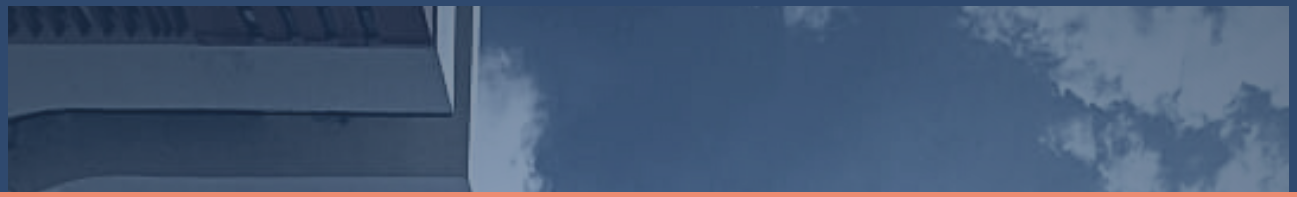


IIT Hyderabad

ENGINEERING PHYSICS

2022 - 2023

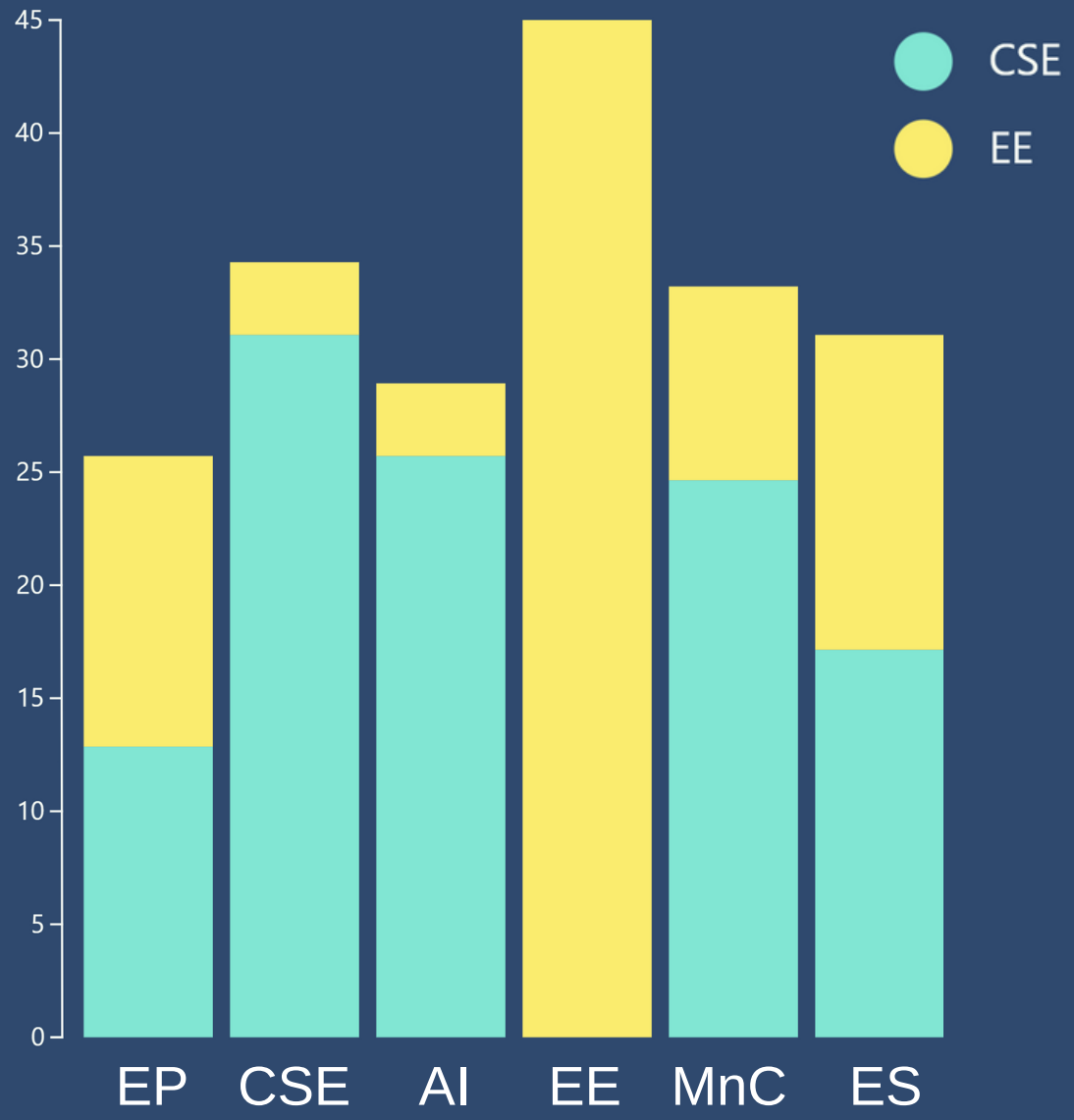
MEETING THE INGENUITY OF ENGINEERING WITH THE TRADITIONAL ROOTS OF SCIENCE

Engineering Physics is the branch that provides the opportunity to work on forefront ideas in technology and science.

Through an emphasis on science, mathematics, and engineering, our students are well-equipped with the skills needed to tackle complex problems in multidisciplinary areas, be it in research, industries, or academia.

EP AS COMPARED TO SIBLING BRANCHES

CSE + EE department credits across branches



12 Credits by the **Computer Science and Engineering** and **12 Credits** by the **Electrical Engineering** departments are offered as part of the core EP curriculum, which cover the amount of **credits required for a minor** in each of the departments respectively.

CURRICULUM

PHYSICS/BASIC SCIENCE COURSES

- Symmetries in Quantum Mechanics
- Special function and differential equations
- Group Theory
- Scattering Theory
- Approx methods in Quantum Mechanics
- Relativistic Quantum Mechanics
- High Energy Physics
- Linear Vector Spaces
- Statistical Physics
- Photonics and Lasers
- Hydrogenic Atoms
- Particle Physics
- Nuclear Physics
- Spectroscopy

EE COURSES

- Electric Circuits
- Magnetic Circuits
- Digital System Design
- Applied Digital Logic Design
- Introduction to Drones
- Matrix Analysis
- Analog Electronics
- Power Electronics
- Analog System Design
- Electronic Devices & Circuits
- Basic Control Theory

CS COURSES

- Introduction to Programming
- Introduction to Data Structures
- Algorithm
- Data Structures

The engineering physics curriculum is designed to fulfill the educational requirements for professional work in various fields of applied sciences. **The courses offered allow us to supplement real world applications.**

The courses offered allows us to have a **firm hold** upon the **theoretical concepts and science behind the technologies** in use today. An **equitable distribution between Core and Non Core** courses can be seen.

COURSES DONE AS ELECTIVES

CSE/AI ELECTIVES	EE ELECTIVES	MATHS ELECTIVES
Database Management System I	Basic Control Theory	Probability
Database Management System II	Microprocessor and Computer Architecture	Linear Algebra
Operating Systems I	Communication Systems	Differential equations
Operating Systems II	Signals and Systems	Number system
Computer Networks	Information science	Transform Techniques
Introduction to Modern AI	Semiconductor fundamentals	Complex variables
Artificial Intelligence	Introduction to Hardware Description Languages	Introduction to Lattice Theory
Random Processes		Introduction to Group Theory
Data Analytics		

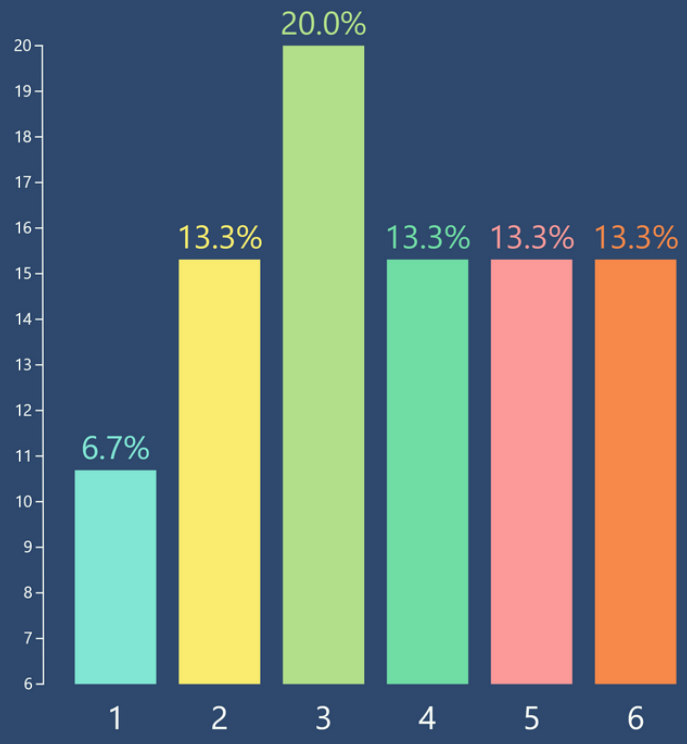
As part of our curriculum, we are given the freedom to take on electives and additional courses from any department, a majority of the **electives commonly taken** are listed in the adjoining table.

Courses involving **core Computer Science topics** and sub-fields of **Artificial Intelligence** and **Data Science** together with **Mathematical Courses** and **courses based on real world Electrical Engineering** compose the principal group of the electives. This results in diverse knowledge about additional realms of engineering, which supplement our core skills.

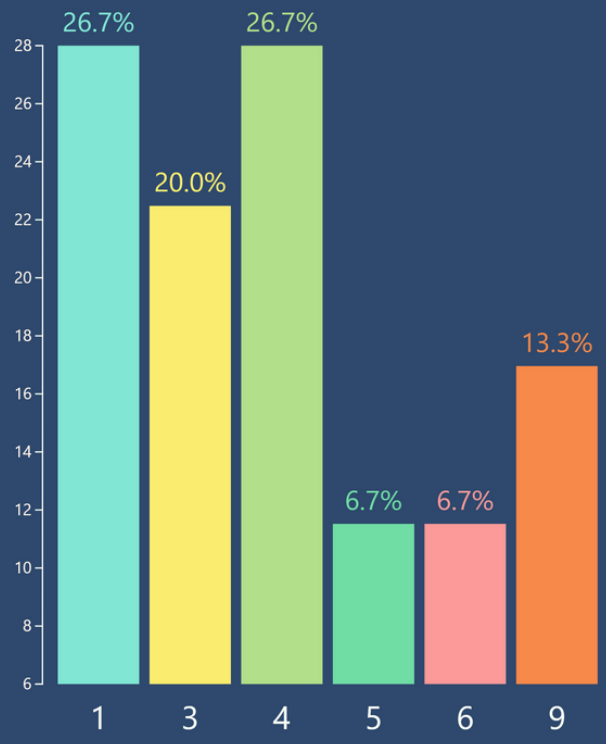
CREDITS IN THE FIELDS OF ML/AI, EE AND CS

% of Students v/s Credits Done by them in the fields of :

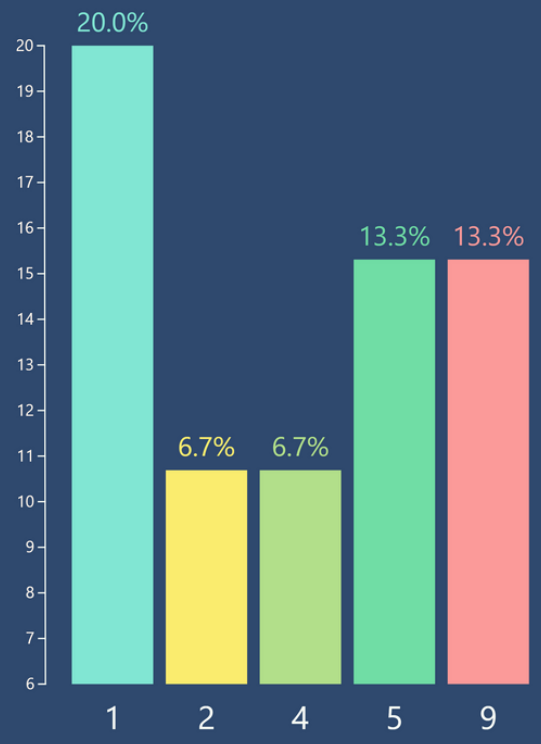
ML/AI/Data Science



EE



CSE



Ample courses have been pursued by the students in diverse fields , namely, **Artificial Intelligence/Machine Learning**, **Computer Sciences**, and **Electrical Engineering**, which complement each other as well as core courses offered by our department, thus placing us a notch above our peers.

ONLINE COURSES

In wake of the pandemic and the need for technological upskilling it brought, our students took to online courses to fulfill these global requirements.

The adjoining text summarizes the data of the various courses taken by the student population.

MORE THAN 30%

Machine Learning by Andrew Ng

MORE THAN 25%

- Neural Network and Deep learning specialization by Andrew Ng
- HTML, CSS, and Javascript for Web Developers

20%

Data Science and Analysis Specialisation

MORE THAN 10%

- DeepLearning and AI using TensorFlow specialization
- Statistics Foundations: Understanding Probability and Distributions

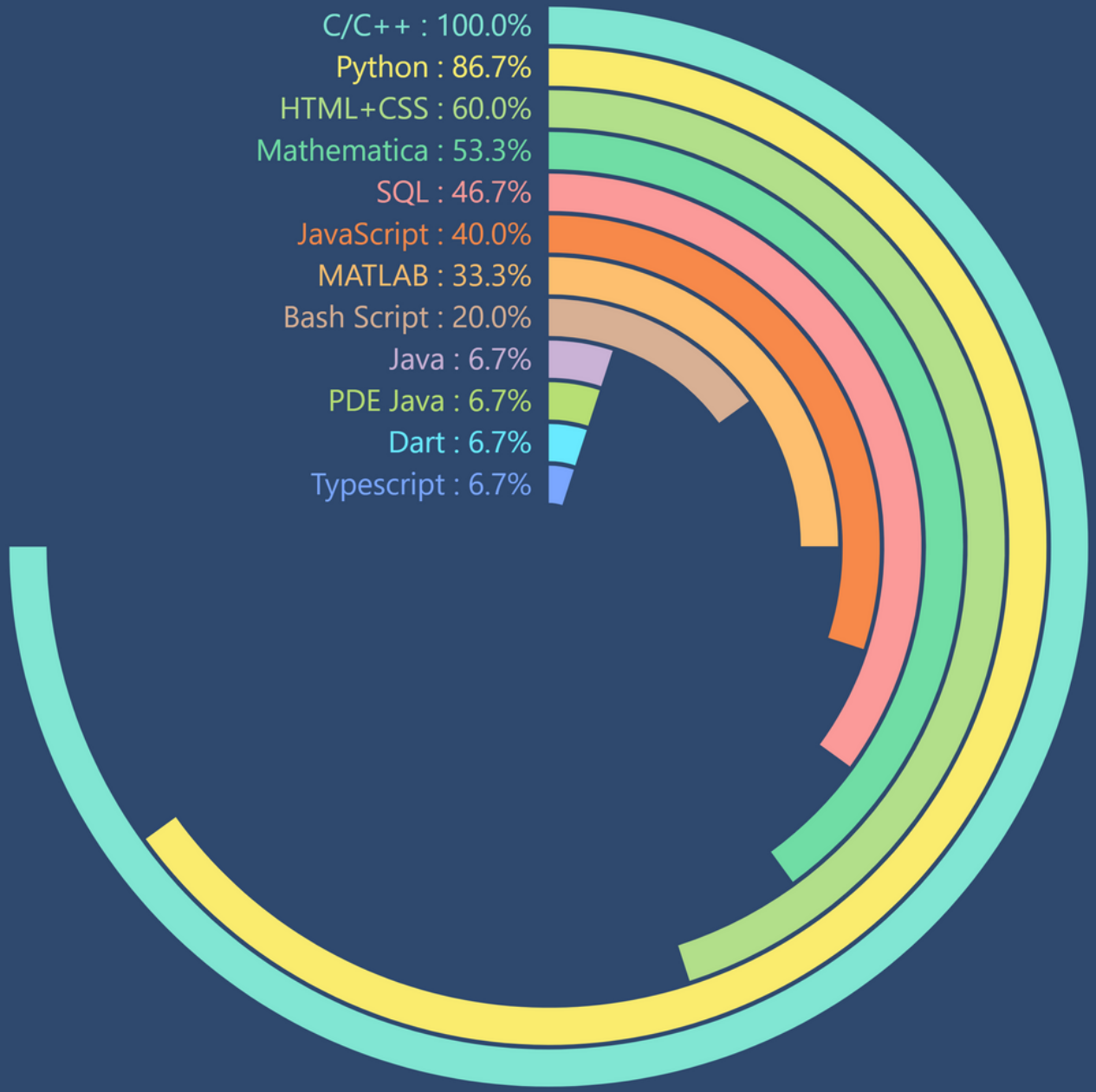
STUDENTS HAVE ALSO TAKEN

- Relational Database Design
- Interacting with OS with Python
- PostgresQL Data Manipulation
- Advanced Typescript
- HSE University Reinforcement learning offered by Coursera
- Android programming course by Udacity

AND..

- App development using Flutter
- Natural Language Processing with Classification and Vector Spaces
- Build Basic Generative Adversarial Networks (GANs)
- Mathematics for Machine Learning : Specialization
- Cybersecurity
- Internet Of Things

WE POSSESS EXTENSIVE KNOWLEDGE OF NUMEROUS PROGRAMMING LANGUAGES



The graph displays the relative familiarity with working with various software languages. **100% of the branch has knowledge of C/C++. Over 50%** are familiar with **languages such as Python, Mathematica, SQL, JavaScript** and other development languages .

Fluency in such skills allow us to be at par with students from computer science engineering in terms of formulating quick solutions to problems. **Software development also allows us to present the solutions developed on theoretical topics**, maximizing our capabilities, for an all-round development.

PROJECTS

- **3D mapping** algorithm of veins
- Direct **detection of dark matter**
- X-ray flux dependent **quasi-periodic oscillation properties** in black hole X-ray binaries
- **Differential forms** for **magnetic reconnection**
- **Continual Learning** for Computer Vision Applications
- **Fake news detection** with Blockchain
- **Photometric redshifts** with genetic algorithms
- **Magnetic field line tracing** and wandering in reconnection
- **Swarming behaviour** in swarmalators
- Study and **Optimization of Optical frequency combs**
- Black hole **quasinormal modes**
- Unsupervised recognition of **Phase Transitions**
- **Reconstructing Particles** with Belle II Detector
- **Super Conducting Qubit**
- Experiments with **GM counter**
- **Optimization techniques** in Bayesian Analysis
- Millisecond **Pulsar timing** and **Analysis**
- RI based **driving agent for real traffic**
- **Plasma** and **Laser interaction**
- Study of **pulse profile structures** in **4U 1907+09** with **AstroSat** observations

PAST RECRUITERS FOR INTERNSHIP

Few Organizations where Engineering Physics students have worked as an intern :

- **Goldman Sachs** as Software development engineer Intern.
- **NTT-AT** as Operation Support Software System for ROME (Robotic Optical Management System)
- **NTT-AT** as a Software Engineer (SDE)
- **ServiceNow** as Software Developer intern. (SDE)
- **Publicis Sapient** as DS intern. (DS)
- **UST Global** as a Software Intern (DevOps)
- **Deloitte** as Business Technology Analyst (BTA)
- **YUKAI Engineering Inc.** as a Software Development Intern (SDE)
- **Legato** as Digital and AI intern. (AI)
- **ABB Global** as DS intern. (DS)
- **I'm Beside You** as Data Science Intern (DS)
- **I'm Beside Yo**u as WEB/APP Developer Intern (WEB/APP)
- **Honeywell** as a Software Developer Intern (SDE)
- **Paninian** as Computer Vision Intern (DS)

ORGANIZATIONS THAT HAVE RECRUITED US IN THE PAST

- AMAZON
- GOLDMAN SACHS
- ORACLE
- OYO
- NTT-AT
- HONEYWELL
- ACCENTURE
- I AM BESIDE YOU
- UST GLOBAL
- MICROSOFT
- FLIPKART
- RAKUTEN
- SAAS LAB
- OPPO
- HSBC
- BOSCH
- DELOITTE

SOME OF THE UNIVERSITIES WHERE STUDENTS WENT FOR HIGHER STUDIES:

CONTACT US

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