

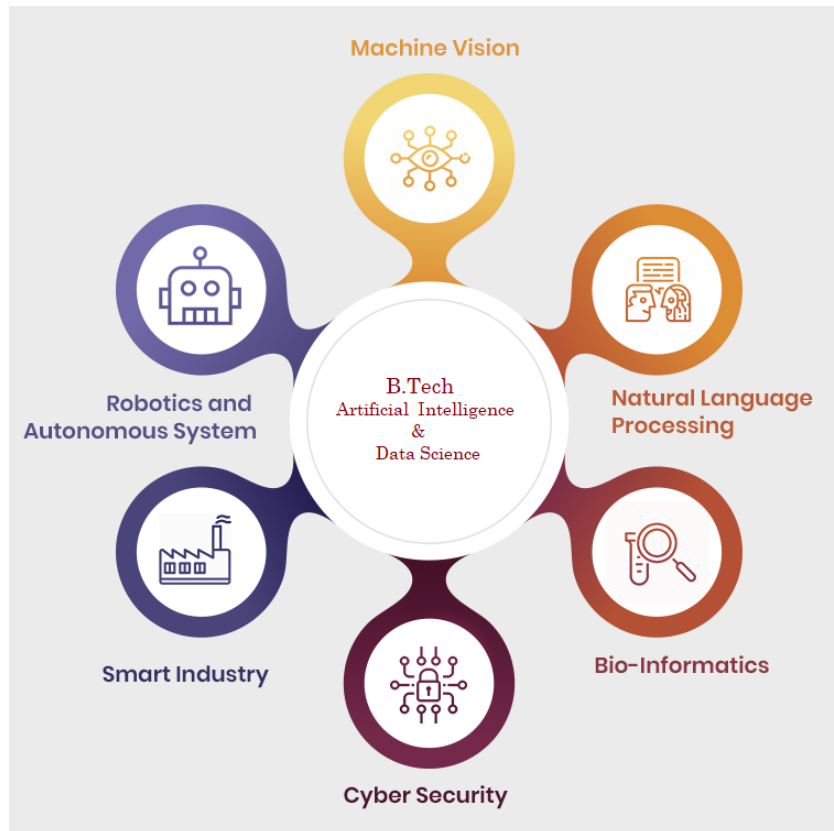


# B.Tech - ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

GUDLAVALLERU ENGINEERING COLLEGE, GUDLAVALLERU

## THEME OF THE COURSE

Artificial Intelligence and Data Science Course prepare students with the skills to perform intelligent data analysis which is a key component in numerous real-world applications. This course aims at providing not only the core technologies such as artificial intelligence, data mining and data modelling but also gives intensive inputs in areas of machine learning and big data analytics. The major focus of this programme is to equip students with statistical, mathematical reasoning, machine learning, knowledge discovery and visualization skills.



## SAMPLE CORE SUBJECTS IN AI & DS COURSE

### Math and Statistics:

- ◆ Linear Algebra
- ◆ Differential and Integral Calculus
- ◆ Matrices and Linear Transformations
- ◆ Probability Theory

### Computer Science:

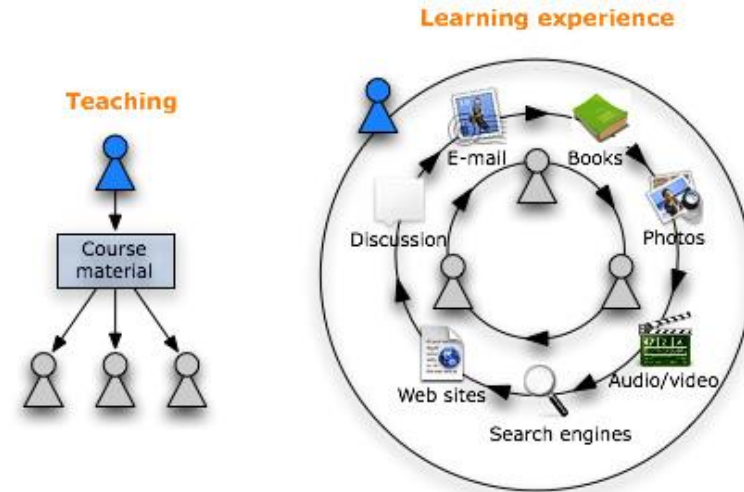
- ◆ Computer Systems and Programming
- ◆ Data Science Essentials
- ◆ Parallel and Sequential Data Structures and Algorithms
- ◆ Logic Programming and Computational Logic

### Artificial Intelligence and Data Science:

- ◆ Machine Learning, Deep Learning, and Reinforcement Learning
- ◆ Information Theory, Inference, and Learning Algorithms
- ◆ Neural Networks for Machine Learning
- ◆ AI Representation and Problem-Solving
- ◆ Natural Language Processing
- ◆ Computer Vision and Image Analysis

## COURSE HIGHLIGHTS

- Student Centric Learning Approach
- Industry attachments: Seminars/ Conferences/ workshops/ Industry Visits/ guest lectures
- Internships: Acquire ability to design Intelligent solutions in variety of domains and business applications.
- Gain Hands on experience with machine learning components, intelligent reasoning and various other AI tools and Technologies.



## CAREER PATH YOU CAN CHOOSE AFTER THE COURSE

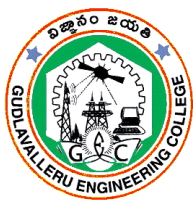
The field of Artificial Intelligence and Data Science has a tremendous career outlook with high pay, a growing number of intriguing sub-fields and the ability to work with life-changing technology daily. Specific jobs that use AI & Data Science are

- Business Analyst
- Data Analyst
- Intelligence Analyst
- Data Manager
- Information Security Analyst
- Risk Analyst
- Robotics

WHO WILL CAPTURE THE VALUE OF AI & DS



	Legend:  = learner  = teacher									
6 Corporates	Healthcare  	Finance & Insurance  	Tech & Telco      	Agriculture  	Automotive  	Legal & Compliance  	Industrials,   	Retail, media, other  		
5 Industry solutions	Healthcare & Life Sciences     	Finance & Insurance   	Agriculture   	Automotive   	Legal & Compliance    	Industrials, Robotics & Logistics     				
4 Enterprise solutions	  	Customer Management  	HR & Talent  	Marketing & Sales  	RPA, Other  	Intelligence & Analytics  	Cybersecurity  	Tools  		
3 Models & algorithms	     	Conversational agents**  	Speech 	NLP & Semantics 	Core Algorithms    	Vision  				
2 Platform & infrastructure	    									
1 Chips	          									

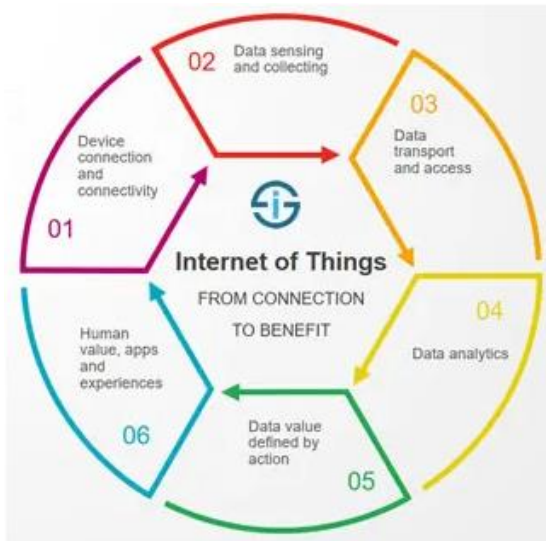


# B.Tech - Internet of Things

Gudlavalleru Engineering College, Gudlavalleru

The present job scenario for engineering students is going through several hurdles and the average hike of the salary for routine ordinary jobs has drastically come down. In this regard, for obtaining careers in specialized jobs, the students have to acquire their B.Tech degree in emerging and future technologies. The Department of ECE, Gudlavalleru Engineering College has initiated B.Tech IoT (Internet of Things) Programme with the encouragement from AICTE, Government, reputed industries and take-up a challenge to shape the students for the requirements of the industry.

Internet of Things (IoT) is a fusion of various advanced technologies which is emerging as a driving force in building a new era of Technology. IoT refers to the network of any objects that are connected to internet using electronics, sensors, software and other technologies. This allows the objects to “talk” to the cloud, sending data that is processed in the cloud and then returned to the end-user. IoT mostly involves coding, database, data analysis, cloud, data interpretation, networking, hardware, circuits and electronic equipment.



## Core Courses in the Curriculum:

The curriculum for IoT is prepared in consultation with industry and academic institutions. Some of the key courses are:

- Basic Courses - Linear Algebra & Calculus, Statistics and Probability, Applied physics,
- Sensors - Principles of Sensors and Data Acquisition, Transducers and Signal Conditioning.
- Embedded Systems – Analog and Digital Circuits, Computer Organization and Microprocessors, VLSI System Design, Embedded Systems Design.
- Communications – Analog and Digital Communications, Computer Networks, Wireless Communication Protocols.
- Artificial Intelligence - Data Structures and OOPS, Artificial Intelligence with Python Programming, Machine Learning.
- Cloud Computing - Database Management Systems, Cloud Computing.
- Internet of Things - Introduction to Internet of Things, IoT System Architecture.

## Applications:

- Smart Cities and Smart Homes
- Business and Finance Transactions
- Agriculture and Environmental monitoring
- Smart Ticketing
- Smart Automotive Systems
- Manufacturing and Media
- Medical and Healthcare systems
- Infrastructure and Energy management
- Better quality of life for elderly people

<b>Transport &amp; Logistics</b>  Fleet management, Goods tracking	<b>Utilities</b>  Smart metering, Smart grid management	<b>Smart cities</b>  Parking sensors, Waste management, etc.	<b>Smart building</b>  Smoke detector, Home automation
<b>Consumers</b>  Wearables Kids/senior tracker	<b>Industrial</b>  Process monitoring & control, Maintenance monitoring	<b>Environment</b>  Food monitoring/alerts, Environmental monitoring	<b>Agriculture</b>  Climate/agriculture monitoring, Livestock tracking

## Training and Skill Development Methodology:

The Department of ECE has taken up training programmes to the faculty and they are ready to explore the students about IoT. The following are the initiatives given to the B.Tech IoT students:

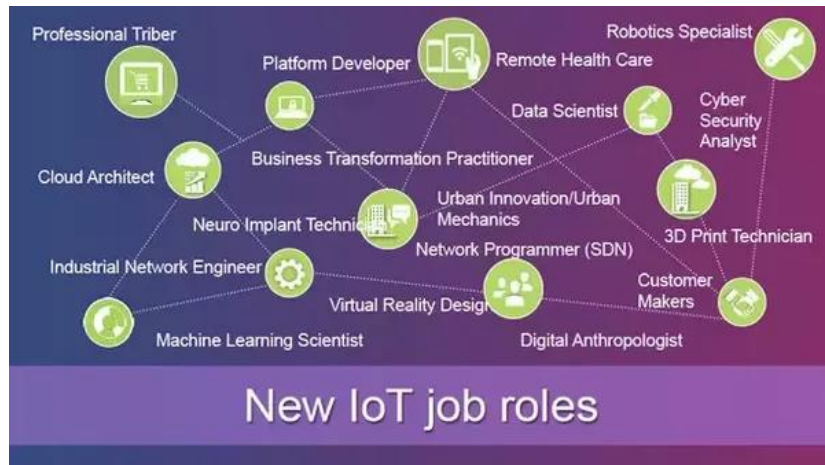
- Practical experiences in the development of IoT Systems.
- Seminars/Guest Lectures/ Training Programmes from Industry.
- Encouraging the students to do their internship, mini project, project based course, main project in the Industry.

If the students trains in the industry, they may get more exposure, rather than learning in the college.

## Careers:

The developing Countries like India have to realize the potential benefits and challenges of IoT. In addition, the unique needs and challenges of implementation in less-developed regions will need to be addressed, including infrastructure readiness, market and investment incentives, technical skill requirements, and policy resources.

The IoT domain offers exciting job prospects and valuable insights into the industry. After completing B.Tech with specialization in IoT, students can work across different profiles where they will be creating applications using programming languages and allowing devices to connect to the internet. The B.Tech IoT has opened array of opportunities for the following roles:



- IoT Developer
- CAD Designer
- Embedded Engineer
- Network Engineer
- Cloud Engineer
- Data Scientist
- Data Visualization expert
- UI Engineer
- Data architect

Finally, The B.Tech IoT Programme has plenty of employment opportunities for the students in the above mentioned areas. The IoT market will grow because existing IT devices will linked to IoT. Projections for the impact of IoT on the Internet and economy are impressive, with some anticipating as many as 10,000 crores connected IoT devices and a global economic impact of more than 11 Trillion Dollars by 2025.

## Current Status & Future Prospect of IoT

