# **IIIT BHAGALPUR**

### PLACEMENT BROCHURE 2021-22

0

0

# **DEPARTMENT OF MECHATRONICS ENGINEERING**









# Overview of Department of Mechatronics Engineering

Indian Institute of Information Technology Bhagalpur started functioning from August, 2017 with two departments, namely, Computer Science Engineering and Electronics and Communication Engineering. However, a synergetic integration of electronics with mechanical engineering along with intelligent computer control is required for improving the functionality, productivity and efficiency in design and manufacturing of products. This calls for the introduction of Mechatronics Engineering branch at IIIT Bhagalpur.

The program combines mechanical design, manufacturing, automation and electrical/ electronics control within a foundational context of design and manufacturing. Degree holders under the discipline will have the opportunity to work in various sectors, viz., aviation, electronics, automobile, manufacturing, oil and gas, mining, transport, defence, robotics and aerospace industries from pursuing higher degree.

### Vision & Mission of the Departmment





# **Message from Head**

Welcome to the Department of Mechatronics Engineering at IIIT Bhagalpur. Considering the need of multidisciplinary research, a new branch called Mechatronics Engineering has been started in the academic year 2018. Mechatronics Engineering is a unique branch of study that exists in very few universities in India and IIIT Bhagalpur is the only institute which has this under graduate course in Bihar.

The department is currently operating with four years undergraduate B. Tech program. The total sanctioned strength of the department is 30 and likely to be increased to 60 students per session. The M. Tech and PhD program is likely to be started soon in near future. The curriculum of the four years' undergraduate program has been designed in such a way that students should be able to design and automate a system. The syllabus of the department has been designed to provide knowledge in the areas of Mechanical design, Electrical design, Signal processing and Control, and Programming. The primary focus of our curriculum is to impart technical know-how to students, promote their problem solving skills and innovation of new technologies. The department also offers number of optional courses for providing wide spectrum of options to the students to pursue their interest and encourages students to have project based learning.

This brochure contains the details of academic programs and student activities carried by faculties and the students of the department of Mechatronics Engineering. Our department is determined to contribute in solving the challenges thrown by the industry as well as the society. If you have any query, please do not hesitate to contact us. I am sure that UG students of Department of Mechatronics will be an asset to a company if hired! Thank you!

> Dr. Gaurav Kumar Head, Department of Mechatronics Engineering Email: gkumar.mea@iiitbh.ac.in Contact No: 8638661359

# Mechatronics Engineering Curriculum (B.Tech)

# Mechanical Design

Solid Mechanics (Theory and Lab) Manufacturing technology (Theory and Lab) Kinematics of machine Dynamics of machinery Fluid mechanics Thermodynamics Machine design

# Computation

C- Programming (Theory and Lab)
Data Structure (Theory and Lab)
OOPS (Theory and Lab)
Artificial Intelligence (Theory and Lab)
Machine Learning (Theory and Lab)

# **Electrical Design**

- Basic electronic circuit
  - Analog circuit (Theory and Lab)
- Digital design (Theory and Lab)
- Electrical Machines (Theory and Lab)

# **Mechatronic System**



# Signal Processing & Control



Digital signal processing (Theory and Lab)

Sensors and actuators (Theory and Lab)

IoT and embedded system (Theory and Lab)

Control systems (Theory and Lab)

### **Facilities & Resources**

### **Mechanical Workshop**

Mechanical Workshop provides basic skill sets required to obtain the know how of manufacturing. Students are exposed to basic operations involved in manufacturing. The aim is to equip the students competent in handling practical work in engineering environment





### **Engineering Graphics Lab**

Engineering Graphics Lab provides students an opportunity to enhance their capability of imagination and lateral thinking. Students learn the importance of drawing in engineering. The lab isequipped with 60 perpetual license of Solid Works installed on 60 computers

### **Manufacturing Lab**

Manufacturing Lab provides in depth experence of various basic maching operations on lathe , milling machine, shaper, drilling machine etc. The laboratory is also equipped with non conventional machining euipments such as wire cut EDM. The students are well trained on these setups to make them understand the various parameters involved in manufacturing and machining.



### **Facilities & Resources**

### **Strength of Material Lab**

The Strength of Material Lab is equipped with all the essential equipments such as UTM, Hardness tester, Impact testing machine, Torsional testing machine etc. Students have been exposed to various experiments to understand the fundamentals of strength of material subject. The experimental demonstration has helped the students to understand the various properties of the material which in turn enables them as a better design engineer.





### **Simulation Lab**

The aim of this lab is to expose the students to the various simulation tools such as Adams, Ansys, Maxwell, so that a student is able to, Design and Simulate a Mechanism, Perform Structural Analysis, Design and Simulate Elec tromagnetic Systems.

### **Electrical Machine Lab**

Electrical Machine Lab is equipped with various experimental test rigs to strengthen the knowledge of students and their technical know how in the domain. The aim is to bridge the gap of knowledge for a design engineer such that these skilss can be used in the areas related to Electric Vehicle Technology or related fields.



Rectifier Inverter

### **Facilities & Resources**

### **Sensors & Control Lab**

The Sensors & Control lab is a unique lab which provides practical knowledge of sensor technology, features and characteristics of a sensor and its real time application in control. Students will be trained using various experimental desgin to gain the understanding of sensor and different aspects of control





### **Mechatronics Lab**

Mechatronics lab has been planned to provide the knowledge of complete set of automation. The students will be exposed to various skill set needed for automation as a whole particularly PLC programming and application of pneumatic and hydraulic actuators in the development of a mechatronics system.

### **Robotics Lab**

Robotics lab has been planned to expose the students to the general functioning of a robot. Students will be trained on few general robots and they will be allowed to implement there skills learned in other labs such as AI and control lab to design special purpose robots.



# **Thrust Areas of the Department**

The Department of Mechatronics Engineering, IIIT Bhagalpur is aiming to lead the state of Bihar and India as a whole in the following areas,

### 1. Mechatronic systems to support villagers

The aim is to understand the need of the villagers and design useful low cost instruments, which would be in affordable range.

### 2. Electric Vehicle and design

The pollution and limited gasoline source are one of the major problems of the society. Use of electric vehicle is a good way to reduce pollution. A lot of research is going on it across the world. IIIT Bhagalpur is also exploring the field and we are aiming to lead the area of electric vehicle design.



### 3. Robotics

Robotics has many applications from manufacturing to medical industry. However, the aim of the department is to equip students with all the tools such that they are capable of designing robotic equipment and bother products such as a Drone.

### 4. Actuator design

The focus is in development of electromagnetic design to provide solutions to rotating industry such as, electrical machines industry, Silk Industry etc.



# **Glimps of Departmental Activities**





**Robotics workshop** 



Workshop on Electric Vehicle Technology

# In the second se

Short Term Course on Mechatronics

# ट्रिपल आइटी में वर्कशॉप का उद्घाटन आज

धारालपुर . ट्रिप्ल आइटी में बुधवार को स्वास्थ्य एवं परिवार कल्याण राज्य मंत्री अश्विनी कुमार चौबे वर्कशॉप का उद्घाटन सुबह 11 बजे करेंगे. कार्यशाला में स्मार्ट वेटिलेटर का निर्माण किया जायेगा. वहीं इसका उपयोग भागलपुर रेशम उद्योग के रेशम हथकरघा मशीनरी के उन्नयन के लिए तकनीकी सहायता प्रदान करने के लिए भी किया जायेगा. इसके अलावा राज्य मंत्री ट्रिपल आइटी भागलपुर में ज्ञान आधारित नियंत्रण केंद्र के सर्वेक्षण

व संस्थान के कम्प्यूटेशनल सुविधाओं को देखने के लिए शैक्षणिक सह प्रशासनिक भवन का दौरा करेंगे. इस केंद्र का उपयोग बीमारियों की भविष्यवाणी करने के लिए भारतीय रोगी के डिजिटल डेटा को स्टोर और विश्लेषण करने के लिए किया जायेगा. संस्थान द्वारा विकसित कोविड-19 डिटेक्शन सॉफ्टवेयर और हार्डवेयर का भी प्रदर्शन होगा. राज्य मंत्री संस्थान के संकाय, छात्रों व कर्मचारियों को संबोधित करेंगे



Inaugeration of workshop by MoS, Health & Family Welfare Shri Ashwini Kumar Choubey

# **Demography of the Department**



# CONTACT US

## AT

# tnp\_fic@iiitbh.ac.in

# Phone No: 8638661359

