ENGINEERING SCIENCE

IIT Hyderabad

PLACEMENT BROCHURE

Overview

Interdisciplinary Studies

In this branch students complete the majority of courses done by AI, CSE, MnC and EE students and some courses from other branches in the first 4 semesters

Specialization

By the end of the 4th semester students from Engineering Science department take a specialization in one of CSE, AI, MnC, EE branches or choose to remain in ES as per their preferences and interests.

Important Credits

An ES student specializing in a branch does more credits than a student double majoring in that branch, and does almost all the credits done by a student who belongs to that core branch.

Electives Offered & Project opportunities

Students in ES are allowed to take many elective courses from any branch of their choice giving them opportunity to explore courses of all other branches. Many courses in the curriculum lay emphasis on project work experience throughout ,building better problem solving skills and industry exposure.

Objectives

- Interdisciplinary engineering program
- Emphasis on understanding and integrated application of engineering, science and math principles
- ‘T’ structured education
- First 2 years: broad exposure to core engineering and science streams
- Next 2 years: specialize in core engineering streams OR in engineering science

Expected outcomes

- Ability to apply acquired math, science and engineering skills to solve real-world engineering problems
- Ability to identify, formulate and solve multi-disciplinary engineering problems
- Ability to work well in interdisciplinary teams with focus on system integration

JEE ADVANCED

PAST YEARS
OPENING AND CLOSING RANKS

Year	Opening Rank	Closing Rank
2017	1956	3459
2018	2389	3582
2019	1404	2733
2020	3167	3881
2021	3570	6911

CURRICULUM

Discrete Structures-I
Data Structures-I
Data Structures-II
Algorithms
POPL-I
POPL-II
Theory of Computation
Computer Networks I
Computer Networks II
Operating Systems-I
Operating Systems-II
Compilers-I
Compilers-II
DBMS I
DBMS II
Software Engineering

ES-CS SPECIALIZATION

- The student gets the degree as **B.Tech in Computer Science and Engineering and Engineering Science**
- ES students in the first four semesters complete almost all the CS credits done by the CS students.
- Apart from the mandatory courses of CS, students are required to do **21 credits of core electives** from core CS basket which consists of courses related to machine learning,computer vision,quantum computing and many more.
- Apart from few courses, all the CS courses are done by ES students who are specializing in CS which amounts to a **total of 57 CS credits** which is much higher than that completed by a student pursuing a double major or a minor in CS. (24 credits for double major and 12 credits for minor).

CURRICULUM

Mandatory courses

Foundations of ML
Matrix Theory
Deep Learning
Reinforcement Learning
Advanced topics in ML

Discrete Structures
Data Structures-I
Data Structures-II
Algorithms
POPL-I
Theory of Computation
DBMS I
DBMS II

ES-AI SPECIALIZATION

- The student gets the degree as **B.Tech in Artificial Intelligence and Engineering Science**
- ES students in the first four semesters complete almost all the CS credits done by the CS students.(including Data structures and Algorithms)
- Apart from the mandatory courses **students are required to do 19 credits of AI electives** from core AI and ML basket(min 6) , language technologies, speech and vision basket(min 3) and data analytics,natural and artificial intelligence(min 3) .
- In total **34 AI credits, 18 CS credits and 9 free elective credits** are done by ES-AI students which is **much higher** than that of student pursuing a **double major(24) or a minor(12)** in AI.

CURRICULUM

Discrete Structures
Introduction to Data Structures
Programming languages
Data Structures
Algorithms
Theory of Computation
Calculus-I
Calculus-II
Vector Calculus
Linear Algebra
Differential Equations
Probability
Statistics
Complex Variables
Analysis of Functions of Single Variable
Groups and Rings
Analysis of Functions of Several Variables
Functional Analysis

ES-MNC SPECIALIZATION

- The student gets the degree as **B.Tech in Mathematics and Computing and Engineering Science**
- ES students in the first four semesters complete almost all the CS credits and MA Credits done by the CS students and MA students
- Some of the important courses like Algorithms *and* Data structures are completed by ES students along with the MA and CS students in the first two years.
- Apart from that the ES students specializing in MnC will complete the CS courses like Computer Networks 1, DBMS 1 and others
- Apart from few courses all the Math courses are done by ES students who are specializing in MnC we can do other CS courses like Data Mining,Machine Learning courses as department electives.

CURRICULUM

Applied Digital Logic Design
Internet of Things (IOT)
Digital Systems Design
Signals and Systems
Introduction to Hardware Description Languages
Semiconductor Fundamentals
Electronic Devices and Circuits
Basic Control Theory
Communication Systems
Digital Signal Processing
Electric Circuits
Analog Electronics
Random Processes
Digital Modulation technique
Analog System Design
Control Systems
Physical Of MOS Transistors
Advanced DSP
Engineering Electromagnetics
Power Electronics

ES-EE SPECIALIZATION

- The student gets the degree as **B.Tech in Electrical Engineering and Engineering Science**
- ES students in the first four semesters do many of the EE credits done by the EE students.
- The basics of many domains such as Communication, Networks, Semiconductors etc are covered in ES curriculum
- Some of the important courses like Digital Signal Processing and Semiconductor Fundamentals are completed by ES students along with the EE students in the first two years.
- Apart from that the ES students specializing in EE complete almost every EE course which amounts to a total of about 63 core EE credits. **Much more than any double major or minor student.**

CURRICULUM

Discrete Structures I
Introduction to Data Structures
Principles of Programing languages-I
Data Structures
Algorithms
Theory of Computation
Digital Systems Design
Signals and Systems
Introduction to Hardware Description Languages
Semiconductor Fundamentals
Electronic Devices and Circuits
Basic Control Theory
Communication Systems
Probability
Statistics
Calculus
Linear Algebra

4-Yr Engineering Science

- ES students in the first four semesters complete **almost all** the CS and Math credits done by the CS and MnC students.
- Some of the important courses like **Algorithms** and **Data structures**, **Linear Algebra**,etc are completed by ES students along with the CS and MnC students in the first two years.
- **For the last two years, a 4-year ES students are allowed to design their curriculum following certain rules. They also have to complete 2 semester long projects under professors.**
- They are most prepared for interdisciplinary roles and each student carries a unique specialization based upon their selected courses.
- In particular a student can choose 30 CS credits apart from free electives as a part of the curriculum itself. A double major student needs to complete only 24 CS credits. **Hence a 4 year ES student is capable of doing more CS core credits, than a student double majoring in CS and same for other departments.**

Previous Year's data

Placements of ES2018 Batch

- 3 students got PPO from **Goldman Sachs**
- 2 students got PPO from **Amazon** and another student got a PPO from **Arcesium**
- 2 students were placed in **Microsoft**
- 2 students were placed in **SaaS Labs**
- 1 student was placed in **BNY Mellon**
- 1 student was placed in **JP Morgan**
- Remaining students have been placed in big tech companies including **Flipkart**, **Oracle**, **NTT-AT, Yokogowa** etc.
- 1 student pursuing higher education was accepted into **State University Of NewYork, Buffalo.**

Placements of ES2017 Batch

- 1 student got a PPO from **DE Shaw** and another student got a PPO from **Adobe**
- 2 students are running a **startup (CRIOT)**
- 2 students were placed in **Microsoft**
- 2 students were placed in **Oppo**
- 1 student was placed in **Amazon**
- 1 student was placed in **Goldman Sachs**
- Remaining students have been placed in big tech companies including **Qualcomm**, **Oracle**, **BNY Mellon** etc.
- 1 students pursuing higher education was accepted into **University of Illinois, Chicago**