs was allotted for the year 2011-2012 for the Power Electronics laboratory (No.8024/RIFD/MOD-131(pvt)/Policy-III/2011-2012, dated 06.03.2012).

2. INFRASTRUCTURE

- Electrical machines laboratory, Control, Measurement and Instrumentation laboratory, Power Electronics laboratory, Electric circuits and Electronic devices laboratory, Research and Development laboratory and Power System Simulation Laboratory are equipped with machineries, components, signal generating, power supply measuring, recording instruments and computer systems costing Rs.2 crores. The total built up area of laboratories is 1208.21 sq.m.
- Latest softwares on Power system analysis, Power system stability, Power world simulator and Power electronics are available to study, solve, design and simulate research on Power system and Power Electronics problems to experience the real time results.
- All the class rooms are equipped with computer systems, LCD and OHP to promote the Teaching-Learning process more effectively.
- Separate library facility for EEE students with more than two thousand books on core subjects and hard copies of IEEE Journals and magazines from 1999 are available for reference. Staff and students can access the softcopy of Journals, proceedings published by IEEE, Elsevier, ASME, Springer, Mc Graw Hill.
- All laboratories are provided with sufficient computing facilities, printing facility with internet connection to simulate laboratory experiments.

3. STAFF

- Teams of well qualified, and experienced 32 faculties with cadre ratio as per AICTE, are guiding the students to attain the best educational objectives.
- Excellent research environment promotes the staff and students to participate, present and publish their research works in the National/International Journals and National/International conferences.
- Faculty and experienced faculty available for guiding Ph.D. scholars.
- Staff development Programme / Faculty development programme / Workshop/ Seminar are organized regularly to share the knowledge of our experienced faculty with parent institution and other colleges staff and students and Industrial persons.

4. RESEARCH AND DEVELOPMENT

- The Research and Development section is doing research on Industrial Power Harmonics and mitigation and interact with industries in measuring, recording, analyzing and designing of filters for reducing harmonics with the help of Power Quality analyzer, as per IEEE standard.

5. STUDENTS

- Students secured 95 University Ranks in UG and 15 University Ranks in PG from 1998 to 2015 with **Gold medal** in 2000 (UG - EEE) and in 2011 (PG – Power Systems Engineering). Sweety Jain of 2009 batch student secured 2nd rank in Anna University Examination in 2009 among 8500 students who completed degree and out of 240 Engineering colleges all over Tamil Nadu.
- IEEE student's chapter which was started in the year 1999, continuously conducting number of student technical programme. Guest lecturers from industries have been arranged periodically to promote Industry-Institute Interaction and to bridge the gap between curriculum and latest trend in industry.
- To promote innovation, latest trends in industry and employability skills, student's professional activities are conducted every year in the name of symposium and conferences.
- Workshop/Seminar is regularly conducted for students to meet out the curriculum objectives.
- Inplant trainings are arranged for second and third year students to have hands on training with industry. Industrial visits are arranged every semester to know about the various process taking places in industry.
- Placement oriented training programme were conducted every semester right from the first year to develop soft skills, attitude, aptitude, self confidence, communication skills, interview skills etc, so as to face the campus placement programme organized by the college. Professional Trainers from software companies, Bangalore, Chennai are being invited for such training programme.

K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM – 630 612
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
FACULTY LIST

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32.	M.Maha Lakshmi	Assistant Professor	-	mmahalakshmi36@gmail.com
33.	Dr. C.Vimala Rani	Assistant Professor	-	jaysanjayvim@gmail.com

Placement Activity – Reminder

1. In the month of October every first year students must fill forms online in TATA CONSULTANCY SERVICES (TCS) campus recruitment using nextsteptcs.com website and must submit the following documents in the department.
 - a. SSLC and HSC mark sheet photo copy at least 5.
 - b. Latest passport size Photo at least 5.
 - c. Current address proof with parent contact cell numbers.
 - d. Create your own two E-mail id using Gmail.
 - e. Resume with Scanned copy of passport size Photo.
 - f. CT number registered in the TCS website.
2. Every semester end update CGPA in your resume and TCS profile.
3. An Engineering student from Electrical and Electronics Engineering should complete the following courses in order to enhance their software skills. This will be most helpful during their successful completion in Curriculum during 4th Semester and in the software company campus recruitment.
 - a. Should complete **C Programming** before joining **2nd Semester**.
 - b. Should complete **C++ Programming** before joining **3rd Semester**.
 - c. Should complete **JAVA Programming** before joining **4th Semester**. (for the successful completion of object oriented Programming theory paper and laboratory during 4th Semester)
4. An Engineering student from Electrical and Electronics Engineering should complete the **Micro Processor, Micro Controller and Embedded Systems** courses before joining **5th Semester** in order to enhance their Hardware skills. This will be most helpful during their successful completion in Curriculum from 5th to 6th Semester and in the Core company campus recruitment. (for the successful completion of Micro Processor and Micro Controller theory as well as laboratory during 5th Semester and Embedded Systems during 6th Semester)
5. From 6th Semester Summer vacation onwards all should prepare for GATE Examination because all Engineering students from Electrical and Electronics Engineering should appear GATE Examination in order to settle in their life by pursuing higher education in the reputed colleges like IIT, NIT and Anna University or else to join as a Graduate Engineer trainee in a public sector companies like IOC, BHEL, PGCIL etc.,
6. Before joining 7th Semester all should get any international certification programme course like OCJP, CCNA, etc., and upload the certification details in TCS campus commune website. This will be most helpful during the TCS campus and other MNC company recruitment.

Activity	Semester							
	1	2	3	4	5	6	7	8
TCS Online form Filling in nextsteptcs.com	In the month of October							
Documents to be submitted in the EEE Department/ Placement Coordinator	a. SSLC and HSC mark sheet photo copy at least 5. b. Latest passport size Photo at least 5. c. Current address proof with parent contact cell numbers. d. Create your own two E-mail id using Gmail. e. Resume with Scanned copy of passport size Photo. f. CT number registered in the TCS website.							
Updating CGPA in resume and TCS online profile	✓	✓	✓	✓	✓	✓	✓	✓
C Programming	✓	✓						
C++ Programming		✓						
JAVA Programming			✓					
Micro Processor & Micro Controller				✓				
Embedded Systems					✓			
GATE / UPSC/ TNPSC Preparation			✓	✓	✓	✓	✓	
International Certification – OCJP / CCNA						✓	✓	

GENERAL REMINDERS

I. General

1. Keep at least 5 photocopies of birth certificate, ration card, Voters ID card, College ID card, Aadhar card, 10th ,+2 mark sheets, 10th /+2 Transfer Certificates, [* all proofs to be kept in your bag, in your house and in your mail, all kept in a water proof file-remember Chennai flood]. This will be required at anytime, anywhere.
2. Apply for Savings Bank account in any of the nationalized banks in first year. Apply for LIC schemes, saving schemes right from the first year. [*Refer]
3. Get Driving license during third year of your Degree course[*Refer]
4. Get Passport before the completion of 6th semester. [*Refer]
5. Always keep ID card issued by competent authority while moving from one city to another/ one state to another. It is better to wear ID card always.(except during bathing).
6. Never share your username and password of mail accounts to anyone even in your home/ to teachers/ friends. Never reply to un trusted mail/fake messages. Never transfer/ deposit money to any unknown mail. Beware of fraud/cheating by any one.
7. Share only legal, ethical, non-political, educational value based information/ photos/videos with your friends or any others through social media. Posting of illegal/political/unethical/ information/comments will spoil your career. Remember that all such communications in social media/emails are continuously monitored and recorded by intelligent agencies in the country and abroad, due to security threats.
8. Don't involve teasing of students of your class, juniors or seniors in the classrooms, laboratories or in hostels. Don't loan the cell phone to anyone. Also don't keep your cell phone easily accessible by anyone.
9. Don't send obscene messages or pictures through cell phones/ internet to anyone. Defaulters will be easily tracked by Cyber Crime Agencies. Don't purchase/loan someone's laptop/mobile phone, due to theft complaints.
10. Avoid two wheeler riding for long travelling, and night travelling. Wear helmet. Follow traffic rules. Lot of accidental deaths reported due to negligence of traffic rules. About 1.5lakhs of people lost their life in accidents in our country every year.
11. For any transaction of money, use cheques or bank accounts(for more than Rs. 10,000/-) because finding fake notes is difficult.
12. Always keep 10 passport and stamp size photographs, 10 no.s of revenue stamps, all ID proofs whenever going for banks/pass port office.
13. Keep at least email ids and good friendship of 25 students of your branch who have been placed in different companies. Collect background information on core/IT companies(minimum 25)
14. Develop good reading habit/read News papers daily/watch news channel daily/Watch films nominated for Oscar award.Watch channels like Discovery/Nat Geo/History/ any other news channels.(not more than an hour)
15. Speak in English only. Develop good writing skills by reading books.
16. Have a Desk top/Laptop, Printer before entering 5th semester.
17. Have internet facility in home for educational purpose. Keep all NPTEL material.
18. Keep all kind of stationery in your table for use at any time [pencil, sharpener, eraser, ball point pen of different colours, sketches, bell clip, stapler, single punch, tag, gum, knife,scissors,A4 paper, cello tap, emergency lamp, scale, protractor, compass, pen drive, CD, whitener, calculator, diary, stapler pin box]

II. Education:

20. Download Anna University examination results immediately after the publication of result from AU website. Mark sheet attestation will not be given without the above copy
21. Always keep 5 copies of AU mark sheets , of each semester. Post it on your mail.
22. Discrepancy in mark sheets such as Name, Date of Birth, CGPA awarded, register number should be corrected immediately.

23. Always keep Rs 5,000/- in a semester for the payment of Book fee/AU exam fee/Training fee/purchase of competitive exam books/Educational tour/seminar/additional course/ certification course etc. Educate your parents for the above. This may be required in a particular month or in several months spread in a semester.
24. Enroll in IEEE membership during first/second year. Attend at least one programme at Chennai.
25. Collect 5 sets of AU question papers, subject wise, in a semester(within 10 days)
26. Prepare good quality Resume. Consult TPO, placed final year students. Resume preparation is an art that ensures your quality and getting jobs in reputed concern. Update your resume, monthly (by attending value added courses, online courses, co-curricular and extracurricular activities, publishing articles in conferences, symposium, technical events, journals, News papers, inplant training, internship, new languages learnt, project developed, industrial visits, social services participated etc.)
27. Attend any courses after consulting with HOD/senior staff to avoid courses not suited to your branch.
28. Purchase text/reference books every semester.
29. Purchase competitive exam books , like Objective type QB,GATE/TANCET/IES/IAS and prepare for the exams from second year onwards.
30. Collect aptitude/reasoning/analytical/numerical/verbal/test questions from the placed students or download from the website. For successful placement, preparation from the first year in the above topics is required.
31. Collect information like Product, clients, branches, head office, annual turnover, GM,CEO, etc of 25 core companies, and 25 software companies.
32. Attend atleast one seminar/workshop/ paper presentation contest per semester, applicable to your branch of study.
33. Plan your study for current subject/assignment work/observation work/record work/aptitude training for technical /non-technical daily/weekly/monthly.
34. Decide & justify clearly, your objective before 6th semester and plan accordingly. Options are placement(ON/OFF) in core/IT companies, higher studies/ civil services , parents business , start your own business. Confused mind never take a decision.
35. Attend inplant training(Min:one week,Max:One month) during semester holidays. Avoid industrial visit (Energy waste) and educational tour (Money waste).
36. Do mini project in second, third year of your study .Update these in final year. Project should be based on the need of the society/industry.

III. Health

37. Health is wealth. Read Dalailama statement on life of a man. We work hard , earn and save money sacrificing our health. Later we spent lot of money for medical treatment due to poor healthcare.
38. Have regular exercise either in the forenoon/evening. (an hour walk is must everyday).
39. Your food habits decides what you are and how long you will live with peace. Avoid junk foods/road side eatery. Use hot water for drinking.
40. Consult doctors in case of health problems. Periodical medical checkup, once in 6 months, is necessary for health and dental care. This may require Rs.2,000/- per year. Otherwise you need to pay a lot. It is advisable to stay in a house, within 500 metre (walkable distance) from a multispecialty hospital, otherwise 250 meters from any hospital. This is required to tackle emergency situations and also to avoid paying more for transport.
41. Avoid roaming/walking during summer/rainy season.
42. Attend yoga classes/ do meditation.
43. Apply group insurance medical policy at the age of 20.
44. Follow ethics and be Nationalistic.

Developing Leadership Skills

No one is a born leader; everyone can develop leadership skills and everyone can benefit from using them. First, take time to honestly analyze yourself. Learn to understand yourself. It's the first step to understanding others. Consider these important questions:

1. What kind of leader am I? One who helps to solve problems? A leader who helps people get along? How do others see me as a leader?
2. What are my goals, purposes, and expectations in working with this particular group?
Identify areas for improvement.

Ask yourself these questions:

1. Do I try to be aware of how others think and feel?
2. Do I try to help others perform to the best of their abilities?
3. Am I willing to accept responsibility?
4. Am I willing to try new ideas and new ways of doing things?
5. Am I able to communicate with others effectively?
6. Am I a good problem solver?
7. Do I accept and appreciate other perspectives and opinions?
8. Am I aware of current issues and concerns on campus or in my community?

Then after analyzing your strengths and weaknesses -- take action

Devise a strategy for upgrading your skills. Here are a few strategies to consider:

1) Communicate effectively:

Effective communication is dialogue. Barriers are created by speaking down to people, asking closed questions that elicit yes or no answers, using excessive authority, and promoting a culture that depends on unanimity. If your focus is winning the argument or if you react defensively to criticism, you'll create fear of openness and hinder the organization's growth.

Try these steps to effective communication:

- Listen actively - ask open questions. Be genuinely interested in what other's say.
- Thank people for their openness -- stress how much you value it -- even if you don't like specifically what is being said.
- Point to areas of agreement before jumping on areas of disagreement - this reduces defensiveness; members won't fear being "attacked."
- Set aside your authority to create an atmosphere of partnership to reduce fear in group members.
- Promote a culture of constructive dissent - though not to the point of paralysis.
- Portray disagreement as simply a difference of opinion. Get rid of the "I'm right, you're wrong" attitude.

2) Encourage enthusiasm and a sense of belonging. Show:

- Friendliness: others will be more willing to share ideas if you're interested in them as people too.
- Understanding: everyone makes mistakes. Try to be constructive, tolerant and tactful when offering criticism.
- Fairness: equal treatment and equal opportunity lead to an equally good effort from all group members.
- Integrity: members will take tasks more seriously if you show that you're more interested in group goals than your own personal gain.

3) Keep everyone working toward agreed upon goals:

- Remind everyone of the group's purposes from time to time. It's easy to become too narrowly focused and lose sight of the larger goals.
- Provide encouragement and motivation, by showing your appreciation for good ideas and extra effort.
- Harmonize differences and disagreements between group members by stressing compromise and cooperation.

- Involve everyone in discussions and decisions, even if asking for opinions and ideas means a longer discussion.

4) Get to know the people around you Everyone has different abilities, wants, needs, and purpose in life.

To get along with others and get results, you need to get to know them.

- Interact with group members as often as possible. The only way to get to know someone is through direct personal contact.
- Become familiar with every member of your group. Take note of each person's unique qualities and characteristics.

5) Treat others as individuals

Put your knowledge and understanding of each group member to work!

- Be aware of expectations. Everyone expects something different: recognition, a chance to learn, a chance to work with other people, etc.
- Be creative. A repetitious routine can cause boredom. A successful leader thinks of new and better approaches to old ways of doing things.
- Provide rewards. Recognition by the group is a source of personal satisfaction and positive reinforcement for a job well done.
- Delegate responsibilities. If everyone shares the work, everyone can share pride in the group's accomplishments. Let each member know what's expected of him/her, available resources, deadlines, etc.

6) Accept responsibility for getting things done

- Take the initiative. Why stand around and wait for someone else to get things started?

Set an example.

- Offer help and information. Your unique knowledge and skills may be just what's needed.
- Seek help and information. Ask for advice if you need it. This will encourage group involvement and help accomplish group goals.
- Make things happen. By being decisive, energetic, and enthusiastic, you can and will help get things done!
- Know when and how to say "no." If your time and resources are already committed, turn down extra tasks, but do it nicely.

7) Problem solve in a step - by-step way

Whether you are faced with a decision to make or a conflict to resolve, following a logical approach will help.

1. State the problem as simply and clearly as possible.
2. Gather all relevant information and available resources.
3. Brainstorm as many ideas or solutions as you can think of (with others if possible).
4. Evaluate each idea or solution and choose the best one.
5. Design a plan for using your idea or solution. Include a timetable, assigned roles, and resources to be used.
6. Follow up on your plan by asking if your idea worked and why or why not.

Tips for Effective Communication

Have courage to say what you think. Be confident in knowing that you can make worthwhile contributions to conversation. Take time each day to be aware of your opinions and feelings so you can adequately convey them to others. Individuals who are hesitant to speak because they do not feel their input would be worthwhile need not fear. What is important or worthwhile to one person may not be to another and may be more so to someone else.

Practice. Developing advanced communication skills begins with simple interactions. Communication skills can be practiced every day in settings that range from the social to the professional. New skills take time to refine, but each time you use your communication skills, you open yourself to opportunities and future partnerships.

Make eye contact. Whether you are speaking or listening, looking into the eyes of the person with whom you are conversing can make the interaction more successful. Eye contact conveys interest and encourages your partner to be interested in you in return.

Use gestures. These include gestures with your hands and face. Make your whole body talk. Use smaller gestures for individuals and small groups. The gestures should get larger as the group that one is addressing increases in size.

Manifest constructive attitudes and beliefs. The attitudes you bring to communication will have a huge impact on the way you compose yourself and interact with others. Choose to be honest, patient, optimistic, sincere, respectful, and accepting of others. Be sensitive to other people's feelings, and believe in others' competence.

Develop effective listening skills: Not only should one be able to speak effectively, one must listen to the other person's words and engage in communication on what the other person is speaking about. Avoid the impulse to listen only for the end of their sentence so that you can blurt out the ideas or memories your mind while the other person is speaking.

Enunciate your words. Speak clearly and don't mumble. If people are always asking you to repeat yourself, try to do a better job of articulating yourself in a better manner.

Pronounce your words correctly. People will judge your competency through your vocabulary. If you aren't sure of how to say a word, don't use it.

Use the right words. If you're not sure of the meaning of a word, don't use it. Grab a dictionary and start a daily habit of learning one new word per day. Use it sometime in your conversations during the day.

Slow your speech down. People will perceive you as nervous and unsure of yourself if you talk fast. However, be careful not to slow down to the point where people begin to finish your sentences just to help you finish.

K.L.N. COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING
All India Installed Capacity (in MW) of Power Stations

This is a **list of states and territories of India** by installed capacity of power utilities with electricity generation mode break-up as on **31 March 2016** with figures in Megawatts.

REVISED

INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN SOUTHERN REGION									
INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES									
(As on 31.03.2016)									
State	Ownership/ Sector	Modewise breakup							Grand Total
		Thermal				Nuclear	Hydro (Renewable)	RES (MNRE)	
		Coal	Gas	Diesel	Total				
Andhra Pradesh	State	3085.91	0.00	0.00	3085.91	0.00	1758.87	89.50	4934.28
	Private	2990.00	3182.65	16.97	6189.62	0.00	0.00	2586.80	8776.42
	Central	1473.30	0.00	0.00	1473.30	127.16	0.00	0.00	1600.46
	Sub-Total	7549.21	3182.65	16.97	10748.83	127.16	1758.87	2676.30	15311.17
Telangana	State	4806.59	0.00	0.00	4806.59	0.00	2135.66	0.00	6942.25
	Private	270.00	1697.75	19.83	1987.58	0.00	0.00	605.54	2593.12
	Central	1721.88	0.00	0.00	1721.88	148.62	0.00	0.00	1870.50
	Sub-Total	6798.47	1697.75	19.83	8516.05	148.62	2135.66	605.54	11405.87
Karnataka	State	4220.00	0.00	127.92	4347.92	0.00	3599.80	155.33	8103.05
	Private	2060.00	0.00	106.50	2166.50	0.00	0.00	4950.19	7116.69
	Central	1628.46	0.00	0.00	1628.46	475.86	0.00	0.00	2104.32
	Sub-Total	7908.46	0.00	234.42	8142.88	475.86	3599.80	5105.52	17324.06
Kerala	State	0.00	0.00	234.60	234.60	0.00	1881.50	138.92	2255.02
	Private	0.00	174.00	0.00	174.00	0.00	0.00	116.55	290.55
	Central	1038.69	359.58	0.00	1398.27	228.60	0.00	0.00	1626.87
	Sub-Total	1038.69	533.58	234.60	1806.87	228.60	1881.50	255.47	4172.44
Tamil Nadu	State	4770.00	524.08	0.00	5294.08	0.00	2182.20	122.70	7598.98
	Private	2350.00	503.10	411.66	3264.76	0.00	0.00	9388.56	12653.32
	Central	4155.10	0.00	0.00	4155.10	986.50	0.00	0.00	5141.60
	Sub-Total	11275.10	1027.18	411.66	12713.94	986.50	2182.20	9511.26	25393.90
NLC	State	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Central	100.17	0.00	0.00	100.17	0.00	0.00	0.00	100.17
	Sub-Total	100.17	0.00	0.00	100.17	0.00	0.00	0.00	100.17
Puducherry	State	0.00	32.50	0.00	32.50	0.00	0.00	0.00	32.50
	Private	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03
	Central	249.32	0.00	0.00	249.32	52.78	0.00	0.00	302.10
	Sub-Total	249.32	32.50	0.00	281.82	52.78	0.00	0.03	334.63
Central - Unallocated		1523.08	0.00	0.00	1523.08	300.48	0.00	0.00	1823.56
Total (Southern Region)	State	16882.50	556.58	362.52	17801.60	0.00	11558.03	506.45	29866.08
	Private	7670.00	5557.50	554.96	13782.46	0.00	0.00	17647.67	31430.13
	Central	11890.00	359.58	0.00	12249.58	2320.00	0.00	0.00	14569.58
	Grand Total	36442.50	6473.66	917.48	43833.64	2320.00	11558.03	18154.12	75865.79

*Renewable Energy Sources (RES) includes small hydro projects, wind, solar, tidal, biomass and urban & industrial waste power.

ADVANCED TRAINING INSTITUTE

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Annual Training calendar 2016 – 2017 (Short Term Skill Training Programme)

	Course Code	Course Title	Duration (Week)	Date	
				From	To
GROUP:1	ELECTRICAL CONTROL MAINTENANCE				
	01.01	Protective Relays , Circuit Breakers, & Switch Gear Protection	01	04-04-2016 09-05-2016 20-06-2016 06-06-2016 12-09-2016 24-10-2016 19-12-2016 06-02-2017 13-03-2017	06-04-2016 13-06-2016 24-06-2016 12-06-2016 16-09-2016 28-10-2016 23-12-2016 10-02-2017 17-03-2017
	01.02	Operation and Maint. Of Power Transformers	01	11-04-2016 16-05-2016 27-06-2016 01-06-2016 29-08-2016 31-10-2016 05-12-2016 26-12-2016 13-02-2017 20-03-2017	15-04-2016 20-06-2016 01-07-2016 05-06-2016 02-09-2016 04-11-2016 09-12-2016 30-12-2016 17-02-2017 24-03-2017
	01.03	Trouble shooting & Maintenance of Electric Motors	01	25-04-2016 23-05-2016 11-07-2016 19-09-2016 17-10-2016 07-11-2016 02-01-2017 20-02-2017	29-04-2016 27-06-2016 15-07-2016 23-09-2016 21-10-2016 11-11-2016 06-01-2017 24-02-2017
	01.04	Operation & Control of Industrial AC/DC Motors	01	2-05-2016 30-05-2016 13-06-2016 15-07-2016 25-09-2016 21-11-2016 09-01-2017 27-02-2017	5-05-2016 3-06-2016 17-06-2016 22-07-2016 30-09-2016 25-11-2016 13-01-2017 03-03-2017
	01.05	Electrical Safety at Work Place and First Aid	01	2-05-2016 5-05-2016 25-07-2016 3-10-2016 25-11-2016 16-01-2017 06-03-2017	6-05-2016 10-06-2016 29-07-2016 7-10-2016 02-12-2016 20-01-2017 10-03-2017
GROUP:1	ELECTRONIC CONTROL MAINTENANCE				
	02.01	Maintenance and Servicing of SMPS Inverter & UPS	02	11-07-2016 2-1-2017	22-07-2016 13-1-2017
	02.02	Power Electronics and its Industrial Applications	02	4-04-2016 26-9-2016 27-2-2017	15-04-2016 7-10-2016 10-3-2017
	02.03	Industrial Drives & Automation using Siemens PLC	02	16-05-2016 6-5-2016 23-1-2017	27-05-2016 19-5-2016 3-2-2017
	02.04	Siemens S 7 400 PLC Step 7 (Level 1)	01	25-04-2016 29-5-2016 6-2-2017	29-04-2016 2-9-2016 10-2-2017
	02.05	Siemens S 7 400 PLC Win CC SCADA (Level 2)	01	2-05-2016 5-09-2016 13-02-2017	5-05-2016 9-09-2016 17-02-2017
	02.06	Siemens S 7 400 PLC TIA portal (Level 1)	01	16-05-2016 27-05-2016 3-05-2016 23-1-2017 28-11-2016	20-05-2016 1-07-2016 12-08-2016 27-1-2017 2-12-2016

List of PSUs through GATE Exam

Name of PSU	Eligible Branches	Name of PSU	Eligible Branches	Name of PSU	Eligible Branches
 ONGC Ltd.	XE, GG	 MDL	ME, EE	 NLC	ME, EE, EC, IN, MN, CE
 NHPC Limited	EE	 PSPCL Ltd	ME, EE, EC, IN, CE, CS	 NALCO	ME, EE, EC, IN, MT, CE, MN, CS, CH
 BPCL Limited	ME, EE, CH, IN, CE	 OPGC Ltd	ME, EE, CE, C & I	 RITES	CE, ME
 CEL	EC, ME, EE, XE	 IRCON International Ltd	EC, EE, IN	 NPCC	CE
 Coal India Ltd.	ME, EE, MN, GG	 BNPM	ME, EE, EC, CH	 MECL	ME, CY, GG
 POWERGRID	EE, CE, CS	 AAI	EC, EE	 NBCC Ltd.	CE
 Indian Oil	CH, CE, CS, EE, EC, GG, IN, ME, MT, MN	 BBNL	EC, EE, CS	PAPCL	EE, EC, ME, IN, CS
 THDC India Ltd	ME, EE, CE	 NFL	EE, CS, CH, IN, XE		
 HPCL	ME, EE, CE, IN, CH, EC	 GSECL	EE, ME, MT, C & I		
 NTPC Limited	ME, EC, EE, IN	 GAIL	ME, EE, IN, CH		

Lists of TOP 10 software companies to offer jobs in India

S. No.	Name of the Company	About the company	Head quarters	Revenue	No. of Employees	Website
1.	Tata Consultancy Services	TCS was established in 1968 and is spread across 47 countries.	Mumbai, India	US\$ 13.44 billion	300,464	www.tcs.com
2.	Cognizant Technology Solutions	CTS was founded in year 1994 by Srilankan American Kumar Mahadeva.	Teaneck, New Jersey, United States	US\$ 8.84 billion	178,000	www.cognizant.com
3.	Infosys	Infosys was founded in year 1981.	Bangalore, Karnataka	US\$ 8.4 billion	160,405	www.infosys.com
4.	Wipro	Azim Premji is the Chairman & TK Kurien is the CEO of Wipro.	Mumbai, India	US\$7.3 billion	146,053	www.wipro.com
5.	Tech Mahindra	Tech Mahindra was founded in year 1986	Mumbai	\$4.09 billion	89,500	www.techmahindra.com
6.	HCL Technologies	HCL was founded by Shiv Nadar in year 1991.	Noida, Uttar Pradesh	US\$335 million	90,190	www.hcltech.com
7.	iGate	iGate was earlier known as Patni Computer Systems and was founded by Narendra Patni and his wife.	Bridgewater, New Jersey, U.S	US\$ 1.15 billion	31,000 +	www.igate.com
8.	Mphasis	MPhasis was founded by Jaithirth Rao in year 2000	Bangalore, India	US\$1.0 billion	45,426 +	www.Mphasis.com
9.	Larsen &Toubro Infotech	L & T Infotech was founded in year 1997	Mumbai	US\$ 650 million	16,000+	www.lntinfotech.com
10.	Oracle Financial Services Software Limited	Oracle Financial Services Software Limited was earlier know as i-Flex Solutions Limited. It is spread across 130 countries around the globe and provides the IT solutions to the financial companies.	Mumbai, India	US\$610 million	9,682	www.oracle.com

Lists of TOP 10 core companies to offer Electrical jobs

1 | **Bharat Heavy Electricals Ltd.**

Corporate office – New Delhi, India | **Establishment** – 1964 |

Business – Electrical equipments | **Website** – www.bhel.com |

Bharat Heavy Electricals Ltd established in the year 1964 is a leading power plant equipment manufacturer and has expertise in engineering, manufacture, construction, testing, designing and servicing of various products of the core sectors such as defense, power, industries etc. BHEL is among the top electrical companies in India and which has total 16 manufacturing divisions and four regional offices. It is currently operating more than 150 project sites across India and abroad.

2 | **Alstom**

Corporate office – Levallois-Perret, France | **Establishment** – 1928 |

Business – Power generation and transmission | **Website** – www.alstom.com |

Alstom a multinational corporation is one of the best electrical companies in India and world, operating in hydroelectric power transportation and generation and it is active in many core industry sector. Company has a workforce of 9000+ employees in India and over 85000+ worldwide.

3 | **ABB**

Corporate office – Zürich, Switzerland | **Establishment** – 1988 |

Business – Electrical equipments | **Website** – www.abb.com |

ABB holds interests in robotics and mainly in the automation and power areas. ABB is active in the field of electricity grids manufacturing and other technologies in the field of automation and power. ABB is one of the few giant electrical player at global level and among the largest engineering company in the world.

4| **Siemens**

Corporate office – Erlangen, Germany | **Establishment** – 1847 |

Business – Renewable energy, Power generation & transmission| **Website** – www.energy.siemens.com |

Siemens a German conglomerate is rated one the finest electrical company in India. Company's product line includes generators, steam turbines, compressors, high-voltage switching products and many more. Siemens employees more than 86000 people worldwide and it is a leading supplier of energy related products worldwide.

5 | **Crompton Greaves**

Corporate office – Mumbai, Maharashtra | **Establishment** – 1878 |

Business – Electrical | **Website** – www.cgglobal.com |

Crompton Greaves is a part of Avantha Group which is headquartered in Mumbai. CGL deals in manufacturing, marketing and designing of power transmission and generation related products. CGL has manufacturing units in Canada, France, Hungary, UK, US, Indonesia, Ireland, India and Belgium.

6 |**Bajaj Electricals Ltd.**

Corporate office – Mumbai, Mharashtra | **Establishment** – 1938 |

Business – Electrical Appliances | **Website** – www.bajajelectricals.com |

Bajaj Electricals is a leader in the field of electrical equipment and headquartered in Mumbai. It is one of the top 5 electrical companies in India having 19 branch offices across India. Bajaj Electricals provides complete range of consumer durable such as fan, electrical appliances, lighting which includes tubes, lamps etc.

7 | **Eason Reyrolle**

Corporate office – Bangalore, Karnataka | **Establishment** – 1986 |

Business – Electric Equipments & Industrial Consumables | **Website** – www.easunreyrolle.com |

Established in 1980 Eason Reyrolle is a Power Management Products, Transmission, Distribution & Industrial Application, Systems, Solutions and Services provider having significant presence in global market as reputed electrical products manufacturer.

8 | **Schneider Electrical**

Corporate office – Rueil Malmaison, France | **Establishment** – 1981 |

Business – Electric Equipment | **Website** – www.schneider-electric.co.in |

Schneider Electric a French company established in the year 2000 is among the top electrical companies in India which is involved in energy management. Company has a workforce of more than 17000 employees and has 31 global manufacturing Plants.

9| **Wipro Lighting**

Corporate office – Pune, Maharashtra | **Establishment** – |

Business – Lamps, Luminaires and Accessories | **Website** – www.wiprolighting.com |

Wipro lightings a part of Wipro group and a leading electrical company in India producing Lamps, luminaries and accessories. Company's product portfolio comprises of high end lighting control and architectural dimming system, high intensity discharge lamp Luminaries, brightness management lighting products etc.

10| **Kelvin Electrical**

Corporate office – Al-Ain, U.A.E | **Establishment** – 2005 |

Business – | **Website** – www.kelvin-electrical.com |

Kelvin Electrical LLC founded in 2005 is based in United Arab Emirates (UAE). Kelvin Electrical deals in Cable Management Systems, Interior, Architectural, Exterior and Special lighting, Cable Support Systems, Raised Floor, Wiring Accessories etc.

Lists of core companies to offer Electrical jobs in India

Types of Electrical Core Companies

1. **Electrical motors and Generators**
2. **Consultancy (Electrical Engineering)**
3. **Electrical appliances**
4. **Electrical components companies**
5. **Lighting & luminaries**
6. **Power Generation**
7. **Electric wires & Cables**
8. **Electrical exporters**
9. **Measurements & Instrumentation**
10. **Power Distribution**
11. **Transformers**
12. **Green Energy Companies in India**
13. **Internationally renowned MNC'S**
14. **Top 20 core companies in India to offer electrical jobs**
15. **Exclusive Government jobs for Electrical Engineers**

Electrical motors and Generators

1. Ajay Engineers <http://www.ajayengineers.com>
2. All India Electric Motor Manufacturers' Association <http://www.aiemma.com/>
3. Aqua Brand Submersible Sewage Pump <http://www.aquapumps.com>
4. Compact <http://www.compactlighting.net>
5. Crown Electric Company <http://www.crown-gear.com>
6. Lawkim <http://lawkimindia.com/>
7. MMC Electric Company <http://www.dynafluxindia.com>
8. MS Enterprises and Trimega Power Corporation <http://www.msein.com>
9. National Electrical Industries - Ahmedabad. <http://www.elmomachines.com/>
10. Numeric Power Systems <http://www.numericups.com>
11. Pranshu Electricals <http://www.pranshuelec.com/>
12. Reva Industries <http://www.reva.com/>
13. Rotomag Motors & Controls Pvt. Ltd. <http://www.rotomag.com>
14. Rudrashakti Electronics <http://www.rudrashakti.com>
15. Sanjay Diesels - Diesel Generating Sets. <http://www.dgsets.com/>
16. Venus Industrial Corporation <http://www.venusind.com/>
17. A-One Industries. <http://www.aoneindustries.com/contactus.html>

Consultancy (Electrical Engineering)

1. APJ Projects <http://www.apjprojects.com>
2. Consolidated Consultants and Engineers Pvt. Ltd <http://www.consolidatedconsultants.com>
3. DSON Enterprises <http://www.dsonenterprises.com>
4. Eltech Engineers <http://www.eltechindia.com/>
5. John Mech-El Technologies (P) Ltd <http://www.johnmech-el.com/>
6. Mandvi Electric Works <http://www.bicserve.com/>
7. Miraj Instrumentation Services <http://www.mirajinstrumentation.com>
8. PG Associates <http://www.engineeringconsultant.in>
9. Power Gem Engineers - Consultants in Power Generation. <http://www.powergem.com/>
10. Secon Engineers <http://www.seconindia.com>
11. Shanti Enterprises Electricals Limited <http://www.shantielectricals.com>
12. Shashi Electricals <http://www.shashielectricals.com>
13. SK Systems <http://www.skssystem.com>
14. Tata Consulting Engineers <http://www.tce.co.in>
15. Nutronics India <http://www.nutronicsindia.com/>

Electrical appliances

1. Ajay Industrial Corporation <http://www.ajayindustrial.com/>
2. Ankit Electricals <http://www.ankitelectricals.com>
3. A.P.C. System & Products Pvt. Ltd <http://www.apcsp.com>
4. Arka Trading & Services <http://www.mfdplaza.in>
5. Bajaj Electricals Ltd - Part of Bajaj Group. <http://www.bajajelectricals.com/>
6. Electroil <http://www.electroil.com/>
7. Eveready Industries India Ltd <http://www.evereadyindustries.com/>
8. Graftec india <http://graftec.trade-india.com>
9. Indexelectronics <http://www.indexelectronics.com>
10. Khaitan Group <http://www.khaitan.com/>
11. Lloyd Electric & Engineering Limited <http://www.lloydengg.com/>
12. Modern Electrical Stores <http://www.modernelectricalsindia.com/>
13. Needo electronics and electricals pvt. Ltd. <http://www.needoindia.com>
14. Picasso home products <http://www.picassoappliances.com/>
15. Polor Industries Ltd <http://www.polarinc.com/>
16. Rajshree India Ltd. <http://www.rajshreefans.com>
17. Shilpa Electricals <http://www.shilpaelectricals.com/>
18. Super Impex <http://www.superimpex.com>
19. Tri Star Engineering Industries <http://www.tristarengg.com>
20. Vijay Electricals <http://www.vijayelectricalspune.com/>
21. Vxl Technologies Ltd. <http://www.vxlDesign.com>
22. XtremeWorx <http://www.xtremeworx.net>

Electrical components companies

1. Ace Bimetalliks India Pvt. Ltd. <http://www.aceelectricals.com>
2. Aditron India Pvt. Ltd. (Engineering Division) <http://www.aiplen.com>
3. Admir Ovens <http://www.admir.com>
4. Arvind Anticor Ltd <http://www.picklingplant.com>
5. Asiatic Electronic Industries. <http://www.asiatic-india.com/>
6. Axis Electrical Components India Pvt. Ltd. <http://www.axis-india.com>
7. Balar Marketing Pvt. Ltd <http://www.allelectricalproducts.com/>
8. Bhartia Industries Limited <http://www.bhindia.com>
9. Brass Copper & Alloy (I) Ltd. <http://www.hexworldwide.com>
10. Brightech Valves and Controls Pvt. Ltd. <http://www.brightechvalves.com>
11. Caltech Engineering Services <http://www.caltechindia.com>
12. Color Design India <http://www.colordesigntech.com/>
13. Consult Techniques (I) Pvt. Ltd <http://www.consulttechnique.com/>
14. Deki Electronics Ltd. <http://www.dekielectronics.com>
15. Elpro International Limited <http://www.elproindia.com/>
16. Elymer <http://www.elymer.com>
17. E S Electronics (India) Pvt. Ltd <http://www.energysaversindia.com/>
18. Finetech Engineering Corporation <http://www.finetechindia.com>
19. Gayatri Control, Ahmedabad <http://www.gayatricontrol.com/>
20. Gemscab Industries Ltd <http://www.gemscab.com/>
21. Hallmark Electronics <http://www.hallmarkelect.com/>
22. India International House Ltd <http://www.builderhardware.com/>
23. Jaykrishna magnetics pvt.ltd <http://www.jkmagnetics.com>
24. Leotech Group <http://www.leotechindia.com/>
25. Maxx Mobile Phone Accessories Pvt. Ltd <http://www.maxxmobile.co.in>
26. Mehta Engineering Enterprise <http://www.mehtaswitch.com>

27. Mehta Tubes Ltd <http://www.mehta-group.com/>
28. Mellcon Engineers <http://www.mellcon.com>
29. Micromot Controls <http://www.micromotcontrols.com>
30. Muskaan Engineers <http://www.electricitysaver.com/>
31. Neelam Import Pvt. Ltd. <http://www.cellking.org>
32. Onload Gears <http://www.onloadgears.com/>
33. Orton Engineering Pvt. Ltd, Thane <http://www.ortonengineering.com/>
34. Persang Alloy Industries <http://www.webmasterindia.com/persangalloy>
35. PMT Engineers <http://www.pmtengineers.com>
36. Powercap Systems (Madras) Pvt. Ltd <http://www.transformersindia.com/>
37. Powertek Equipment Company <http://www.powertekindia.com/>
38. Pragati Electrocom Pvt. Ltd <http://www.pragatielectrocom.com/>
39. Pran Electronics Pvt. Ltd. <http://www.pranelectronics.com>
40. Precicraft Components India Pvt. Ltd <http://www.precicraft.com/>
41. Prima Automation India Pvt. Ltd <http://www.prima-automation.com/>
42. Rittal India Pvt Ltd <http://www.rittal-india.com>
43. Sanghi Yantra Udyog <http://www.skyuindia.com/>
44. SKN - Bentex Group of Companies. <http://www.sknbentex.com/>
45. South India Industrial Suppliers http://siis-india.com/bus_bar_support.html
46. Square Automation Pvt. Ltd <http://www.squareautomation.com/>
47. Sudhir Switchgears <http://www.sudhirswitchgears.com>
48. Syntron Controls <http://www.syntron-controls.com>
49. Torque Master Tools Pvt. Ltd <http://www.torquemasterindia.com/>
50. United Core <http://www.unitedcores.com/>
51. Utiliti Controls <http://www.utiliticontrols.com/>
52. valrack modular systems pvt.ltd <http://www.valrack.com>
53. Wavetronics <http://www.wavetronicsindia.com>
54. Rane Holdings Limited <http://www.rane.co.in>

Lighting & luminaries

1. A.K. Electricals <http://www.akelectricals.com/>
2. APCO India http://www.indiabizclub.net/Electrical/APCO_INDIA.html
3. Aquascape engineers <http://www.fountainsnozzles.com>
4. Arihant Enterprises : <http://www.arihantsecurityindia.com/>
5. Atlas Electricals www.indiabizclub.net/Electrical/ATLAS_ELECTRICALS.html
6. Baliga Lighting <http://www.baliga.com/>
7. Crompton Greaves Limited. <http://www.cglonline.com/>
8. Decon Lighting <http://deconlighting.com>
9. GE Lighting India <http://www.gelighting.com/india/index.html>
10. Jain Industrial Lighting Corporation <http://www.indiamart.com/jilco/>
11. Jayanta Lamp Industries Pvt.Ltd : <http://www.jayantagroup.com>
12. Kuber Lighting Pvt Ltd <http://www.kuber.biz>
13. Litray Lighting : <http://www.litraylighting.com/>
14. Mindscreen Pvt. Ltd. <http://www.mindscreenfilms.com/>
15. Peralites <http://www.indiabizclub.net/Electrical/PEARLITES.html>
16. Sam International <http://www.indiamart.com/>
17. Shyam Electricals - <http://www.shyamelectricals.com/>
18. Hpl Electric & Power Pvt.Ltd <http://www.hplindia.com>

Power Generation

1. Advance Engineering Company - <http://www.advanceengineering.com/>
2. APGENCO <http://www.apgenco.com/>

3. Birla Power Solutions Limited <http://www.birlapower.com>
4. Dyna Hitech Power Systems Ltd <http://www.dynahitech.com>
5. Essar Group <http://www.essar.com/Group/group.asp>
6. Essar Power Ltd. <http://www.essar.com/>
7. Jindal Steel & Power Ltd. <http://www.jindalsteelpower.com>
8. Kaiga Atomic Power Station <http://www.npcil.org/docs/kaigaps.htm>
9. Kakrapar Atomic Power Station <http://www.npcil.org/docs/kaps.htm>
10. Kirloskar Electric Co <http://www.kirloskar-electric.com/>
11. Lanco Industries <http://www.lancogroup.com/groups/kpower/kpower.html>
12. Madras Atomic Power Station (MAPS) <http://www.npcil.org/>
13. Magnum Power Generation Ltd <http://www.magnumgrouponline.com/power/>
14. Narora Atomic Power Station <http://www.npcil.org/docs/naps.htm>
15. National Thermal Power Corporation (NTPC) <http://www.ntpc.co.in>
16. NEPC India Ltd <http://www.nepcindia.com>
17. PTC India <http://www.ptcindia.com>
18. Rajasthan Atomic Power Station (RAPS) <http://www.npcilraps.com/>
19. Rajasthan Renewable Energy Corporation Limited (RRECL) <http://www.rrecl.com/>
20. Reliance Energy <http://www.rel.co.in>
21. Tarapur Atomic Power Station <http://www.npcil.org/docs/taps.htm>
22. Tata Electric Companies <http://www.tata.com>
23. Tata Power <http://www.tatapower.com/>
24. Techno Instrument India Pvt.Ltd web site url: <http://www.tiiindia.com/>
25. Torrent Power web site url: <http://www.torrentpower.com/>
26. Uttar Pradesh Power Corporation Ltd <http://www.uppcl.org/>
27. ABB Ltd www.abb.co.in/
28. Adani Power Ltd www.adanipower.com/
29. Aplab Ltd www.aplab.com/
30. BF Utilities Ltd www.bfutilities.com/
31. CESC Ltd. www.cescltd.com/
32. CMI Ltd. www.cmilimited.com.au/
33. DLF Power Limited www.eipowertech.com/dlf_power_limited.htm
34. DPSC Ltd www.dpscl.com/
35. Energy Development Company Ltd www.energy.com.ph/
36. Entegra Ltd www.entegra.co.in/
37. GMR Infrastructure Ltd www.gmrgroup.in/
38. Gujarat Industries Power Company Ltd www.gipcl.com/
39. GVK Power & Infrastructure Ltd www.gvk.com/
40. HBL Power Systems Ltd www.hbl.in/
41. Indowind Energy Ltd www.indowind.com/
42. Indo power projects Ltd www.indopowerprojects.in/
43. Jaiprakash Power Ventures Ltd www.jppowerventures.com/
44. Kalpataru Power Transmission Ltd www.kalpatarupower.com/
45. KSK Energy Ventures Ltd www.ksk.co.in/
46. National Wind & Power Corpn. Ltd www.nationalwind.com/
47. Neyveli Lignite Corpn. Ltd www.nlcindia.com/
48. NHPC Ltd. www.nhpcindia.com/
49. NTPC Limited www.ntpc.co.in/
50. Power Grid Corpn. Of India Ltd www.powergridindia.com/
51. PTC India Ltd www.ptcindia.com/
52. Reliance Power Ltd www.reliancepower.co.in/

53. Savant Infocomm Ltd www.savant-infocomm.com/
54. Sun Source (India) Ltd www.sunsource.in/about_us.htm
55. Suryachakra Power Corpn. Ltd www.suryachakra.in/
56. Suzlon Energy Limited www.suzlon.com/

Electric wires & Cables

1. Aksh Optifibre Limited <http://www.akshoptifibre.com/>
2. Anant Distributors Private Ltd. <http://www.proflexcable.com/>
3. Brimson Cables Private Ltd <http://www.brimsoncable.com/>
4. Capital Cables India Limited - <http://www.indiantrade.com/cci/>
5. Colt Cables Private Limited <http://www.coltcables.com/>
6. Cords Cable Industries Ltd <http://www.cordscable.com/>
7. Delton Cables Limited - <http://www.deltoncables.com/>
8. Fort Gloster Industries Limited <http://www.glostercables.com/>
9. Kaydour Cables India <http://www.kaydourcables.com>
10. KEI Industries Limited <http://www.kei-ind.com/>
11. Lapp India <http://www.lappindia.com/>
12. National Cable Industries <http://www.nationalcables.com/>
13. Navinbhai Cables Private Ltd <http://www.ncplindia.com/>
14. Neolex Cables <http://www.neolexcable.com/>
15. North Eastern Cables Private Ltd <http://www.khetangroup.com/>
16. Novoflex Marketing Private Limited. <http://www.novoflexgroup.com/>
17. Polycab Wires Private Limited <http://www.polycab.com/>
18. Q-Flex Cables Limited <http://www.qflexcable.com/>
19. Ravin Cables limited - Primecab brand of cables. <http://www.primecab.com/>
20. Relemac India <http://www.relemacindia.com>
21. RollRing Industries - Calicut, Kerala. <http://www.rollring.com/>
22. Samdaria Electricals <http://www.samdariaelectricals.co.in/>
23. Satish Enterprises <http://www.satishenterprise.com/>
24. Shree Nakoda Cables Private Limited. <http://www.nakodacables.com/>
25. Skytone Electricals (India) <http://www.skytonecables.com/>
26. Surbhi Cables Industries Private Limited. <http://www.indiamart.com/surbhi/>
27. Surbhi Telelink Pvt. Ltd <http://www.surbhiindia.com/>
28. Torrent Cables Ltd <http://www.torrentcables.com/>
29. Universal Cables <http://www.universalcablesLtd.com>
30. Usha Martin <http://www.ushamartin.com>
31. Weather Crafts Ltd <http://www.weathercraft.com/>
32. Finolex Cables Limited <http://www.finolex.com>

Electrical exporters

1. Arbariya steels <http://www.arbariya.com/>
2. Bajaj International Pvt. Ltd. <http://www.bajajinternational.com/>
3. BiAx <http://www.biaxmetals.com/>
4. Brightech Valves and Controls Pvt Ltd <http://www.brightechvalves.com>
5. Dynamic Scaffolding & Equipment Co <http://www.dynamicscaffolding.com/>
6. Excel Metal And Engg. Industries <http://www.excelmetal.net>
7. Impex Trading Company <http://www.impextradingco.com>
8. Miltop Trading Company <http://www.miltop.com/>
9. Om(India)Exports <http://omindiaexpo.com>
10. Oriental Export Corporation <http://www.indialinks.com/oriental/>
11. Sevana Electrical Group <http://www.sevana.com/>
12. Veejay Lakshmi Engineering Works Limited <http://www.veejaylakshmi.com>

13. Vishal Electromag Industries <http://www.vishalmotor.com>
14. Vaibhav Electricals <http://www.vaibhavelectricals.com>
15. Industrial Forging Industries <http://www.ifi-india.net/>
16. Imperial Brass Component <http://electronics-electrical.exportersindia.com>
17. M/s Horizon Exports <http://www.horizonexport.net>
18. Golden Crest Marketing Network Pvt. Ltd. <http://www.aceenergy.co.in/>
19. Shree Krishna Enterprises <http://www.shreekrishnaenterprises.co.in/>
20. Sahiba International Trading Company <http://www.sahibainternational.com>
21. Pushpak Metals web site url: <http://www.pushpakmetals.com/>
22. IEEMA <http://www.ieema.org>
23. ELSTER METERING (P) LTD <http://www.elstermetering.com/>
24. Shivam Electronics <http://www.shivamelectronics.com>
25. SUBRTO <http://www.subrtoburnishing.com/>
26. Unitek Engineers <http://www.unitekengineers.com>
27. Euro Technologies <http://www.eurotapes.in/>

Measurements & Instrumentation

1. Active Control Pvt Ltd <http://www.indiamart.com/activecontrols/>
2. Autometers Alliance Limited. <http://www.autometers.com/>
3. EIP Bulk Control Pvt Ltd <http://www.eipbulkcontrols.com/>
4. IMP Power Limited <http://www.imp-power.com/>
5. Instruments International <http://www.indorecity.com/ii/index.html>
6. Kanji Precision Works <http://www.kanjimeters.com>
7. Mittal Enterprises <http://www.indiamart.com/mittalenterprises/>
8. Modsonic <http://www.modsonic.com/>
9. Nippon Instruments <http://www.nipponinstruments.com/>
10. Poonawala Electro Weigh <http://www.peweigh.com>
11. Prok Devices <http://www.prokdvs.com>
12. Shanti Instruments <http://www.shanti-instruments.com>
13. Texlab Industries <http://www.texlabindia.com>
14. Vasavi Electronics <http://www.vasavi.com>
15. VPL Infotech <http://vplinf.com>

Power Distribution

1. Areva T&D India <http://www.areva-td.co.in/>
2. BSES Yamuna Power Ltd and BSES Rajdhani Power Ltd. <http://www.bsedelhi.com/>
3. Central Power Distribution Company of Andhra Pradesh Limited <http://www.apcentralpower.com/>
4. CESC Limited <http://www.cescltd.com>
5. Eastern Power Distribution Company of Andhra Pradesh Limited <http://www.apeasternpower.com/>
6. Elpro International Limited <http://www.elproindia.com/>
7. Gujarat Electricity Board <http://www.gseb.com>
8. Haryana Power Utilities <http://www.haryanaelectricity.com/>
9. Hubli Electricity Supply Company Limited (HESCOM) <http://www.hescom.org/>
10. Maharashtra State Electricity Distribution Company Limited <http://www.mahadiscom.in>
11. Natinal Hydroelectric Power Corporation of India <http://www.nhpcindia.com>
12. Noida Power Company Ltd <http://www.noidapower.com>
13. North Delhi Power Limited <http://www.ndplonline.com/>
14. Power Grid Corporation Of India <http://www.powergridindia.com>
15. Southern Power Distribution of Andhra Pradesh <http://www.apspdcl.in>
16. Transmission Corporation of Andhra Pradesh (AP TRANSO) <http://www.aptranscorp.com/>

Transformers

1. Emco Limited <http://www.emcoindia.com>
2. Golecha Electro Stampings. <http://www.golecha.com/>

3. Intaf India <http://www.intafindia.com/>
4. Kappa Electricals Private Ltd <http://www.kappaelectricals.com/>
5. Kotsons Transformers <http://www.kotsons.com/>
6. Mahindra Electrical Works <http://www.mewindia.com>
7. Marson's Electricals <http://www.marsonselectricals.com/>
8. P.M. Electronics Limited. <http://www.indiamart.com/pme/>
9. Prismatic India <http://www.wind-it.com/>
10. Raksan Transformers Private Ltd <http://www.raksantransformers.com/>
11. Roland Electronics and devices Private Ltd. <http://www.redpl.com/>
12. Sai Electricals <http://www.saielectricals.com/>
13. Tesla Transformers Limited <http://www.teslatransformers.com/>
14. Transformers and Electricals Kerala Limited. <http://www.telk.com/>
15. Transformers and Rectifiers (India) Ltd. <http://www.jmtril.com>
16. T.S. International <http://www.transformers-reactors.com>

Green Energy Companies in India

1. **Suzlon Energy:** Suzlon is of course the first company that comes to mind. They are one of the leading wind energy companies in India are one of the better known alternative energy companies in India. Here are some details from their website.

Conceived in 1995 with just 20 people, Suzlon is now a leading wind power company with:

- Over 16,000 people in 25 countries
- Operations across the Americas, Asia, Australia and Europe
- Fully integrated supply chain with manufacturing facilities in three continents
- Sophisticated R&D capabilities in Belgium, Denmark, Germany, India and The Netherlands
- Market leader in Asia, Suzlon Market Share (Combined with REpower) rose to 9.8% thereby making Suzlon 3rd * largest wind turbine manufacturing company in the world.

2. **Orient Green Power Limited:** Primarily engaged in the Wind and Biomass energy space. Currently wind constitutes the majority of their energy portfolio, so this is another one of India's wind energy companies. As of March 31, 2010, their total portfolio of operating projects included 193.1 MW of aggregate installed capacity, which comprised 152.6 MW of wind energy projects and 40.5 MW of biomass projects. Their portfolio of committed and development projects included approximately 815.5 MW of prospective capacity, which comprised an estimated 622.0 MW of wind energy projects, 178.5 MW of biomass projects and a 15.0 MW small hydroelectric project

3. **Indowind Energy Limited:** Indowind Energy Limited is also a wind energy company that develops wind farms for sale, manages the wind assets, and generates green power for sale to utilities and corporates. Turnkey implementation of Wind Power Projects, from concept to commissioning. Wind Asset Management Solution for installed assets, including operations, billing, collection of revenue to project customers. Supply of Green Power to Customers. CERs (Carbon Credit) Sales and Trading.

4. **Suryachakra Power Corporation Limited:** SPCL is the flagship company of Suryachakra Group with interests in Power generation – renewable energy (biomass, Solar, hydro, Wind) and Clean Technology / Ultra Super Critical Thermal Power Plants (coal, Gas), Engineering Consultancy and Urban infrastructure development activities. Suryachakra Power Corporation Limited has established 3 wholly owned subsidiaries for setting up of renewable energy (biomass) power projects and also acquired stake in Sri Panchajanya Power Private limited, which was setting up a 10 MW Biomass Power Plant at Hingoli, Maharashtra.
5. **NEPC India:** This is a Public Limited Company promoted by the Khemka Group with the primary objective of promoting wind energy. This successful Group has a multi crore turnover from diversified activities in the field of Power Generation from Wind Energy and manufacture and marketing of Wind Turbine Generator (a renewable energy device).
6. **Azure Power:** Azure Power is the green energy space as it is one of the solar energy companies in India. It is a solar power company, and they are supplying power to 20,000 people in 32 villages in Punjab.
7. **AuroMira Energy:** Auro Mira is also a green technology energy company that is private, and present in the Biomass, Small Hydel and Wind Sectors. It plans to develop over 1000 MW capacity by 2012. AME is presently focusing in Biomass, Small Hydro and Wind Sectors. AME plans to invest \$ 900 Million to develop, own and operate over 1000 MW in clean energy in addition to WTG manufacture and to develop over 15000 acres of energy plantation in the next five years. AME intends to foray into other clean energy technologies, solar, bio-diesel etc. in the future.
8. **Husk Power Systems:** This is truly an alternate energy company which owns and operates 35-100 kW “mini power-plants” that use discarded rice husks to deliver electricity to off-grid villages in the Indian “Rice Belt
9. **RRB Energy Limited:** This company is in the field of Wind Power Generation, and is an ISO 9001:2008 and ISO 14001:2004 certified Company. RRBEL is also an Independent Power Producer having established wind farms of aggregate megawatt capacity.
10. **Moser Baer Solar Limited:** This is a subsidiary of Moser Baer that is one of the solar energy companies as well. The Group’s photovoltaic manufacturing business was established between 2005 and 2007 with the primary objective of providing reliable solar power as a competitive non-subsidized source of energy.

Internationally renowned MNC's to offer electrical jobs

Cisco, Hewlett Packard, Intel, AMD, IBM, Ford, General Electric, General Motors, Lockheed Martin, Lucent Technologies, Moog, Micron, Motorola, Nokia, Qualcomm, Rockwell, Sun Microsystems, Atto Technology, MTI and Texas Instruments.

Top core companies in India to offer electrical jobs

1. Bharat Sanchar Nigam Limited
2. Tata Consultancy Services
3. Bharti Airtel Limited
4. Wipro Ltd
5. Infosys Technologies Limited
6. Hewlett-Packard India
7. HCL Infosystems Limited
8. Reliance Communications Ltd
9. LG Electronics India Pvt Ltd
10. IBM India Pvt Ltd
11. Videocon Industries Ltd
12. HCL Technologies Limited
13. Satyam Computer Services Ltd
14. Siemens Ltd.
15. Samsung India Electronics Pvt. Ltd.
16. Mahanagar Telephone Nigam Ltd
17. Redington (India) Limited
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19. Idea Cellular Ltd
20. Videsh Sanchar Nigam Limited

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Ref: http://www.regencyengg.com/eee_job_offer.html

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