



NEW HORIZON COLLEGE OF ENGINEERING

Autonomous College Permanently affiliated to VTU Approved by AICTE
Accredited by NAAC with 'A' Grade

Department of Electrical and Electronics Engineering



AUTUMN TRONICALS

(BI-ANNUAL EEE MAGAZINE)

Autumn Tronicals, Dec 2016

DECEMBER '16

CONTENTS

TITLE	PAGE NO
EDITORIALS	3-5
VISION AND MISION PO's and PSO's	6-7
WORKSHOP	8
INDUSTRIAL VISIT	9
GUEST LECTURES	10
OLYMPIC ENGINEERING	11-13
CAREER OPTIONS AFTER B.E/B.TECH	14-19
TIPS FOR SUCCESS	20
SINGLE PHASE MULTILEVEL INVERTER FOR ISOLATED APPLICATIONS	21
BIO-GENERATION USING VEGETABLE OIL	22
ALUMNI INTERACTION	23

CHAIRMAN MESSAGE

It's pleasure to present my views for the biannual EEE magazine – “**Autumn Tronicles**”. The Department of Electrical and Electronics Engineering has always been one of the most active and happening Departments of our Institute and has brought us lot of pride over the past. The Institute as a whole has been undergoing very drastic reforms in terms of curriculum updating and course structure.



The EEE Department has taken up these readily which we hope will work for the benefit of the students. The new course plans have been applied to some of the senior years in UG apart from the first years as well, and we look forward to the feedback on the same to ensure we're moving on the right path. It is always good to see the students bring out their creative and hidden talents in any form and this would be a perfect platform for the students of the Department. This would also serve as an apt magazine for the sharing of technical articles by faculty and students from their respective areas of research. All the very best.

Dr. Mohan Manghnani

PRINCIPAL MESSAGE



At NHCE, We understand that the need to teach beyond curriculum so as to make our students 'Industry Ready'. Recent observations made by many stalwarts in the industry indicate the fact that a majority of Engineering Graduates out of colleges are not employable. NHCE has always been in the forefront in ensuring that students are employable.

It gives me immense pleasure to pen a few words as prologue to the in-house magazine of the EEE department, **Autumn Tronicles**. The issue is designed to present the events that have occurred as well as technical write-ups which makes the issue resourceful and informative. I congratulate all the contributors and also editorial board for bringing out such a nice issue. Happy Reading.

Dr. Manjunatha

HoD MESSAGE

I am extremely delighted to write a piece of message for the first issue of “Autumn Tronicles” and acknowledge that the editorial team has done a stupendous job of subsuming all the key events which have taken place over the course of last few months. To Top it off, this Magazine includes major events witnessed by our department as well as Engineering Advances in the Electrical Field.



The essential objective of the Technical Magazine is to inform, engage, inspire and entertain a diverse readership – including students, faculty, parents and alumni- with a timely and honest portrait of our department activities. This issue has made an earnest attempt in this direction and all the credit for its success falls upon faculty and students who have worked with dedication and enthusiasm to bring the second issue forward. I convey my regards to all the readers.

Dr.R.Elumalai

FACULTY ADVISOR MESSAGE



On Behalf of the Team, I am delighted on the launch of the first issue of “Autumn Tronicles”, on the eve of currents. The Clubs of EEE Department has played its instrumental role, this academic year as well, alike the previous years, through the year long activities of various workshops and social events.

The EEE Magazine has been experiencing a paradigm growth in the recent past and is now taking a new shape as a technical magazine adding a new flavour. I appreciate this initiative and wish whole heartedly that Autumn Tronicles accomplish greater heights and wider reach. With no doubt I aspire the EEE students to take this association and the magazine to an elevated horizon. Wishing you a very great and successful venture ahead.

Dr.S.Sujitha

EDITORIAL TEAM

Faculty Co-ordinator

Dr. S. Sujitha

Student Co-ordinator

Pradeep D N

Madiha Ayub

Chief Editor

Sharath A N

Design Heads

Viswajeeth Gupta

Preethi Sinha

Preethu Nath

Committee members

Swaroop Kulkarni

Vaishnavi P Salunke



ABOUT DEPARTMENT

Electrical and Electronics Engineering is a continuously evolving subject. As technology has advanced, so have the challenge facing the modern engineer. EEE is a subject that naturally partners with other disciplines with whole new engineering avenues. From the very inception of the college in 2001, the Department of EEE offers four year full-time B.E Programme affiliated to VTU with the intake of 60 students, now boast of 120 students per year.

The department is equipped with all the required laboratories, infrastructure and class rooms. The B.E degree programme is designed to achieve a balance between depth of knowledge acquired through specialization and breadth of knowledge gained through exploration. The undergraduate degree courses offered by department provide a comprehensive foundation in the core topics of EEE coupled with an area of specialization relevant to emerging engineering challenges. The curriculum has been designed to create professional electrical and electronics engineers, who can serve the fields of core electrical engineering, information and communication systems, and other related fields.

VISION AND MISSION

VISION

To produce competent Engineers to excel in the field of Electrical and Electronics Engineering by providing necessary knowledge and skills through measurable and continuous improvement methods.

MISSION

To provide an environment in which both faculty and students can think critically and assimilate knowledge

- By imparting quality technical education for students to develop into globally competent technology professionals.
- By collaborating with industry, research organizations and academia to encourage creativity and innovation.
- By preparing graduates with positive attitude and ethical values.

PROGRAMME OUTCOMES

Electrical and Electronics Engineering Graduates will be able to:

- **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **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.
- **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.
- **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.
- **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.
- **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.
- **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.
- **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **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.
- **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.
- **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

PROGRAMME SPECIFIC OUTCOMES

- **PSO 1:** Graduates will be able to solve real life problems of power system and power Electronics using MiPower, PSPICE and MATLAB software tools and hardware.
- **PSO 2:** Graduates will be able to develop and support systems based on Renewable and sustainable Energy sources.

ARDUINO WORKSHOP

Arduino is an open source computer hardware and software company. The project, and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. The project's products are distributed as open-source hardware and software, which are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially in preassembled form, or as do-it-yourself (DIY) kits.

Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler tool chains, the Arduino project provides an integrated development environment (IDE) based on the Processing language project.

The Arduino project started in 2003 as a program for students at the Interaction Design Institute Ivrea in Ivrea, Italy, aiming to provide a low-cost and easy way for novices and professionals to create devices that interact with their environment using sensors and actuators. Common examples of such devices intended for beginner hobbyists include simple robots, thermostats, and motion detectors.

The name Arduino comes from a bar in Ivrea, Italy, where some of the founders of the project used to meet. The bar was named after Arduino of Ivrea, who was the margrave of the March of Ivrea and King of Italy from 1002 to 1014.

The objective of the workshop is to provide an opportunity for student to get aware of ARDUINO and introduce them to the field of Embedded systems. The venue was at Electric Circuit Theory lab of Department Electrical and Electronics Engineering.

In the work shop students were able to acquire in depth knowledge of ARDUINO and its various applications in different domains of present technological era. The introductory session was given by Dr. R. Elumalai, Professor and Head, Department of Electrical and Electronics Engineering, NHCE. He gave introduction to Embedded systems and different architectures used in Embedded systems.

The workshop had hands on training on different aspects of ARDUINO and provided an opportunity for students to learn the intricacies of ARDUINO development environment. The hands on session had working of various peripherals like driving an LED, switches, configuring serial port, interfacing LDR sensor, speakers, 7-segment display and many more. The hands on training were conducted by Mr. Duney. D. Sam Assistant Professor, Department of EEE.



INDUSTRIAL VISIT - Bharat Heavy Electricals Limited (BHEL)



Forging ahead on a sturdy foundation of over five decades of engineering excellence and embracing the glorious next phase of its growth, BHEL is an integrated power plant equipment manufacturer and one of the largest engineering and manufacturing companies of its kind in India engaged in the design, engineering, manufacture, construction, testing, commissioning and servicing of a wide range of products and services for core sectors of the economy, viz. Power, Transmission, Industry, Transportation (Railways), Renewable Energy, Oil & Gas, Water and Defense with over 180 products offerings to meet the needs of these sectors.

BHEL's growth has been synchronous with achieving self-sufficiency in the indigenous manufacturing of heavy electrical equipment. Out of the available 35,000 MW per annum capacity for power plant equipment manufacturing in the country, A widespread network of 17 Manufacturing Divisions, 2 Repair Units, 4 Regional Offices, 8 Service Centers, 4 Overseas Offices, 6 Joint Ventures, 15 Regional Marketing Centers and current project execution at more than 150 project sites across India and abroad corroborates the humungous scale and size of its operations. BHEL also has a widespread overseas footprint in 82 countries across all the six continents with cumulative overseas installed capacity of BHEL manufactured power plants nearing 10,000 MW including Belarus, Bhutan, Egypt, Indonesia, Iraq, Kazakhstan, Malaysia, New Zealand, Oman, Rwanda, Sudan, Tajikistan and UAE. A major highlight of the year was the largest ever export order, valued at US\$1.5 billion (Rs.10,000 Crore), for setting up 1,320 MW (2x660 MW) Maitree Super Thermal Power Project in Bangladesh. Significantly, won against stiff international competitive bidding,

this is BHEL's largest power project order in the international market.

An Industrial visit to Bharath Heavy Electricals Limited (BHEL) – Electro Porcelain Division (EPD), Bangalore organized by Prof. S.Sujitha and Coordinated by Prof. B.S Mohan from EEE Department on 15th October 2016. The objective of industrial visit is to give practical exposure to the students of EEE (Materials in Electrical Engineering) in order to enhance their practical knowledge and to have an overview on the performance related to “Materials in Electrical Engineering” and “Ceramic Insulators”. The second year students and faculty members of Department of EEE, NHCE had a chance to have a look at the manufacturing process of the porcelain disc insulators at BHEL-Electro Porcelain Division. Mr. Raju, AGM, BHEL guided us to entire manufacturing process, starting from the raw materials needed for the process till the finished product obtained. It's a tedious process where each step taken for the process goes for at least 6 days of observing and a overall of 24 days for completion of the product. Their main raw material is clay from Gujarat and Maharashtra and quartz are mainly used. The raw materials are then weighed and crushed in ball mills to prepare the slip. Then it is pumped to another ball mill where dewatering is done. It is then passed through pressure pads to make cakes and remove excess water. Then the cakes are passed through plunge mills where continuous cylindrical moulds are released which is then cut into desired length manually or automatically with the help of Jiggering machine. They are then checked and adequate mass is removed by placing it into a rotating wheel. It is then placed into chambers where it is dried at high temperatures. The testing and quality checking is done by applying high voltage. If the disc is perfectly alright it withstands the voltage or it breaks into two pieces and was stunning, the way testing took place. The entire process requires hard work and a time span of about 20-25 days. Overall we had a great experience at the BHEL ceramic business.



GUEST LECTURES

Name of the Invited Speaker	Title of the Lecture delivered	Date of the Lecture
Dr. K Santhy, Head Material Science Engg, Care group of institutions, Trichy	Materials for special applications and Modern Techniques for Material Science in Electrical Engineering	21/10/2016 and 22/10/2016
Mr. Pawan, DYSP, Defence Ministry India	Life Skills and Opportunities in defence for Electrical Engineers	15/10/2016
Smudranil Chatterjee	The Opportunities in Higher Studies Abroad	27/09/2016
Mr. Sree Ram Gopal, Founder/Architect, Stack Solutions, Bangalore	Industrial Networks on IP Internet Protocol(Cisco Networking)	08/09/2016
Dr. K. Vinodh Kumar Sr. Scientist, ABB Ltd	Introduction to non-linear system analysis	14/09/2016
Prof Satish Dept. of EEE, NHCE	Applications of signals and systems	08/08/2016





OLYMPIC ENGINEERING

THE OLYMPICS, A STAGE WHERE THE BEST THE WORLD HAS TO OFFER COME TOGETHER AND TEST THEIR METTLE AGAINST EACH OTHER. THOUGH IT HAS BEEN GOING ON SINCE 776 BC, THERE HAVE BEEN A FEW CHANGES SINCE THEN....

FOR INSTANCE, TAKE THE 100M SPRINT, PROBABLY THE MOST GLAMOROUS OF THE OLYMPIC EVENTS. BACK IN THE ANCIENT OLYMPICS, SELECTING THE WINNER WAS AS SIMPLE AS SEEING WHO CROSSED THE FINISH LINE FIRST. NOW WE HAVE STOPWATCHES AND PHOTO FINISHES ACCURATE TO THE NANOSECOND.

HERE ARE SOME OF THE NOTEWORTHY INNOVATIONS:

NIKE AEROBLADES

SINCE THE 2000 OLYMPIC GAMES IN SYDNEY, NIKE HAS BEEN OUTFITTING TRACK AND FIELD ATHLETES WITH GEAR DESIGNED TO MAKE THEM MORE AERODYNAMIC. THIS YEAR IN RIO, THE COMPANY'S SOLUTION WAS, OF ALL THINGS, SPIKY TAPE.

NIKE'S SPORTS RESEARCH LAB HAS LONG BEEN DEVELOPING TEXTURIZED GEAR FOR RUNNERS TO HELP THEM REDUCE DRAG, BUT ITS NEWEST INVENTION IS AEROBLADES, WHICH MADE THEIR FIRST OLYMPIC APPEARANCE IN RIO. NIKE'S AEROBLADES ARE "FORMED NODES" THAT LOOK LIKE TINY HOOKS OR SPIKES AND REDUCE WIND RESISTANCE BY INFLUENCING THE MOVEMENT OF AIR AROUND ATHLETES. THE SPORTS BRAND HAS PRODUCED LEG AND ARM SLEEVES COVERED IN AEROBLADES, ALONG WITH ADHESIVE PATCHES.

TO TEST THE DRAG-REDUCING PERFORMANCE AND DETERMINE WHERE PATCHES SHOULD BE PLACED ON THE BODY, NIKE STUCK AEROBLADES TO MANNEQUINS AND PLACED THEM IN A WIND TUNNEL. THEY WERE THEN ABLE TO DEVELOP PLACEMENT INSTRUCTIONS FOR ATHLETES, FROM SPRINTERS TO MARATHON RUNNERS, WITH THE GOAL OF HELPING THEM CROSS THE FINISH LINE FASTER.

HYKSO PUNCH-TRACKING SENSORS

FIGHTERS PLACE LIGHTWEIGHT SENSORS UNDER THE TAPE ON THEIR WRISTS, WHICH SEND DATA TO A MOBILE APP THAT COUNTS PUNCHES AND MEASURES INTENSITY AND VELOCITY. THE APP CAN EVEN DISTINGUISH BETWEEN THE TYPES OF PUNCHES THEY THROW.

THE U.S. AND CANADIAN BOXING TEAMS HAVE BEEN USING HYKSO'S TECHNOLOGY DURING SPARRING AND TRAINING. PREVIOUSLY, BOXING CANADA HEAD COACH DANIEL TREPANIER HAD BEEN USING A MANUAL CLICKER TO COUNT ALL OF THE PUNCHES. NOW, HE CAN ANALYZE STRATEGY, RECOGNIZE PREVIOUSLY UNDETECTABLE PUNCHING PATTERNS AND HELP HIS TEAM ADJUST THEM. (THE MOVIE "REAL STEEL" COMES TO MIND)

"HAVING ACCESS TO THIS ADDED LAYER OF KNOWLEDGE GIVES OUR TEAM A HUGE COMPETITIVE ADVANTAGE HEADING INTO RIO THIS SUMMER," TREPANIER SAID IN A HYKSO TESTIMONIAL BEFORE THE OLYMPICS.

HYKSO'S TRACKING SYSTEMS ARE CURRENTLY AVAILABLE FOR PRE-ORDER BY THE GENERAL PUBLIC.

SOLOS AUGMENTED REALITY GLASSES

FOR TRAINING CYCLISTS WHO WANT TO CHECK THEIR VITAL SIGNS AND BOOST THEIR PERFORMANCE MID-RIDE, SOLOS SMART GLASSES PROVIDE AN AUGMENTED REALITY VIEW OF THE INFO, "HEADS UP AND HANDS FREE." (TALK ABOUT GOOD LOOKING TECH!)

SOLOS, AN OFFICIAL SPONSOR OF THE U.S. CYCLING TEAM, HAS PARTNERED WITH THE ATHLETES TO CREATE A PAIR OF SHADES THAT DISPLAY STATS SUCH AS CADENCE, HEART RATE, SPEED, DISTANCE, DURATION AND MORE, LAYERED OVER THE ROAD AHEAD.

THE GLASSES, DEVELOPED BY WESTBOROUGH, MASS.-BASED KOPIN CORPORATION, ARE DESIGNED TO BE AERODYNAMIC, STYLISH AND COMFORTABLE. THEY ALSO CONTAIN A SPEAKER, WHICH DELIVERS AN AUDIO FEED OF THE CYCLIST'S STATS, AND CONNECT TO A MOBILE INTERFACE.

WHILE THE U.S. CYCLING TEAM TRAINED WITH SOLOS, THEY WEREN'T ABLE TO WEAR THEM DURING THE RACES IN RIO.

OMEGA UNDERWATER LAP COUNTERS

WATCHMAKER COMPANY OMEGA HAS BEEN THE OFFICIAL TIMEKEEPER FOR ALL BUT THREE OF THE OLYMPIC GAMES SINCE 1932, BUT THIS YEAR, IT HAS EXPANDED ITS ROLE BEYOND OFFICIAL DATA-HANDLING.

WHEN SWIMMERS ARE RACING BACK AND FORTH ACROSS THE POOL, THEY OFTEN HAVE TROUBLE KEEPING TRACK OF THE NUMBER OF LAPS THEY'VE COMPLETED. TO ELIMINATE THIS DISTRACTION AND REPLACE THE HUMAN OFFICIALS WHO PREVIOUSLY DISPLAYED NUMBERS AT THE POOL'S EDGE, OMEGA HAS DEVELOPED UNDERWATER LAP COUNTERS.

INSTALLED AT THE BOTTOM OF EACH LANE, THE COUNTERS UPDATE EVERY TIME A SWIMMER TOUCHES A PAD ON THE WALL. THE NUMBERS ARE VISIBLE TO SWIMMERS WITHOUT REQUIRING THEM TO LOOK UP FROM THE POOL. THEY'RE DESIGNED SOLELY FOR IN-THE-MOMENT USE BY COMPETITORS, RATHER THAN OFFICIAL TIMEKEEPING FOR THE RACES, OMEGA CLARIFIES ON ITS WEBSITE.

OMEGA PREMIERED THE LAP COUNTERS AT THE FINA WORLD SWIMMING CHAMPIONSHIPS IN DOHA, QATAR, IN DECEMBER 2014. IN RIO, THE DEVICES WERE USED IN THE 800-METER AND 1500-METER FREESTYLE SWIMMING EVENTS.

FALCOEYE- OPTICAL SCORING SYSTEM


IN THIS MOST TRADITIONAL OF EVENTS, AN ELECTRONIC SCORING SYSTEM HAS REPLACED THE REFEREE'S JUDGEMENT. WHILE THE CLASSIC PAPER TARGETS MAY LOOK THE SAME, IN REALITY THEY ARE NOW ONLY THE VISIBLE FACE OF A HIGH-TECHNOLOGY SENSOR SYSTEM THAT WILL TRANSFORM THE SPECTATOR EXPERIENCE OF THE SPORT. THE BASIC METHOD OF THIS SYSTEM IS THAT IT DOESN'T WORK WITH BUILT-IN SENSORS; IT DEFINES THE ARROW'S POSITION BY OPTICAL SOLUTIONS INSTEAD.

"WHEN THE ARROW HITS THE TARGET, THE SYSTEM SHOWS THE SCORE ON THE BIG SCREEN IMMEDIATELY," SAYS RIO 2016 ARCHERY MANAGER LUIZ EDUARDO ALMEIDA. "IT IS EXTREMELY ACCURATE AND MUCH FASTER."

THE NEW SYSTEM IDENTIFIES THE EXACT POINT OF THE ARROW IN THE TARGET WITHIN AN ACCURACY OF 0.2MM, MUCH MORE PRECISE THAN THE HUMAN EYE IS CAPABLE OF. THE SCORE IS DISPLAYED ON THE SCREEN JUST ONE SECOND AFTER THE ARROW HITS THE TARGET.

THESE ARE BUT A FEW OF THE TECHNOLOGICAL MARVELS THAT HELPED THE GAMES GO SMOOTHLY. THESE ARE MOMENTS THAT CAN MAKE US PROUD TO BE ENGINEERS.

WHO KNOWS, PUT IN THE EFFORT AND TIME, AND WE CAN BE THE PUSH THAT INDIA NEEDS TO EXCEED EXPECTATIONS IN THE COMING 2020 TOKYO OLYMPICS.



In today's fast paced world, there is no dearth of choices in any field, including education. There are a lot of options regarding what can be done after B.Tech. Here, we bring forth some of them.

MASTER OF SCIENCE (MS)

Master of Science, or MS, as it is more popularly known, is for advanced studies in a particular technical subject.

HOW TO APPLY

GRE (Graduate Record Examination) has to be attempted for pursuing MS in the U.S.A. The test contains questions on verbal reasoning, quantitative aptitude and analytical writing. Apart from GRE, applicants should also attempt TOEFL (Test of English as a Foreign Language) / IELTS (International English Language Testing System) which are English proficiency tests for non-native English speakers. The scores are valid for 5 years from the date of the test.

These scores can also be used to apply for PhD directly after B.Tech. However, one must have a very high CGPA and excellent projects to get into a top college.

PROS

There are a lot of job opportunities after completing MS. Research options too are abundant.

CONS

MS scholars have lesser chances of landing up a managerial post early in their career compared to MBA graduates.

MASTER OF TECHNOLOGY (M.Tech)

This option is extremely viable for people who want to improve upon their technical skills, and thus, pursue a career in the same field.

HOW TO APPLY

In order to pursue M.Tech in IITs, NITs or IISC, one has to attempt GATE

CAREER OPTIONS

AFTER B. TECH

CAREER OPTIONS *AFTER B. TECH*

(Graduate Aptitude Test in Engineering). Some IITs shortlist students based on their GATE score and then conduct their own written test and interview. Although GATE scores are given more preference, a person with decent career marks has an edge over those who don't. The test consists of Subject related Questions (70%), Engineering Mathematics (15%) and Aptitude (15%). Most people start preparing from their second or third year.

PROS

After M.Tech, one can get into a good core company. The salary is mostly higher than what is provided to B.Tech graduates. There are opportunities to pursue research and also take up teaching as a profession.

CONS

There are a few companies which consider only B.Tech and pay accordingly. MBA graduates have a greater chance of climbing the rungs of the ladder in the corporate world as they have more managerial knowledge.

MASTER OF BUSINESS ADMINISTRATION:

MBA is the best option for students who want to hone up their management skills, which are needed to prepare for generalist roles in various non-technical industries. The core courses in an MBA program cover various areas of business such as accounting, finance, marketing, human resources, and operations in a manner most relevant to management analysis and strategy.

HOW TO APPLY

Many prestigious B-Schools in India (including IIMs) shortlist students based on their CAT (Common Aptitude Test) scores. This is followed by a GD or an essay writing round, after which interviews are conducted. The aptitude test contains questions on Quantitative Ability (QA), Verbal Ability (VA) and Reading Comprehension (RC), Data Interpretation (DI) and Logical Reasoning (LR). Other Institutes conduct their own entrance tests. As a lot of people attempt this test, it is advisable to start preparing as early as possible to land up in one of the top colleges.

For pursuing MBA abroad, GMAT (GRADUATE MANAGEMENT ADMISSION TEST) is the exam that has to be attempted. Nowadays, a few colleges have started accepting GRE (Graduate Record Examination) scores too. GMAT tests analytical, writing, quantitative, verbal, and reading skills in written English. Along with this, exams like TOEFL (Test of English as a Foreign Language) / IELTS (International English Language Testing System), which test proficiency in English, have to be attempted. TOEFL scores are accepted in U.S.A and those of IELTS are accepted by most European Universities.

PROS

It is easier to continue studying as one is still in student mode. A large percentage of students find it difficult to prepare for these examinations simultaneously with their job. The salary too is very high.

CONS

Some HR courses are difficult to understand without prior work experience. It is impossible to be financially independent if MBA is done immediately after B.Tech

PLACEMENTS

This option is perfect for those who have had enough of studying and also for those people who would like to have exposure to the corporate world before deciding on whether to study further in the same field or not.

HOW TO PREPARE

The most basic requirement is to pass the CPC (Campus Placement Committee) examinations. They are conducted in the 6th semester. Those who do not pass in the first attempt can appear for re-CPC exams. It is also advisable to maintain a CGPA > 8 for being eligible for electronics companies. Most electrical, management and software companies require CGPA > 7. A few software companies have no CGPA criteria. A thorough knowledge of the subject is also required for landing a job.

PROS

Learning the importance of hard-earned money and how to spend wisely. Moreover, there are chances to practically apply the concepts taught in college.

CONS

Working long hours and sometimes even on weekends to complete the assigned work is the major let-down.

CIVIL SERVICES

The civil services examination is conducted by the UPSC (Union Public Service Commission) for recruiting people for the IAS (Indian Administrative Service), IPS (Indian Police Service), IFS (Indian Foreign Services) and IRS (Indian Revenue Service).

HOW TO PREPARE

It is one of the most difficult examinations with a success rate of 0.1 - 0.3%. The examination consists of three levels: a preliminary exam, a main exam and a personal interview. The preliminary exam consists of two objective type papers having questions on general studies and aptitude. Main consists of 9 papers of essay type questions. As only 4 attempts are allowed, it is advisable to start preparing as early as possible.



PROS

Job security is the major advantage. In India, any civil servant is looked at with respect. The satisfaction of serving the society is also a major plus point.

CONS

The salary of an honest civil servant is low. Most civil servants are made to shift departments every year.

INDIAN ENGINEERING SERVICES

IES constitutes of engineers working under the Indian government in sectors like railways, roadways, telecommunication etc. Civil, Mechanical, Electrical and Electronics & Communication engineers can attempt the Engineering Services Examination conducted by UPSC (Union Public Service Commission).

CAREER OPTIONS *AFTER B. TECH*

HOW TO PREPARE

The exam consists of 5 papers. The first one is an objective examination having questions on general studies and English. The second and third papers too are objective ones and have questions related to the field of engineering. The fourth and fifth papers have essay type questions related to engineering. The five papers are followed by an interview round. The success rate of this test is extremely low and so it is advisable to start preparing as soon as possible.

PROS

As the jobs are technical, there is no public or political interference, unlike the civil services. The salary is stable and the job is respectable.

CONS

Social recognition is very less. As the promotions are carried out batch-wise, there is no way to differentiate between a high and a low performer.

BANK PROBATIONARY OFFICER EXAMINATION (BANK P.O EXAMINATION)

This exam is the only way of landing a job in renowned banks. A probationary officer is called so because he/she is kept on probation for a certain initial period, which also serves as the training period.

HOW TO PREPARE

The procedure consists of a preliminary examination followed by mains examination and an interview. The preliminary round consists of questions on quantitative aptitude, reasoning and English aptitude. Apart from these, mains consists questions on General Knowledge and Computer Knowledge. Around a year is required to prepare for this exam.

PROS

The salary is lucrative and there are a lot of other benefits. There is an additional benefit of job security.

CONS

There is no room for error. A small mistake may cause a lot of problems for the bank.

STARTUP

This is a very good option for those who do not want to work for others and do not mind taking risks. In recent days, a large number of engineering graduates are opting for this path.

HOW TO START-UP

The three vital requirements of a start-up are 'a useful idea', 'a set of good people' and 'wise investment of money'. Above all, one should learn to never give up as hardships are very common in this path. However, once success is achieved, all hardships are forgotten.

PROS

If the start-up is successful, gigantic financial returns are guaranteed. There is also the satisfaction of having achieved something without much help.

CAREER OPTIONS *AFTER B. TECH*

ARMY/NAVY

The army and navy are branches of the Indian Armed Forces and they too recruit candidates who have finished their B.Tech.

HOW TO APPLY

There are many ways in which one can apply for the armed forces. Prior to that, one must ensure that he/she meets all physical requirements. The 4 ways for applying for the army are CDS (Combined Defence Service) examination, TGC (Technical Graduate Course) which is meant exclusively for male engineering graduates, SSC (Short Service Commission) and UES (University Entry Scheme). SSC is a boon for those who want to serve temporarily. Indian Army has a pact which allows one to serve as a commissioned officer for 5 years, and once the tenure is over, a permanent commission is offered. UES is for B.Tech graduates and has provisional entries for final and pre-final years. For joining the Navy, CDS and SSC are the major examinations. The questions in these examinations are on English, general knowledge and mathematics.

PROS

There is job security and also many additional benefits. Besides, the biggest plus point is that one gets to serve the nation.

CONS

The rules are very strict and postings are mostly in places with extreme weather conditions. The biggest negative is staying miles away from family and friends, for long periods.

JOB for Engineers

Organization	Post Name - No of Vacancies	Last Date for Apply
Hindustan Aeronautics Limited (HAL) Graduate Engineers -	Graduate Engineers - 215	16/12/2016
Bharat Electronics Limited (BEL)	Various Engineers - 100	December 2016
NBCC (India) Limited	Engineering Executive Posts - 88	21/12/2016
Kolkata Municipal Corporation	Assistant Engineer (Civil), Sub Assistant Engineer (Civil) - 80	03/01/2017
MAHAGENCO	Engineers, Chemists - 61	21/12/2016
NPCC Limited	Assistant Engineer (Civil) - 50	26/12/2016
Mineral Exploration Corporation Limited (MECL)	Senior Manager, Manager, Assistant Manager, Foreman, Technical Assistant - 40	12/01/2017
KELTRON	Engineer - 16	22/12/2016
West Bengal Power Development Corporation Limited (WBPDC)	Mine Manager, Assistant Mine Manager, Safety Officer - 15	26/12/2016

10 Tips for Success

1. **Focus on commitment, not motivation.** Just how committed are you to your goal? How important is it for you, and what are you willing to sacrifice in order to achieve it? If you find yourself fully committed, motivation will follow.
2. **Seek knowledge, not results.** If you focus on the excitement of discovery, improving, exploring and experimenting, your motivation will always be fueled. If you focus only on results, your motivation will be like weather—it will die the minute you hit a storm. So the key is to focus on the journey, not the destination. Keep thinking about what you are learning along the way and what you can improve. Make the journey fun. It's an awesome game! The minute you take it serious, there's a big chance it will start carrying a heavy emotional weight and you will lose perspective and become stuck again.
3. **Get rid of stagnating thoughts.** Thoughts influence feelings and feelings determine how you view your work. You have a lot of thoughts in your head, and you always have a choice of which ones to focus on: the ones that will make you emotionally stuck (fears, doubts) or the ones that will move you forward (excitement, experimenting, trying new things, stepping out of your comfort zone).
4. **Use your imagination.** Next step after getting rid of negative thoughts is to use your imagination. When things go well, you are full of positive energy, and when you are experiencing difficulties, you need to be even more energetic. So rename your situation.
6. **If you keep repeating I hate my work, guess which feelings those words will evoke?** It's a matter of imagination! You can always find something to learn even from the worst boss in the world at the most boring job. I have a great exercise for you: Just for three days, think and say positive things only. See what happens. Stop being nice to yourself. Motivation means action and action brings results. Sometimes your actions fail to bring the results you want. So you prefer to be nice to yourself and not put yourself in a difficult situation. You wait for the perfect timing, for an opportunity, while you drive yourself into stagnation and sometimes even into depression. Get out there, challenge yourself, do something that you want to do even if you are afraid.
7. **Get rid of distractions.** Meaningless things and distractions will always be in your way, especially those easy, usual things you would rather do instead of focus in on new challenging and meaningful projects. Learn to focus on what is the most important. Write a list of time-wasters and hold yourself accountable to not do them.
8. **Don't rely on others.** You should never expect others to do it for you, not even your partner, friend or boss. They are all busy with their own needs. No one will make you happy or achieve goals for you. It's all on you.
9. **Plan.** Know your three steps forward. You do not need more. Fill out your weekly calendar, noting when you will do what and how. When-what-how is important to schedule. Review how each day went by what you learned and revise what you could improve.
10. **Protect yourself from burnout.** It's easy to burn out when you are very motivated. Observe yourself to recognize any signs of tiredness and take time to rest. Your body and mind rest when you schedule relaxation and fun time into your weekly calendar. Do diverse tasks, keep switching between something creative and logical, something physical and still, working alone and with a team. Switch locations. Meditate, or just take deep breaths, close your eyes, or focus on one thing for five minutes. You lack motivation not because you are lazy or don't have a goal. Even the biggest stars, richest businesspeople or the most accomplished athletes get lost sometimes. What makes them motivated is the curiosity about how much better or faster they can get. So above all, be curious, and this will lead you to your goals and success.

DEVELOPMENT OF SWITCHED CAPACITOR BASED SINGLE PHASE MULTILEVEL INVERTER FOR ISOLATED APPLICATIONS

It is a single-phase nine-level inverter for stand-alone Photo-voltaic systems with a pulse width modulated (PWM) control scheme. The proposed nine-level inverter comprises a single-phase conventional H-bridge inverter, three bidirectional switches and four capacitor voltage dividers. The control signal generated by using four sinusoidal reference signals that are compared with one triangular carrier signals for controlling the switches of the inverter. The inverter is capable of generating the nine levels of output voltage of more fundamental RMS output voltage with less amount of THD. The proposed nine-level inverter has been verified through MATLAB simulation results. Due to increase in energy demand and rapid depletion of non-renewable resources, power electronic researchers are focusing in the field of alternative energy sources. The renewable energy source predictable to efficiently contribute the humanity energy for almost 1 billion years. The renewable energy sources would also reduce the costs of operation and environmental pollution caused by burning of fossil fuels. Photo-voltaic generation system is one of the most popular renewable energy sources.

The generated energy from the photovoltaic system is used in stand-alone application and it can be delivered to the power network. The multilevel inverter concept is the kind of alteration of two-level inverter. The general structure consists of four switches found in the single-phase inverter is to create a sinusoidal voltage from several levels of voltage, typically obtained from capacitor voltage sources. The main motivation for such inverter is that the current is shared among these multiple switches, allowing a high inverter power rating than the individual switch VA rating. Otherwise it allows harmonics. As the number of level increases, the synthesized output waveform, a staircase wave like, approaches a desired waveform with decreasing harmonic distortion, approaching zero as the number of level increases. Several types of multilevel inverter topologies, which have been reported from high power inverter system manufacturers.

The most commonly used topologies are diode clamped, flying capacitor or multicell, cascaded H-bridge and modified H-bridge multilevel inverter topologies. These three topologies employ different mechanism to produce the required output. The diode clamped multilevel inverter uses clamping diodes along with series connected capacitor whereas, in flying capacitor type, floating capacitors are used to facilitate clamp the output voltage and in cascaded type is the simply series connection of H-bridges.

The main concept of this diode clamped multilevel inverter is to use diodes and provides multiple voltage levels through the different phases to the capacitor banks which are in series. A diode transfers a limited amount of voltage, thereby reducing the stress on other electrical devices. The drawback of diode clamped multilevel inverter is difficult, because of quadratic relation between number of diode and number of level especially, when number of level is higher and also it becomes stressful to maintain charging and discharging cycle. This trouble can be overcome by increasing the switches, diodes and capacitors. Due to the capacitor balancing issues, these are limited to the three levels. In flying capacitor type, flying capacitors are required as a substitute of clamping diodes.

The drawback of flying capacitor multilevel inverter is the output is half of the input dc voltage and it also has the switching redundancy within phase to balance the flying capacitors. The cascaded H-bridge multilevel inverter consists of H-bridge cells and each cell can provide the three different voltages like zero, positive dc and negative dc voltages. This type of topology requires less number of components as compared with diode clamped and flying capacitor type inverters. Separate dc source should be required to the every H-bridge cell. Due to the multiple dc sources, unequal voltage may be appeared.

BIO-GENERATION USING VEGETABLE OIL

Waste oils and fats can be used as renewable fuel resources. Conversion of waste oils and fats to biodiesel fuel is one possibility but poses some difficulties such as in the use of toxic or caustic materials and by-product disposal. Conversion to biodiesel may also decrease the economic attractiveness of using waste oils as fuels. An alternative to the use of biodiesel is the use of vegetable oils or rendered animal fats as a fuel. Using relatively unmodified oils or fats eliminates the problems associated with toxic and caustic precursor chemicals and residual biodiesel alkalinity as the oil is used without altering its chemical properties.

One possibility for the disposal of these products is as a fuel for transport or other uses. Conversion of waste oils and fats to biodiesel fuel has many environmental advantages over petroleum based diesel fuel. However it is not commercially available in India and the 'back-yard' production of biodiesel may present serious risks as the process uses methanol, a toxic and flammable liquid, and sodium or potassium hydroxide, both of which are caustic. By-product disposal may present further difficulties and environmental considerations may preclude production in sensitive areas. An alternative to the use of biodiesel is the use of vegetable oil or rendered animal fats as fuel. While the use of vegetable or animal oils and fats as fuels may be somewhat surprising at first, when examined in an historical context we can see that the compression ignition engine, first developed to a usable level of functionality by the French-born Rudolf Diesel near the end of the 19th century, was originally designed to operate on vegetable oil. In 1900, Rudolf Diesel demonstrated his new compression ignition engine at the World Exhibition in Paris running on peanut oil. In 1911 he wrote "The engine can be fed with vegetable oils and would help considerably in the development of agriculture in the countries that use it."

After some one hundred years of using liquid petroleum fuels, we are now finding that there are unforeseen side effects, the foremost perhaps being the so-called Enhanced Greenhouse Effect. On top of greenhouse gas emissions is the vexing question of how little - or much - is left. The Bio generation power system turns waste vegetable oil and grease into electricity and hot water. The refrigerator-sized generator can produce renewable on-site power and hot water from used vegetable oil—up to 120 gallons a week. The system delivers electricity in the same way as a solar electric panel. Bio generator can turn vegetable oil into energy at the restaurant. It is a unique renewable energy system that generates electricity and hot water, on site for restaurants and food service operations by using waste vegetable oils from their fryers as fuel source. Turning it on is just turning a switch. Pouring oil into the drum will be recognized by the system. It will turn the engine on, clean and refine the fuel, consume all the oil that's deposited and shut the engine down.

Comparing it to the more well-known green energy sources—wind and solar—our 5-kilowatt system produces power 24/7. Whereas solar only produces peak power at noon and nothing at night. So our system is comparable to a 30-kilowatt solar panel which retails for half a million dollars. We will have dramatic savings because we operate at a small level continuously.

NIVAS.C, III year

ALUMNI INTERACTION

I feel that our college has helped me right from day one to get developed in many ways. It provides ample opportunities to help its students march towards excellence. The web based learning Materials to augment the structure of course delivery helped me tower in my academics

ANKITA NIKET
1NH12EE009

Discipline is the watch word of NHCE. It took me to another level of professionalism. Further, opening up platforms to get ourselves involved in extra curricular and co-curricular activities helped me to bring out the innate potentialities and develop a overall personality

NAVNEET DAS
1NH12EE029

Our college helped me feel that the members of the faculty are my second family to cherish forever. Every staff of this institution shares their knowledge with an affectionate pat and unshakable faith by mastering the subject.

PRASANNA R
1NH12EE039

The campus is filled with positive energy and exuberance. My first visit left me awestruck after looking at infrastructure and maintenance of the college. I can positively say EEE department has made me a better person

VINITHA A
1NH12EE062

OUR PLACEMENT PARTNERS

accenture

Capgemini
CONSULTING TECHNOLOGY NETWORKING

Cognizant



GE
GE imagination at work

Godrej



IBM

ICICI Securities

imshealth
INTELLIGENCE APPLIED

KPMG

L&T Infotech

Mindtree
Welcome to possible

NOKIA

TATA
TATA CONSULTANCY SERVICES

Tech
Mahindra



WIPRO
Applying Thought

ITC INFOTECH
Business-friendly Solutions

