DEPARTMENT OF ELECTRICAL ENGINEERING

IIT MADRAS

❖ About:

The Electrical Engineering department at IIT Madras is among the best in the country, and holds a respectable position in the global rankings. With some of the best professors in the country and state of the art laboratory facilities, EE department, IIT Madras is a very good place to foster a strong research culture. The IIT Madras Research Park, conceived by one of our Professors, serves as an excellent place for nurturing and incubating innovation. The department offers both B.Tech (4 year program) & Dual Degree (B.Tech with M.Tech in Electrical Engineering – 5 years) as a part of the undergraduate program. The intake as of 2017 is 66 students for the B.Tech program & 53 students for the Dual Degree Program.

If you are looking for a good classroom and outside classroom learning experience, EE IIT Madras is the place to be. To clarify, EE at IIT Madras encompasses "Electrical & Electronics" and "Electronics & Communication" unlike EE at IIT KGP or IIT G.

❖ How do you know if you're interested in Electrical Engineering? :

- Those people who can comfortably solve and analyse complex circuits might find EE interesting. Don't get afraid by the diodes, transistors etc. which you might have come across while preparing for JEE. You will learn about them in detail, and you will begin to love them.
- If you hate math, then Electrical Engineering is not for you. Be prepared for a **highly math-intensive** curriculum if you're taking up EE. Beyond a point it all comes down to Mathematics.
- Students who found optics interesting (Wave optics, not ray optics) might love Electrical Engineering as we have a dedicated stream called photonics which covers optics in detail.
- If you want to know how a computer is built, what are the parts, how these parts function together, then Electrical Engineering is a place to be(In CS you will learn how to code. In EE, you will know exactly how the code is executed inside the computer). Two years down the line, you would understand how the Intel and Qualcomm processors in your phone work.
- Students who would like to build robots, might find EE both interesting and useful.

In short, EE is for people who have a good grasp of mathematics and find it exciting to model and build various entities, from electromagnetics, to circuits, signal processing and information theory.

❖ Curriculum/Timeline:

- The curriculum of Electrical Engineering at IIT Madras is very well structured. The best part of the curriculum is that you can choose 49% of your courses (These are known as electives). This is very important as students can do courses of their liking without the necessity of doing too many compulsory courses.

  You can find the curriculum here: IIT Madras Curriculum-B.Tech & IIT Madras Curriculum-Dual Degree (Please look at the courses only. Please ignore terms like "credits". You will understand their meaning later).

- In the **first semester**, you will be taught basic C programming along with Math, Physics & Chemistry courses. If you have done C/C++ programming already, you can do an advanced programming course. After the end of the first semester, based on the CGPA, there will be a system called Branch Change, in which students can change their department.

All courses require a lot of coding. Looking up the basics of C programming, apart from being helpful for the first semester courses, would lay the requisite base for the more advanced coding requirements in later semesters.

- In the **second semester**, you will get a first taste of what Electrical Engineering is. One course deals with signals (different types) & their properties, another dealing with gates and digital logic. Apart from these two, you will be doing a math course, a physics course and a humanities course (which deals with topics like economics, politics, pop culture etc. You **have** to do 3 humanities courses before you graduate)

- In the **third semester**, you will be delving further into Electrical Engineering. You will be learning basics of computer architecture & advanced methods to solve circuits in this semester along with basics of EM wave propagation. Apart from this, you have to do a humanities course also.
- The **fourth semester** in Electrical Engineering, IITM is considered to be the most difficult/stressful semester by students. You will be building on the basics learnt in the previous two semesters and you will do the basic courses of all **'streams'** (will be discussed later).
- Based on the first four semesters, students generally get an idea of what aspect of Electrical Engineering they like. In the following semesters (**5^{th} – 8^{th}/10^{th}**), students choose courses of their liking. Students generally tend to specialise in one stream (i.e. do all the courses in that stream). **There is no rule that you should choose courses from**

one stream only. **These are just focussed research areas**. It is perfectly alright if you want to choose courses from multiple streams.

- The institute also offers an array of **interdisciplinary** and **multidisciplinary** courses which open up gateways for higher studies and R&D in upcoming areas such as **Artificial intelligence**, **IoT**, **Data science and big data analytics**, **Advanced microfilm electronics**, **Image and Speech signal processing** for AI applications among many others.

❖ Streams in Electrical Engineering:

- Communications/Signal Processing
- Analog & Digital VLSI
- Power Systems & High Voltage
- Photonics
- Control & Instrumentation
- Semiconductor Devices

❖ Placements:

Our students have been placed in companies like ***Texas Instruments, Qualcomm, Intel, Sony, Samsung, Microsoft, IBM Research, VISA, Oracle, Goldman Sachs etc***. A lot of domestic as well as international companies come during the placement season. For more details about the last year's placement stats please visit this link.

❖ Higher Studies:

Our students have a lot of options as far as higher studies are concerned. They have a lot of fields to choose from. They vary from fields which are traditionally "electrical" like communications/signal processing, Analog & RF, Power Systems, Embedded Systems, Photonics to fields like Control & Optimisation, theoretical physics, neuroscience, Biomedical Engineering & Instrumentation, Applied Mathematics, mechatronics, machine learning & Computer Vision. **Basically our students can diversify into almost any other field of their interest**.

Our students regularly get MS/PhD admits from top US universities like ***Stanford, UCB, Harvard, Georgia Tech, UIUC, UT Austin, and University of Michigan etc***.

If you have further queries, contact Rakesh Raavi (Branch Councillor) at bc.elecengg@gmail.com