



ELECTROWRITE

A Newsletter From Dept. of Electrical Engineering, S.I.T



VOL 2 ISSUE 2

DEPARTMENT MISSION & VISION

Vision

To emerge as a leading Department of Electrical Engineering that caters to the latest needs of power sector, electrical & allied industry by the year 2020 in the region.

Mission

To evolve as an innovative & globally competent Electrical Engineering department that contributes to the socio - economic growth of region by utilizing the advancement in Electrical Engineering by providing conducive learning and interactive environment to students and faculty

Graphene solar panels harvest energy from rain

Rain is normally a solar energy cell's worst nightmare, but a team of Chinese scientists could make it a tremendous ally. They've developed a solar cell with an atom-thick graphene layer that harvests energy from raindrops, making it useful even on the gloomiest days. Water actually sticks to the graphene, creating a sort of natural capacitor -- the sharp difference in energy between the graphene's electrons and the water's ions produces electricity.

The catch is that the current technology isn't all that efficient. It only converts about 6.5 percent of the energy it gets, which pales in comparison to the 22 percent you see among the world's better solar panels. If the creators can improve the performance of this graphene-coated cell, though, they could have a dream solution on their hands -- you wouldn't have to live in a consistently sunny part of the world to reduce your dependency on conventional power.

Source: Science News Journal



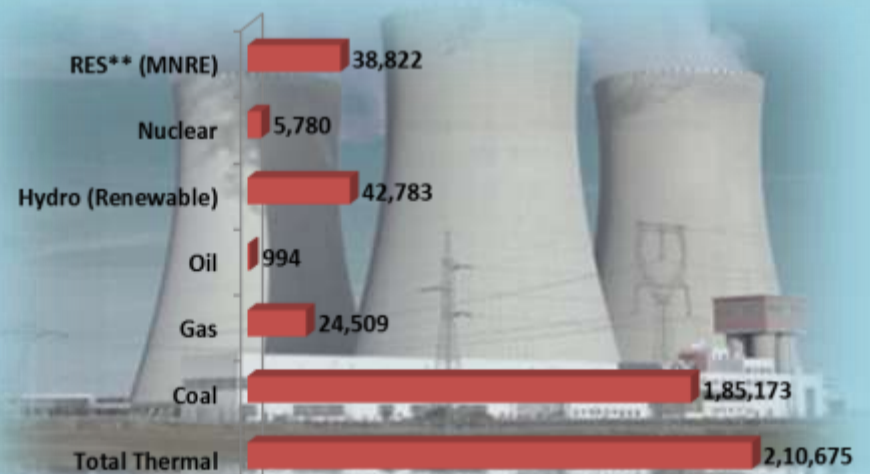
INDIA'S POWER

India's Total Power Generation Capacity

as on 31.03.2016

Sector	MW	%age
State Sector	1,01,761	34.1
Central Sector	76,297	25.6
Private Sector	1,20,003	40.3
Total	2,98,060	

Source Ministry of Power, GOI



Renewable Energy Sources(RES) include SHP, BG, BP, U&I and Wind Energy
SHP= Small Hydro Project ,BG= Biomass Gasifier ,BP= Biomass Power, U & I=Urban & Industrial Waste Power, RES=Renewable Energy Sources

ODD SEMESTER 2015 TOP PERFORMERS IN UNIVERSITY EXAMINATION

- ⇒ 2ND YEAR, 1ST SEMESTER ANKITA SAHA ROLL— 11901614006 SGPA—8.74
- ⇒ 3RD YEAR, 1ST SEMESTER AKASH KIRODIWAL ROLL—11901613007 SGPA—9.14
- ⇒ 4TH YEAR, 1ST SEMESTER NIKITA SHREYA ROLL—11901612060 SGPA—8.63



ADVANTAGES OF OUTCOMES BASED EDUCATION SYSTEMS

DR. R. N. MATHUR, FOUNDER PRESIDENT, EQUATE, NEW DELHI & FORMER ADVISOR, NPIU, MHRD, GOVT. OF INDIA



Outcomes based education systems (OBE) is a process that involves the restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of high order learning and mastery rather than the accumulation of course credits. Thus the primary objective of OBE is to facilitate desired changes within the learners, by increasing knowledge, developing skills and/or positively influencing attitudes, values and judgment.

OBE embodies the idea that the best way to learn is to first determine what needs to be achieved. Once the end has been determined the strategies, processes, techniques, and other ways and means can be put into place to achieve the goal.

If courses are planned with an outcomes-based approach the initial task is

To identify desired outcomes.

When best practice is employed, the starting point for determining the desired outcomes of programmes and courses is student needs.

What knowledge, skills and capabilities do students need on graduation?

In professional programmes, this implies that the students need to graduate as competent professionals in the field. Only theories are not sufficient – the students need to be able to put theory into practice.

Course planning needs to look beyond the end of a course to consider lifelong learning needs. Most commonly this is by ensuring that courses play a part in developing the intellectual capabilities needed for lifelong learning.

OBE Philosophy

OBE can be regarded as a philosophy of education. Within OBE there are a certain set of beliefs and assumptions about **learning, teaching and the systemic structures** within which activities take place. There are two basic types of outcome.

Traditional/Transactional (content based) Education

The first includes performance indicators. (Measured in terms of tests results, completion rates, post course employment, and so forth)

Transformational (outcomes based) learning systems

The second is less tangible and usually expressed in terms of what the learners know & are able to do as a result of their education. (It stresses long term, cross-curricular outcomes which relate to future life roles of the learner such as being a productive worker, a responsible citizen or parent).

Content Based Learning Versus Outcomes Based Learning

Content Based Learning System	Outcomes Based Learning System
Passive students	Active learners
Assessment process – exam & grade driven	Continuous assessment
Rote learning	Critical thinking, reasoning, reflection & action
Content based/broken into subjects	Integration knowledge, learning relevant/ connected real life situations
Textbook/worksheet focused & teacher centred	Learner centred & educator/ facilitator use group/ teamwork
See syllabus as rigid & non negotiable	Learning programmes seen as guides that allow educators to be innovative & creative in designing programmes/ activities
Teachers/trainers responsible for learning - motivated by personality of teacher	Learners take responsibility for their learning, learners motivated by constant feedback/ affirmation of worth
Emphasis what teacher hopes to achieve	Emphasis outcomes – what learner becomes & understands
Content placed in rigid time frames	Flexible time frames - learners work at own pace
Stay in single learning institution until complete	Learners can gather credits different institutions until achieve Qualification
Previous knowledge & experience in learning field ignored – Each time attends whole course	Recognition of prior learning: after pre-assessment, learners credited outcomes demonstrated or transfer credits elsewhere

OBE Principles

Four principles guide the transformational OBE approach, taken together they strengthen the conditions for both learner and teacher success:.

OBE Principles	Explanation	Application to practice
Clarity of focus	◆ Focus on what want learners be able to do successfully	◆ Help learners develop competencies ◆ Enable predetermined significant outcomes ◆ Clarify short & long term learning intentions ◆ Focus assessments on significant outcomes
Design down	◆ Begin curriculum design with a clear definition of the significant learning that learners are to achieve by the end of their formal education	◆ Develop systematic education curricula ◆ Trace back from desired end results ◆ Identity “learning building blocks” ◆ Link planning, teaching & assessment decisions to significant learner outcomes
High expectations	◆ Establish high, challenging performance standards	◆ Engage deeply with issues are learning ◆ Push beyond where normally have gone
Expanded opportunities	◆ Do not learn same thing in same way in same time	◆ Provide multiple learning opportunities ◆ Matching learner’s needs with teaching techniques

OBE Purpose

The decision of what and whether the learners learn is more important than when it happens and through what means (how) they learn it.

Summary

Precisely we can say the focus of education has shifted from the educator to learner however this shift requires change within the educational system in order to facilitate learning.



GLOBAL DIMMING DR. ASHUTOSH CHATTOPADHYAY,

PROFESSOR, DEPARTMENT OF ELECTRICAL ENGINEERING



Global dimming is the gradual reduction in the amount of global direct irradiance at the Earth's surface that was observed for several decades after the start of systematic measurements in the 1950s. Tiny particles that are released when fuels are burned cause global dimming. Like global warming, this process may change rainfall patterns around the world. The amount of sunlight reaching the Earth's surface has decreased by about 2 per cent every ten years, because more sunlight is being reflected back into space.

We are all seeing rather less of the Sun. Scientists looking at five decades of sunlight measurements have reached the disturbing conclusion that the amount of solar energy reaching the Earth's surface has been gradually falling. Paradoxically, the decline in sunlight may mean that global warming is a far greater threat to society than previously thought.

The effect was first spotted by Gerry Stanhill, an English scientist working in Israel. Comparing Israeli sunlight records from the 1950s with current ones, Stanhill was astonished to find a large fall in solar radiation. "There was a staggering 22% drop in the sunlight, and that really amazed me," he says.

Intrigued, he searched out records from all around the world, and found the same story almost everywhere he looked, with sunlight falling by 10% over the USA, nearly 30% in parts of the former Soviet Union, and even by 16% in parts of the British Isles. Although the effect varied greatly from place to place, overall the decline amounted to 1-2% globally per decade between the 1950s and the 1990s.

Gerry called the phenomenon global dimming, but his research, published in 2001, met with a sceptical response from other scientists. It was only recently, when his conclusions were confirmed by Australian scientists using a completely different method to estimate solar radiation, that climate scientists at last woke up to the reality of global dimming.

Dimming appears to be caused by air pollution. Burning coal, oil and wood, whether in cars, power stations or cooking fires, produces not only invisible carbon dioxide (the principal greenhouse gas responsible for global warming) but also tiny airborne particles of soot, ash, sulphur compounds and other pollutants.

This visible air pollution reflects sunlight back into space, preventing it reaching the surface. But the pollution also changes the optical properties of clouds. Because the particles seed the formation of water droplets, polluted clouds contain a larger number of droplets than unpolluted clouds. Recent research shows that this makes them more reflective than they would otherwise be, again reflecting the Sun's rays back into space.

Scientists are now worried that dimming, by shielding the oceans from the full power of the Sun, may be disrupting the pattern of the world's rainfall. There are suggestions that dimming was behind the droughts in sub-Saharan Africa which claimed hundreds of thousands of lives in the 1970s and 1980s. There are disturbing hints the same thing may be happening today in Asia, home to half the world's population. "My main concern is global dimming is also having a detrimental impact on the Asian monsoon," says Prof Veerhabhadran Ramanathan, one of the world's leading climate scientists. "We are talking about billions of people."

But perhaps the most alarming aspect of global dimming is that it may have led scientists to underestimate the true power of the greenhouse effect. They know how much extra energy is being trapped in the Earth's atmosphere by the extra carbon dioxide (CO₂) we have placed there. What has been surprising is that this extra energy has so far resulted in a temperature rise of just 0.6°C.

This has led many scientists to conclude that the present-day climate is less sensitive to the effects of carbon dioxide than it was, say, during the ice age, when a similar rise in CO₂ led to a temperature rise of 6°C. But it now appears the warming from greenhouse gases has been offset by a strong cooling effect from dimming - in effect two of our pollutants have been cancelling each other out. This means that the climate may in fact be more sensitive to the greenhouse effect than thought.

If so, then this is bad news, according to Dr Peter Cox, one of the world's leading climate modellers. As things stand, CO₂ levels are projected to rise strongly over coming decades, whereas there are encouraging signs that particle pollution is at last being brought under control. "We're going to be in a situation, unless we act, where the cooling pollutant is dropping off while the warming pollutant is going up. That means we'll get reduced cooling and increased heating at the same time and that's a problem for us," says Cox.

Even the most pessimistic forecasts of global warming may now have to be drastically revised upwards. That means a temperature rise of 10°C by 2100 could be on the cards, giving the UK a climate like that of North Africa, and rendering many parts of the world uninhabitable. That is unless we act urgently to curb our emissions of greenhouse gases.



Inauguration of GENEEUS— Wall-magazine published by the students of EE

We are pleased to announce that the Wall-magazine published by the students of EE Department was inaugurated by Dr. J. Jhampati, Director, SIT in august presence of Dr. D. C. Roy, Registrar, SIT, Mr. J. B. Basu, HOD, EE and all the Faculty & staff members of EE and students of EE on 20.02.2016. While speaking on the occasion Dr. Jhampati appreciated the good work by the students and advised to carry forward the initiative.

ALUMNI SPEAKS

I graduated in the year 2008 in Electrical Engineering, and was placed with Cognizant Technology Solutions through the campus placement process. Back then, placements used to happen during the pre-final year, and like always it was competitive and difficult for students from non-IT and non-CSE background to get through one of the company. As an Electrical Engineering student, we (I along with my department mates) always used to wonder and ask our professors about opportunities in electrical companies. Those days there weren't many electrical companies that used to come for campus placements, but I can tell you those who were really passionate about working in Electrical companies are all working in reputed Electrical companies, so if you think that getting an opportunity in an Electrical company isn't possible, then you have a misconception! I know many from our college who are working in reputed electrical companies in various parts of the world!

During the one of last interaction that I had during college days with JB Sir and MRC sir they gave me a couple of advices i.e. to be in touch with studies and always look for opportunities in the field which I had specialized i.e. Electrical Engineering. I tried to follow the first suggestion, but working in an IT company, being in touch with Electrical Engineering subjects seemed difficult.

Today, with almost 7 years of work experience, I have come very close to realizing one of my dreams i.e. to pursue an MBA from one of the top business school of the world. As of today, I have four colleges to choose from and all the colleges lie amongst the top 50 business schools of the world! It has not been easy, and there is still a lot left to do before I achieve my goal.

For students who intend to opt for higher studies, there are plenty of opportunities available in and out of India, you just need to be pro-active and dedicated in whatever you do. There are plenty of scholarships available that can fund your education, stipends to support your living and other additional costs. However, it is all competitive, but achievable. If your goals are clear, it would take just a few years before you realize your dream. The only reason why I am writing this is because I want SITians to do well, and take our college to a different level.

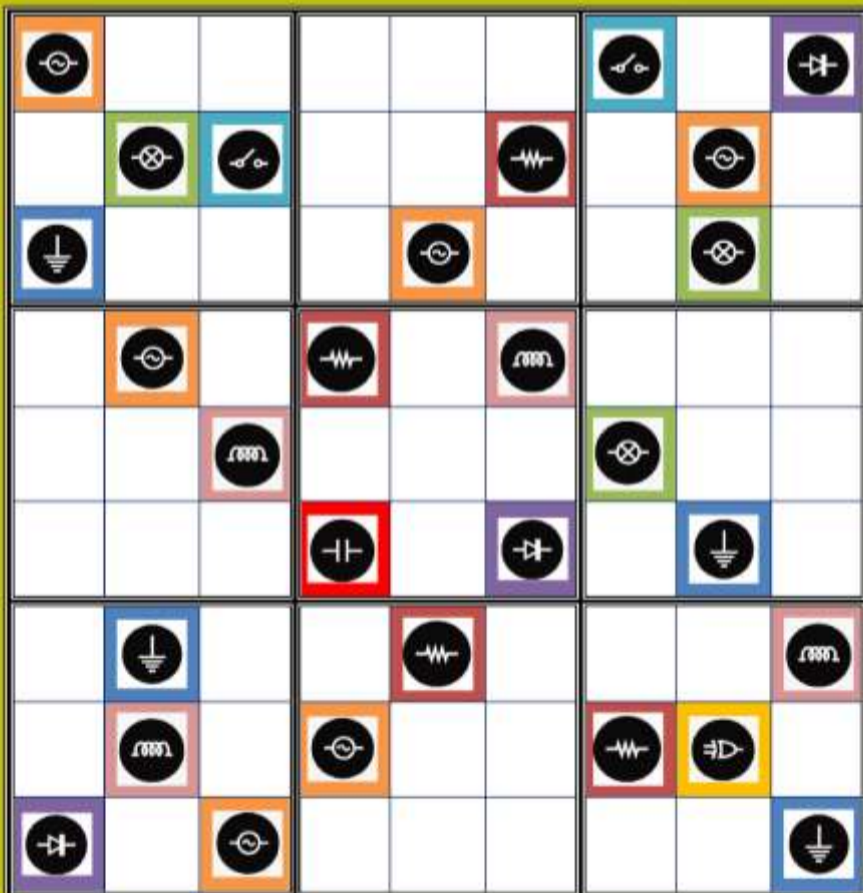
Finally, fun should never take a backseat during college days, you should enjoy each and every moment of your college days. In the beginning, 4 years seems like a long time, but these 4 years can pave way for the rest of your life, so make the most of it. For any help, please do not hesitate to contact me. All the best for your future.

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SUDOKU

Solution will be published in the next issue



Industry-Institute initiative—Guest lecture on “Recent trend in power generation and transmission and its Future prospects in India” on 2nd April, 2016



As per satisfying the increasing demand of electricity, now –a –days how much the power system became complicated and modified in practical field due to that purpose the department organised a guest lecture on “Recent trend in power generation and transmission and its Future prospects in India”.

The program started with a **welcome speech by Mr. Pralay Roy, Asst. Prof. Of EE Dept department & coordinator of Seminar organising Committee** followed by presentation from **Mr. Subrata Kumar Kapat, Chief Engineer, M.N.Dastur, Kolkata**. Mr. Subrata Kumar Kapat shared his view mainly on the modern designing aspects of distribution and substation systems. He also present the indoor and outdoor design of substation according to the requirement and substation size in details by taking various kind of electrical arrangements followed by the proper switchgear systems. He also advice the students to be more aware and sincere in each and every moment thus they can avoid any kind of dangerous unexpected accidents or discontinuity of power flow related with faulty conditions at the time of their practical field work for preparing the students more fit for power based industries.



Editorial Board



3rd year student Interaction with Alumni