

'ELECTROCRATS' 20'

EEE STUDENT'S FORUM

NEWSLETTER

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EDITORIAL

Dear Friends,

It gives us great pleasure and pride to be given the opportunity to publish department newsletter for the year 2020-21.

Action embodied in one's effort is the real key to happiness. There is no success and resultant happiness without action. What is more- you can derive satisfaction and happiness in having done your best. In spite of the tight schedule, the students of EEE Department have made this newsletter a reality by sharing their creativity, thoughts, general and technical knowledge.

Our sincere thanks to our management, Founder President, Dr. N.M. Veeraiyan, Director, Dr. Rajesh for providing us the necessary facilities. Our special thanks to our ever vibrant Principal Dr. R. Ramesh for being the mainstay throughout our journey. We are grateful to our HOD, Ms. Monica P Suresh and all our faculties for their constant support

Editorial Board



Principal's Message

I am very glad to note that the department of Electrical & Electronics Engineering is releasing their newsletter for the academic year 2020-21. The department newsletter brings out the activities, achievements and creativity of the students in the engineering aspects

The newsletter realistically connects the students, staffs, industries and institutional interaction. This newsletter contains various information about seminars, workshops, industrial visits, colloquium and Co-curricular activities. We aim at providing outstanding learning experience for all the students by conducting various activities in the student's forum to enrich their knowledge in different spheres. It is rewarding for us that each year we see our students develop and gain the confidence that will serve them well in life and work. I congratulate the editing team of this newsletter for their efforts and wishing them all the best!!

Dr. R. Ramesh

Principal



Vice Principal's Message

While we march forward towards our goals, we should look back to recollect what we have already done. We should also be aware of what we are doing at present and how we are doing it. We should also bring out a plan for the future. Newsletters exactly do these things. Bringing out newsletters train students in collecting, correlating and disseminating information and ideas.

I am happy that Electrical Engineering department is bringing out the newsletter. I wish the outgoing students a successful career and a bright future.

Dr.R.Senthil Kumar

Vice Principal



HOD's Message

I am very pleased to announce that the EEE student's forum is releasing its 1st issue Newsletter for the academic year 2020-21. The Newsletter brings out a lot of information which is useful to the students. I do hope students are benefited and gain a lot of knowledge through this Newsletter. I thank the editorial team for bringing out such a creative and interactive Newsletter. My best wishes to the students to achieve great heights in all their endeavours.

Mrs.Monica P Suresh

Head of Department

Wireless Power Transmission

SURIYA KUMAR.S, IVth Year

Power transmission as we know it, is done using hotwire methods, i.e power transmission through conducting wires. Main disadvantage of the wire power transmission system which we are forced to seclude is that, while power transmission, the mobility of the device is highly limited or maybe extended till the wire extends. Take for example of recharging the mobile phones. While recharging them, our limitless possibility of mobility reduces to the length of the charger wire. Isn't that annoying? But now, we tend to adjust with that awful fact.

What if, we can transfer power without the wire we use today? What if, the restriction of the mobility is eliminated even when you are transmitting power to the device, say for Recharging the mobile phones, you no longer required to be in the proximity of the charger or else you are no longer confined to the limits of the length of the charger wire. This can be made possible using the Wireless Power Transmission Technique.

Nicolai Tesla, the same person who is known for Induction Motors, Alternating Current, Rotating Magnetic Field Theory. Etc, proposed theories and concepts of wireless power transmission in the late 1800s and early 1900s. Now it is practically implemented on a small scale. Transmission of electricity in this method is called WiTricity, or Wireless Electricity.

How is this Wireless Transmission done? Weird to hear that, right? Transmission of power without wires...WOW! The basic principle is just Electromagnetic Induction. The same principle used in the Transformer, which works on the principle called Mutual Induction. The Transformer has a primary and a secondary winding. The supply is connected to the primary circuit and the secondary is isolated coil, both wounded on an insulated iron core. Even though, there is no electrical contact between the primary and the secondary, current is induced in the secondary. This is Mutual Induction. This is applicable only to AC. This ideology is used for the wireless transmission of power. The point to be noted about the transformer is that, the primary and secondary are not electrically connected. That means it is transmitting the power at Primary coil through wireless transfer to the secondary. This is the basis of the wireless Power transmission. The inductive Coupling is used to achieve the wireless transfer.

Inductive Coupling: Inductive coupling uses magnetic fields that are a natural part of current's movement through wire. Any time electrical current moves through a wire, it

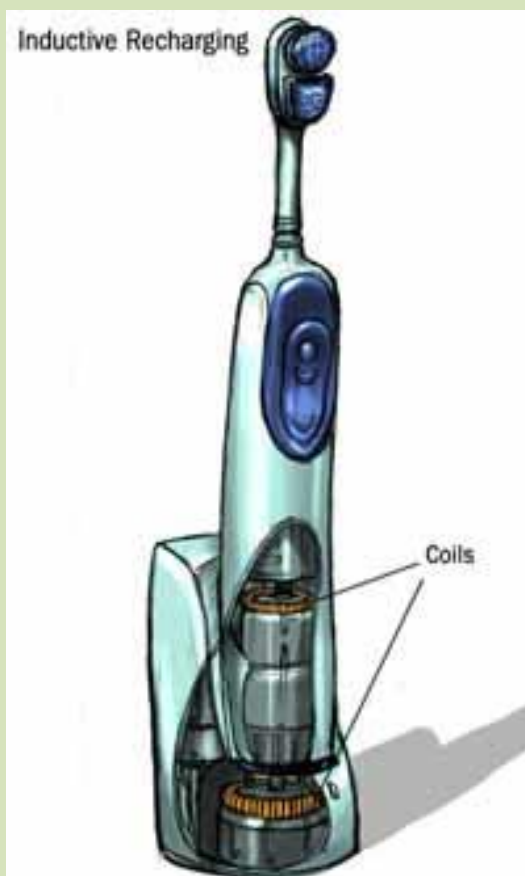
creates a circular **magnetic field** around the wire. Bending the wire into a coil amplifies the magnetic field. The more loops the coil makes, the bigger the field will be.

This type of wireless power transmission is commercially available for recharging mobile phones and cameras. Electric Toothbrushes (in figure) also use this type of method to recharge. How it does? Let us see that.



If you place a second coil of wire in the magnetic field you've created by the primary coil, the field can **induce** a current in the wire. This is essentially how a transformer works as aid earlier, and it's how an electric toothbrush recharges. It takes three basic steps:

1. Current from the wall outlet flows through a coil inside the charger, creating a magnetic field. In a transformer, this coil is called the **primary winding**.



2. When you place your toothbrush in the charger, the magnetic field induces a current in another coil, or **secondary winding**, which connects to the battery.

3. This current recharges the battery.

You can use the same principle to recharge several devices at once. For example, the Splashpower recharging mat (in figure) and Edison Electric's Powerdesk both use coils to create a magnetic field. Electronic devices use corresponding built-in or plug-in receivers to recharge while resting on the mat. These receivers contain compatible coils and the circuitry necessary to deliver electricity to devices' batteries.

Resonance: A good way to understand resonance is to think of it in terms of sound. An object's physical structure -- like the size and shape of a trumpet -- determines the frequency at which it naturally vibrates. This is its **resonant frequency**. It's easy to get objects to vibrate at their resonant frequency and difficult to get them to vibrate at other frequencies.

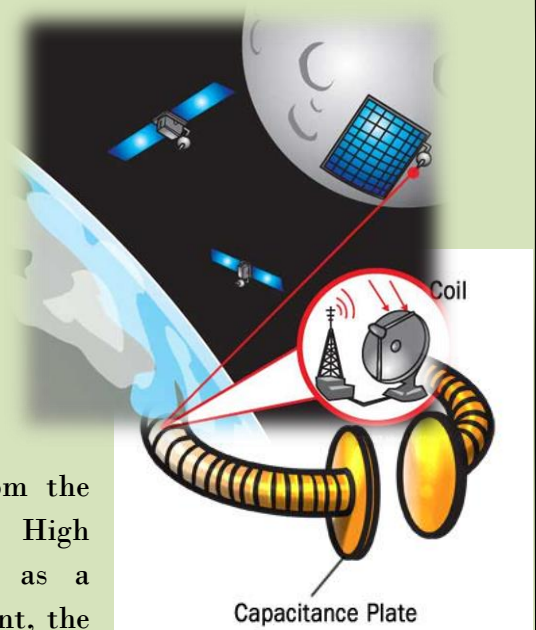
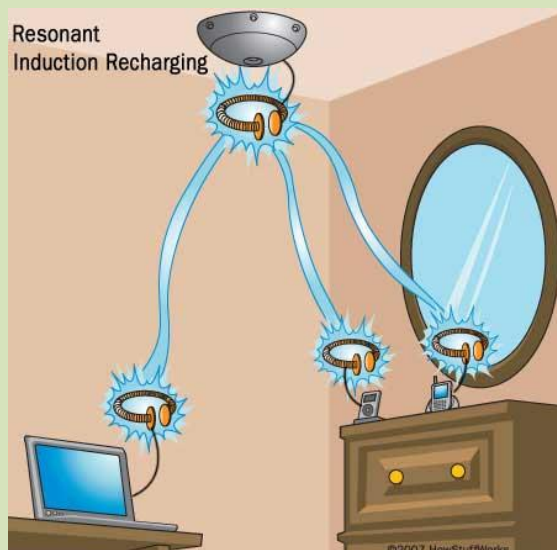
Research at MIT indicates that induction can take place a little differently if the electromagnetic fields around the coils resonate at the same frequency. The theory uses a curved coil of wire as an inductor. A capacitance plate, (in figure) which can hold a charge, attaches to each end of the coil. As electricity travels through this coil, the coil begins to resonate. Its resonant frequency is a product of the inductance of the coil and the capacitance of the plates.

As long as both coils are out of range of one another, nothing will happen, since the fields around the coils aren't strong enough to affect much around them. Similarly, if the two coils resonate at different frequencies, nothing will happen. But if two resonating coils with the same frequency get within a few meters of each other, streams of energy move from the transmitting coil to the receiving coil. According to the theory, one coil can even send electricity to several receiving coils, as long as they all resonate at the same frequency. The researchers have named this **non-radiative energy transfer** since it involves stationary fields around the coils rather than fields that spread in all directions.

The MIT Researchers made their first successful wireless transmission in year 2007. They used resonating coils to light a bulb over a distance of 2 meters.

Canada's Communications Research Centre created a small airplane that could run off power beamed from the Earth. The unmanned plane, called the Stationary High Altitude Relay Platform (SHARP), was designed as a communications relay. Rather flying from point to point, the SHARP could fly in circles two kilometers in diameter at an altitude of about 13 miles

(21 kilometers). Most importantly, the aircraft could fly for months at a time.



Speaking about distance of Transmission, it is not confined to a house or a building or a city. After fully unleashing the real potential of the wireless transmission, the power transmission will involve enormous distances like from space to the Earth. Plans are made to generate power in moon and transmit the power wireless to earth using microwaves.

WHY TIME MANAGEMENT IS IMPORTANT?

ROSITHA.V, IVth Year

- **What is Time Management?** : Time management is a set of principles, practices, skills, tools, and systems working together that help you use your time to **accomplish what you want**; help you **get more value out of your time** with the aim of **improving the quality of your life**.
- Use your time to accomplish what you want.
- Improve your productivity and accomplish more with less effort.
- Make time for the things you want and value.
- Find greater balance, fulfillment, and satisfaction.
- Focus your time and energy on what is most important to you.
- Set and achieve your long-term goals.
- Reduce waste so you'll achieve your desired goals

1. Time is limited. Time is a very special resource in that you cannot store it or save it for later. Everyone gets the exact same amount of time each and every day. If you don't use your time wisely, you can never get it back. Time is a unique resource because you get the same amount as everyone else. Once it's gone, it's gone forever and you can never get it back. One thing that you CAN do with your time is change the way you use it.

2. Time is scarce. Most people feel like they have too much to do and not enough time. Lack of time is blamed for everything from not getting enough exercise, poor finances, unachieved goals, too much stress, bad relationships, and even an unfulfilled life. Time management helps you use the time that you do have in better ways.

3. You need time to get what you want out of life. You need time to do almost anything worthwhile in life. Waiting for more free time is a losing game that almost never results in getting time for what you want. You need to learn how to make time for the things that are important to you. Even if you can only afford to give a small amount of time each week to your goals, you'd be surprised at how much progress you can make.

4. You can accomplish more with less effort. When you become more productive using improved time management skills and tools, you can accomplish more with less effort. Reducing wasted time and effort gives you even more productive time throughout the day. Both of these allow you to make time for a wide range of activities that bring more balance and fulfillment to your life.

5. Too many choices. In this day and age, there are so many ways you can spend your time, that you need some sort of plan to make intelligent choices. Time management helps you make

conscious choices so you can spend *more* of your time doing things that are important and valuable to you.

- **Developing time management skills is a journey** that may begin with this Guide, but needs practice and other guidance along the way.
- **One goal is to help yourself become aware of how you use your time** as one resource in organizing, prioritizing, and succeeding in your studies in the context of competing activities of friends, work, family, etc.

Strategies on using time:

- Identify the blocks of study time
- Schedule weekly reviews and updates
- Prioritize assignments: When studying, get in the habit of beginning with the most difficult subject or task
- Develop alternative study places free from distractions: to maximize concentration
- Got "dead time"? Think of using time walking, riding, etc. for studying "bits"
- Review studies and readings just before class
- Review lecture material immediately after class: Forgetting is greatest within 24 hours without review
- Schedule time for critical course events: Papers, presentations, tests, etc.
- **Time Audit:** The first things people need to do to manage their time is to determine how they spend their time now. A tool for doing this is called a time audit. You may want to look at a sample time audit to compare yours. Once you have completed a time audit you can begin to change the way you manage yourself in relation to time.
- **Managing Oneself:** Time really can't be managed. You can't slow it down or speed it up or manufacture it. It just IS. Time management is MANAGING YOURSELF when following some basic time management principles.
- **Time is something that you need in order to do your work**, accomplish your goals, spend time with your loved ones, and enjoy everything that life has to offer.
- **Time is something that you need in order to do your work**, accomplish your goals, spend time with your loved ones, and enjoy everything that life has to offer.
- "Do you love life? Then do not squander time, for that's the stuff that life is made of." - Benjamin Franklin
- SUCCESS IS NOT POSSIBLE WITHOUT EXCELLENT TIME MANAGEMENT.- Business coach and motivational speaker Brian Tracy
- *If I waste a minute, I waste an hour; If I waste an hour, I waste a day; If I waste a day, I waste a lifetime!*

- – Solzhenitsyn, The cancer ward

ISSAC NEWTON FACTS

AMRITH DANIEL.L, IIIRD YEAR

- Born in England, Isaac Newton was a highly influential physicist, astronomer, mathematician, philosopher, alchemist and theologian.
- In 1687, Newton published *Philosophiae Naturalis Principia Mathematica*, what is widely regarded to be one of the important books in the history of science. In it he describes universal gravitation and the three laws of motion, concepts that remained at the forefront of science for centuries after.
- Newton's law of universal gravitation describes the gravitational attraction between bodies with mass, the earth and moon for example.
- Newton's three laws of motion relate the forces acting on a body to its motion. The first is the law of inertia, it states that 'every object in motion will stay in motion until acted upon by an outside force'. The second is commonly stated as 'force equals mass times acceleration', or $F = ma$. The third and final law is commonly known as 'to every action there is an equal and opposite reaction'.
- Other significant work by Newton includes the principles of conservation related to momentum and angular momentum, the refraction of light, an empirical law of cooling, the building of the first practical telescope and much more.
- Newton moved to London in 1696 and took up a role as the Warden of the Royal Mint, overseeing the production of the Pound Sterling.
- Newton was known to have said that his work on formulating a theory of gravitation was inspired by watching an apple fall from a tree. A story well publicized to this very day.
- Famous Isaac Newton quotes include: "Plato is my friend - Aristotle is my friend - but my greatest friend is truth."
- "If I have seen further it is only by standing on the shoulders of Giants."
- "I can calculate the motions of the heavenly bodies, but not the madness of people."
- "I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the sea-shore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me."
- "Truth is ever to be found in simplicity, and not in the multiplicity and confusion of things."

E-WASTE

Divya, IIIRD YEAR

Electronic Waste or e-Waste is one of the most rapidly growing waste problems in the world. The practice of repair by replacement, rapid technology change, low initial cost and high obsolescence rate has resulted in a rapid generation of e-waste. The consumer doesn't know what to do with the unwanted equipments. Disposal of e- waste is a problem faced all over the world.

IT and telecom are two rapidly blooming industries in our country. Electrical and Electronic equipments, the main tools these industries rely upon, are made of a large number of components. They contain toxic substances like mercury, cadmium, and lead which can have adverse impact on human health and environment, if not handled carefully. Long term exposure to chemicals and metals like cadmium, lead, chromium, mercury and polyvinyl chlorides can severely damage the nervous system, kidneys, bones, reproductive and endocrine systems.

Breaking, recycling or disposing in an unprotected environment without the necessary safety precautions can result in harmful side effects to the workers and release toxins into the soil, air and groundwater causing serious environmental pollution. Developed countries such as the US dispose off their waste to India and other Asian countries. In this way the toxic junk of the developed nations would flood the world's poorest nations.

What can we do to solve this challenge?

Waste prevention is more preferred to any other waste management options including recycling. We must reuse the old products instead of disposing them. We must get our old equipments repaired and reused at least till they work to our satisfaction. But if the old equipments are damaged beyond repair or too worn out to use, then it is suggested to get them recycled in an environmentally safe manner. Many of these products can be reused, refurbished or recycled in an environmentally sound manner so that they are less harmful to the ecosystem.

Through responsible use, reuse and recycling of electronic items, we can protect and preserve our environment.