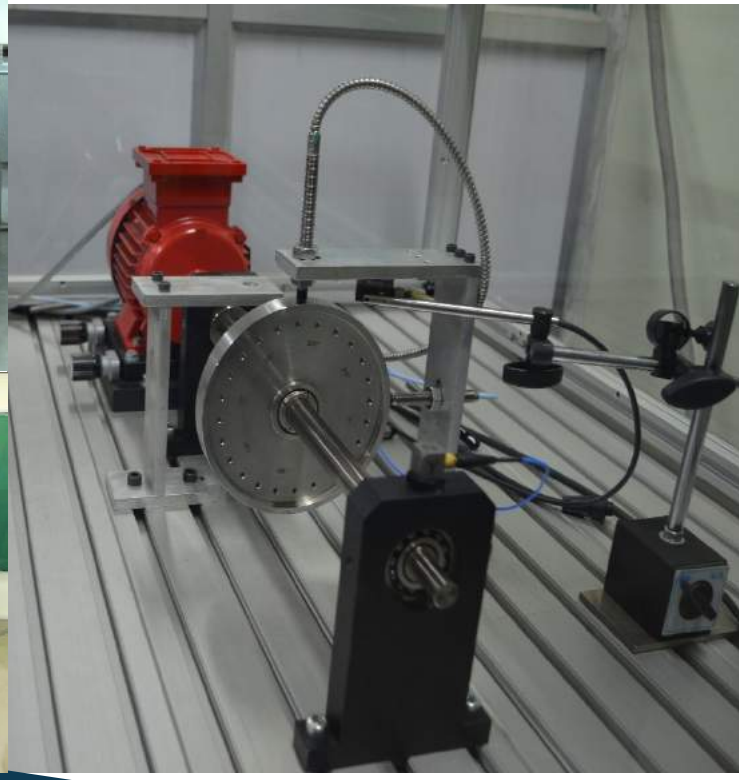
Mechanical Engineering

Placement Brochure

2019-2020

Contact Us:
Training and Placement Cell
Indian Institute of Technology Patna
Email Id - tpc@iitp.ac.in
Telephone Number – 0612-3028083/8091

Our aim is to engage in the frontiers of the field and channelize the state of art knowledge to train personnel who can solve problems of relevance to the society at large.



About

Since its inception in 2008, Department is advancing towards the frontiers in the field of Mechanical Engineering. Presently the department is offering B.tech, M.Tech and PhD degrees. Such activities are aptly supported by 16 state-of-the-art research cum teaching laboratories. Significant no. of patents and publications in various top multidisciplinary journals is an evidence of the flourishing research environment in the department

Students of the Department of Mechanical Engineering are known throughout India for their enthusiastic participation in professional organizations and events such as BAJA, SUPRA SAEINDIA, ROBOCON.

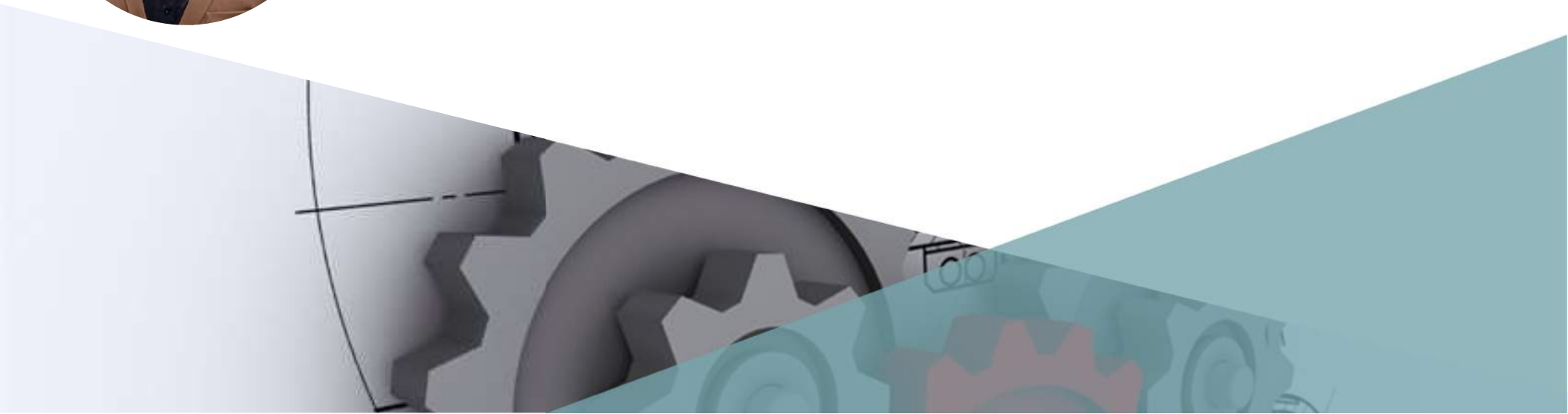
We revise our curriculum according to the need of today's research and industry applications.

The primary focus of our curriculum is to convey technical know-how to students, promote their problem solving skills and innovation of new technologies.

The department lays great emphasis in research and development. The department has close interaction with industry and research institutes agencies including Aeronautics Research Development Board (ARDB), Defense Research Development Organization (DRDO), Board of Research in Nuclear Science (BRNS), Department of Science and Technology (DST), Indian Space Research Organization (ISRO) and Research labs have been setup in the department in collaboration with industry and government agencies

Dr. Mohd. Kaleem Khan

HOD, Department of Mechanical Engineering



Course Curriculum

The B.tech program in Mechanical Engineering has been structured to provide a comprehensive exposure to the fundamentals as well as introduce them to the most recent and advanced concepts sought for by the industry.

The curriculum follows a balanced approach, stressing equally on the theoretical aspects as well as providing the necessary hands-on training and lab exposure to deal with the versatile conditions present in the industry

Elective Courses

- Computational Fluid Dynamics
- Finite Element Analysis
- Refrigeration & Air Conditioning
- Vehicle Dynamics
- Robotics and Robots Application
- Bio –Inspired Robotics
- Aerodynamics
- Composite Materials and Engineering

Emphasis is being imparted on taking up innovative ideas from concept stage to final product development stage via the route of basic technology research, and product development.

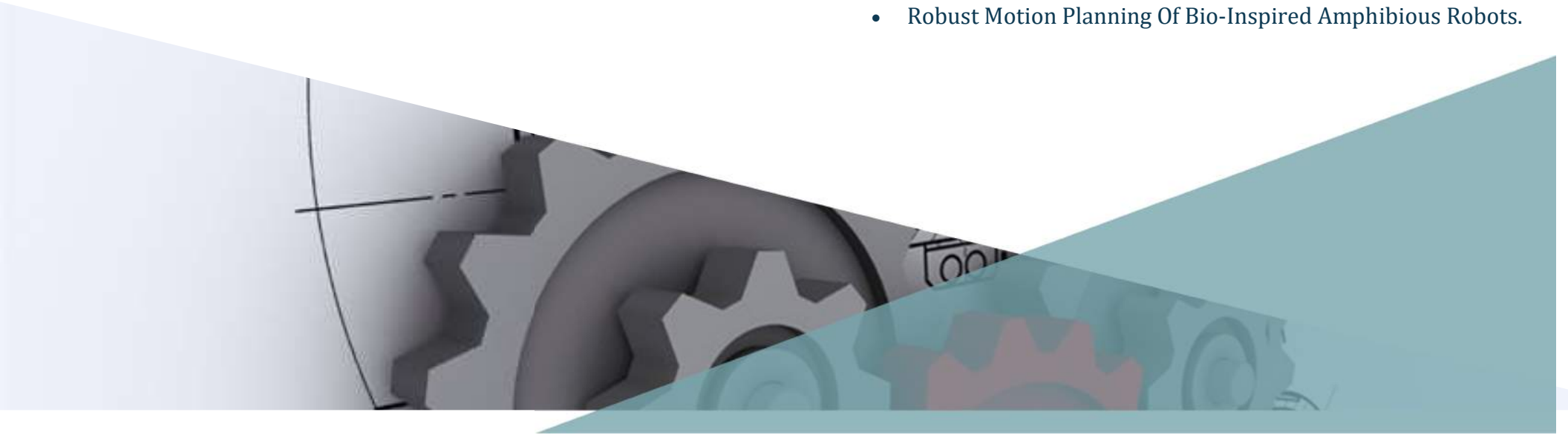
Core Courses

- Solid Mechanics
- Fluid Mechanics and Machinery
- Basic & Applied Thermodynamics
- Machine Design
- Material Science
- Manufacturing Technology
- Heat and Mass Transfer
- Kinematics of Machine
- System Dynamics & Control Systems
- Industrial Engineering & Operation Research

Research Highlights

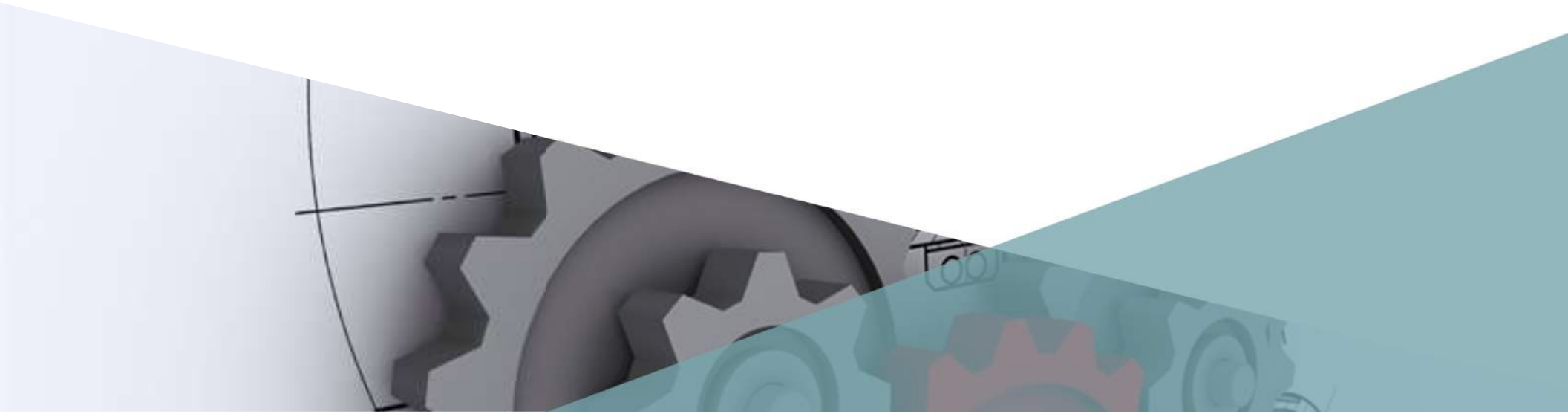
Glimpses

- Design And Fabrication Of Automated GMAW Process And Analyzing Welded Zone Through Image Processing.
- The Design Of Magnetic Microbot.
- Design And Fabrication Of Hybrid Harvester.
- Development Of Robot For Municipal Waste Sorting.
- Evaluation Of Burst Criteria Of Zircaloy Cladding.
- Smart Hybrid IOT Based Solar Cooker.
- Studies On Maxwell Stress And Hysteresis Characteristic Of Poly-Acrylic And Silicon-Based Elastomers.
- Development Of Axial Field Magnetic Gear
- Multi-Sensor Based Intelligent Tool Condition Monitoring In Mechanical Micromachining.
- Robust Motion Planning Of Bio-Inspired Amphibious Robots.



Patents & IPR

Topic	Application Number
Biaxial stretching device	985/KOL/2013
Whirl detection of shaft coupled with an induction motor using full spectrum analysis of motor current signature	1026/KOL/2014
Manual Wheat Harvester	261817
New design application-Handle operated garbage and soil collector	272013/D/NF/SKM
Surfactant Based Boiling System For zero gravity	1208/KOL/2015



Student Activities

IITP Motorsports, is a reputed team to design and manufacture one of the finest formula racing cars from India.

This project puts forward the task of designing, manufacturing, raising funds, marketing, logistics, extensive testing and racing, on the shoulders of our dedicated, skilled and determined team members.

Achievements 2018:

- **13th** rank in Endurance race.
- Overall rank of **22** out of 126 participating teams.
- **1st** among all the participating **IIT's**

SUPRA SAEINDIA

Student Activities

Team Invincible IITP is a team of 30 members who create an All-Terrain Vehicle(ATV) from ground zero, starting with only basic technical knowledge but unfathomable passion and dedication. It took part in SAE Baja 2016 and Enduro Student India in 2017, 2018 & 2019.

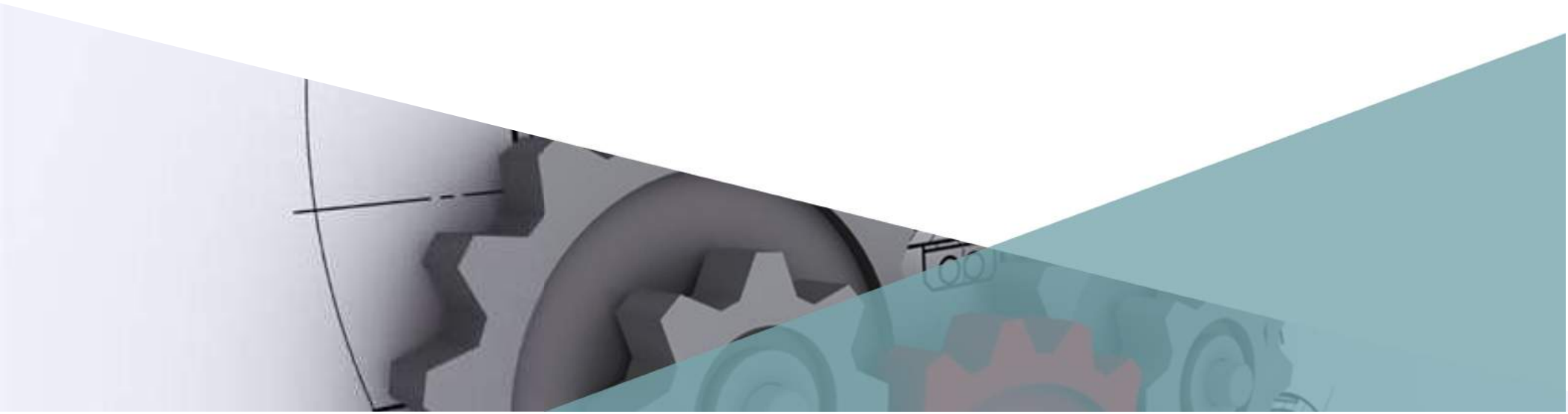
Team Invincible IITP looks forward to achieving even greater feats in the near future.

"*ANY TRACK, ANY DAY*"

Achievements 2019:

- **1st** in Design Validation
- Overall 4th in Static Events

ENDURO STUDENT INDIA



Student Activities

Team HPVC-IIT Patna a group 15 of highly talented and passionate students, continuously working to design and build efficient, highly engineered and ergonomic *human powered vehicles* for everyday use—from commuting to work, to carrying goods to market and participates in **ASME** organized Human Powered Vehicle Challenge

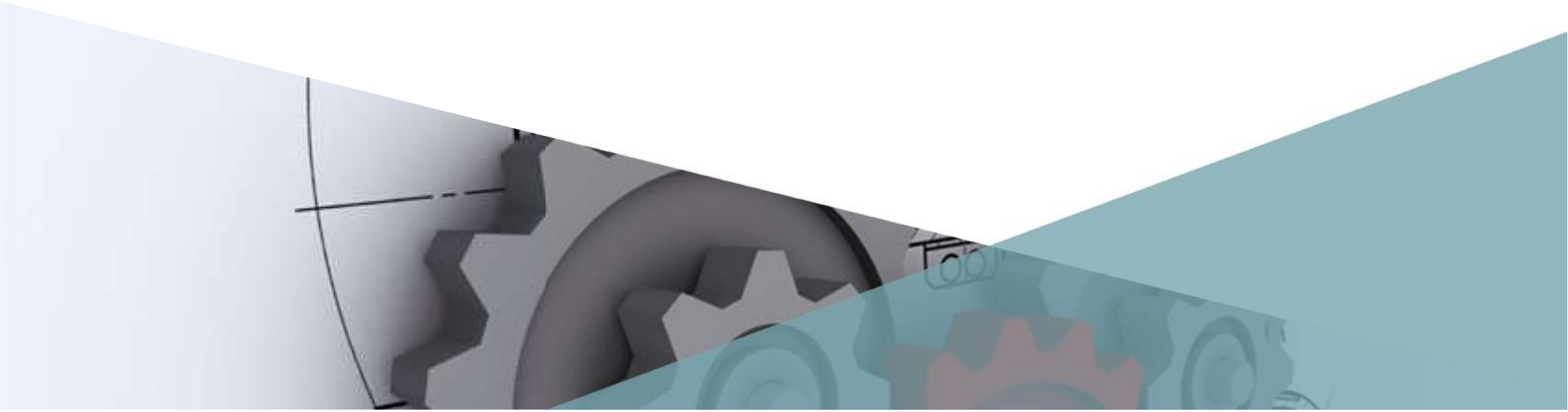
Achievements 2018:

- **2nd in Design**
- **4th in Endurance Race**

Achievements 2017:

- **3rd Rank overall**
- **3rd in Men's Drag Race**

HPVC Asia Pacific



Student Activities

ABU Robocon is an annual robotics competition organized among the Asian and South-Asian countries to showcase their engineering skills in building robots.

Team of IIT Patna has students with high interest in robotics as well as design.
They started taking part in this competition from 2017.

Achievements 2019 (Till Date):

- **Stage 1: 2nd** All over India
- **Stage 2**: Selected as one of the Top 25 teams for competing in Nationals

ABU ROBOCON

INTERNSHIPS

INDUSTRY

Central Mechanical Engineering Research Institute

TARDID technologies

TATA STEEL

Student Activities in NEWS

आईआईटी पटना के छात्रों ने बनायी फॉर्मूला स्टूडेंट रेसिंग कार

हिन्दुस्तान
एक्सक्लूसिव

पटना | चारुमिता

आईआईटी पटना के मैकेनिकल इंजीनियरिंग विभाग के 25 छात्रों की टीम ने फॉर्मूला स्टूडेंट रेसिंग कार बनायी है। कार की लागत पांच लाख है। खास बात यह है कि कार की डिजाइन और सारा मैनुफैक्चरिंग इसी टीम ने किया है। सस्पेंशन सिस्टम से लेकर चैसिस व टायर तक खुद छात्रों ने बनाए हैं। सेकेंड इयर के छात्र आशीष उपाध्याय व रौशन की टीम ने दिन-रात एक कर कार को तैयार किया है। यह रेसिंग कार 11 से 16 जून तक चलने वाली सुप्रा एसएई इंडिया कॉम्पिटिशन में भाग लेगी। इंटर नोएडा के बुद्धा इंटरनेशनल सर्किट में इसका आयोजन होगा। देश से करीब 122 टीमें इस कॉम्पिटिशन में भाग लेंगी।

छह माह में बनी है कार : इस कार को बनने में करीब महीने लगे हैं। टीम के कैप्टन आशीष ने बताया कि यह मिनी फॉर्मूला रेसिंग कार है जिसमें केटीएम 390 की इंजन लगाई गई है। इसकी रफ्तार 105 किमी प्रति घंटे है। इसे हल्की रखने के लिए एल्युमिनियम का इस्तेमाल किया गया है। फॉर्मूला वन रेसिंग कार काफी हल्की होती है जिसके कारण यह महंगी भी होती है। हमने इस कार को हल्का रखने के लिए एल्युमिनियम के पार्ट का इस्तेमाल किया है। इसकी बॉडी मात्र 43 किलो है और टायर भी छोटे रखे गए हैं। बॉडी बनाने में ऐसे स्टील रॉड का प्रयोग किया गया है जिसमें कार्बन कंटेंट होते हैं। इसके पार्ट्स लाने में काफी दिक्कत हुई क्योंकि ये पटना में मिलते नहीं हैं। इसके लिए कई जगहों से जाकर पार्ट लाने पड़े। कार की स्पांसरशिप रोडिक कंसल्टेंसी और नेशनल इक्वेरेंस कॉरपोरेशन ने की है।

उपलब्धि

- मैकेनिकल इंजीनियरिंग की टीम ने तैयार की है लाइट वेट रेसिंग कार
- सुप्रा एसएई इंडिया कॉम्पिटिशन में इस रेसिंग कार से करेंगे भागीदारी

इन छात्रों ने की है कड़ी मेहनत

इंजन एंड ट्रांसमिशन	आशुतोष मिश्रा
सस्पेंशन	नितिन कश्यप
ब्रेक–टायर	रौशन गुप्ता
चैसिस	आशीष द्विवा

05 लाख लागत आई है फॉर्मूला स्टूडेंट रेसिंग कार तैयार करने में

ऐसा है स्टूडेंट रेसिंग कार

- **01** सीट वाली है कार
- **390** इंजन के साथ केटीएम
- **105** किमी प्रति घंटे की रफ्तार
- **06** सेकेंड में 90 किमी रफ्तार

रेसिंग कार के साथ आईआईटी पटना के छात्र। • हिन्दुस्तान

डिजाइन की होगी टेस्टिंग

आशीष ने बताया कि इस कॉम्पिटिशन में तीन हजार छात्र भाग लेंगे। इसमें कार की डिजाइन की एनालिसिस और रेसिंग की भी टेस्टिंग होगी। अगर इस कार को अच्छा स्थान मिलता है तो हम अपना आइडिया किसी कंपनी के साथ शेयर कर सकते हैं।

सबसे बेहतर प्रोजेक्ट

स्टूडेंट रेसिंग कार अन्य फॉर्मूला रेसिंग कार से अलग है। कारों की डिजाइन पूरी तरह छात्रों की टीम करती है। छात्रों को मैटेरियल स्टरकचर, एयरोडायनेमिक्स, सस्पेंशन डायनेमिक्स, इंटरनल कंबशन इंजन के बारे में पूरी तकनीकी जानकारी होती है। मैकेनिकल इंजीनियरिंग के छात्रों के लिए स्टूडेंट रेसिंग कार बनाने को सबसे बेहतर प्रोजेक्ट माना जाता है।

Students build phone-powered all-terrain vehicle

IIT team vrooms with Queen

ROSHAN KUMAR

Students from Indian Institute of Technology-Patna came 25th in an all-India inter-college vehicle design competition by developing an all-terrain vehicle (ATV) with a smartphone-powered driver-suggestion system.

Twenty-eight second- and third-year students designed the single-seater vehicle, which they call The Queen and which has a system that receives signals like GPS coordinates, ultrasonic sensor readings to display the vehicle's speed, position and ground clearance.

The students call their team "Invincible IITP", and their leader is third-year mechanical engineering student Saurav Jain while Anirban Bhattacharya from the department of mechanical engineering is the faculty advisor.

The team had participated in the finals of Enduro Student India 2017, all-India inter-college vehicle design competition held in Coimbatore, Tamil Nadu, in April.

"The team from IIT-Patna finished with an overall rank of 25 in their first attempt at the event." The teams first had to clear a preliminary round in which IIT-Patna stood at 12th position. In the second round, 79 teams participated.

Though the IIT-Patna team came in 25th overall, in some specific categories they performed better.

For example, at the vehicle endurance race test in which the vehicle had to make a four-

The smartphone through web applications receives signals like GPS coordinates giving detailed information such as the degree or curve at which the vehicle is titled.

The mobile, which receives ultrasonic sensor readings, displays the vehicle's speed, its position and ground clearance. Ground clearance, also known as ride height, indicates the height of the lowermost part of the vehicle with respect to the ground.

The vehicle uses lightweight pneumatic springs for better shock absorbing power.

"The pneumatic springs are around 2kg in weight, much less than coil springs which weigh 8kg," Saurav said.

The Queen can run 30km per litre and has a speed of 54km per hour.

Anirban, who acted as the faculty adviser for the team, said: "We have set a platform for the future. Teams from our

The all-terrain vehicle developed by IIT-Patna students

IIT-Patna students develop low cost Formula-1 racing cars

Nandini
• htpatna@hindustantimes.com

PATNA : As you walk around the campus of IIT-Patna, you can hear the noise of an engine humming in the distance through the mostly empty campus at this time of the year. With most of the students gone for their summer vacations, this group of students has been toiling in the excruciating summer heat working on their car.

The team 'IIT-P Motorsports', a group of 25 students including juniors and seniors, from department of mechanical engineering, IIT Patna, are gearing up to compete in the seventh edition of SUPRA SAEINDIA organised by Maruti Suzuki India Ltd (MSIL) in association with the Society of Automotive Engineers India (SAEINDIA). More than 3,000 students from 122 teams from all over the country are expected to compete in designing and developing the Formula Prototype cars.

The competition will be held at the Formula 1 track at Buddh International Circuit in Greater Noida from June 11 to 16.

The Formula 1 models of car developed by IIT-Patna students, led by Ashish Upadhyay and Roshan has various unique specialities.

"We have used aluminium instead of steel to manufacture some of the heavy components of vehicles. Due to this, the weight of the vehicle will be less without any significant loss of the strength. We have used KTM Duke 390 engine in Model A and TVS Apache RTR 160 4V for Model B. The total weight of the car is 43 kg and it cost up to Rs 5 lakh only. Any other formula racing car available in market costs around Rs 2-5 crore. It took us six months to develop this car," said Upadhyay.

The participants will also present a PowerPoint presentation. If the design and specifications are liked by jury, the team will share the idea with them for launch in Indian market.

SUPRA SAEINDIA is a unique event which blends the awe and beauty of motorsports with learning and experience in teamwork, engineering, marketing skills, etc. Maruti Suzuki provides a platform to engineering students to conceive, design and fabricate a Formula prototype car giving them exposure to real-world challenges and opportunity to refine their skills and learn from mistakes to build on their talent as future entrepreneurs.

• The Formula 1 model car made by IIT-Patna students. HT PHOTO

ह्यूमन पावर्ड व्हीकल चैलेंज में तीसरे नंबर पर रही आईआईटी पटना की टीम

के छात्रों की डिजाइन की गई साइकिल को चौथा पुरस्कार

टॉप गियर में दिखा आइआइटी छात्रों का 'इनोवेशन'

जागरण संवाददाता, पटना : भारतीय प्रौद्योगिकी संस्थान पटना (आइआइटी) के छात्रों की टीम ने वेल्लूर इंस्टीट्यूट ऑफ टेक्नोलॉजी (वीआइटी), वेल्लूर में 17 से 19 मार्च तक आयोजित अंतरराष्ट्रीय प्रतियोगिता में इनोवेशन कैटेगरी में चौथा स्थान हासिल किया है। कंपीटिशन में भाग लेने वाली टीमों को अपनी डिजाइन की गई साइकिल ('सेमी-रिकम्बेंट बीकल') का प्रदर्शन करना था।

'ह्यूमन पावर्ड व्हीकल चैलेंज (एचपीवीसी) इंडिया 2016' प्रतियोगिता का आयोजन प्रतिवर्ष 'अमेरिकन सोसायटी ऑफ मैकेनिकल इंजीनियर्स' (अस्मे) करता है। आइआइटी पटना की टीम 'अलेक्ट्रिटी' को इनोवेशन इवेंट में चौथा एवं डिजाइन इवेंट में पांचवां स्थान हासिल हुआ। 22 सदस्यीय टीम ने फैकल्टी सदस्य डॉ. अतुल ठाकुर के मार्गदर्शन एवं कैप्टन धर्मेश कुमार देवांगन के नेतृत्व में प्रतियोगिता में भाग लिया।

कंपीटिशन में एनआइटी पटना, बीआइटी पटना, आइएसएम धनबाद, एनआइटी राउरकेला, एनआइटी रायपुर, केआइआइटी यूनिवर्सिटी भुवनेश्वर, चंडीगढ़ विश्वविद्यालय, एनआइटी सिलचर समेत देश के 41 प्रमुख तकनीकी संस्थानों, विश्वविद्यालयों एवं विदेश की कुछ टीमों ने भाग लिया था। चंडीगढ़ विश्वविद्यालय की टीम को ओवरऑल प्रथम स्थान हासिल हुआ।

- डिजाइन इवेंट में पांचवां स्थान वीआइटी वेल्लूर में 17 से 19 मार्च तक आयोजित हुई थी कंपीटिशन
- टीमों को अपनी डिजाइन की गई साइकिल का करना था प्रदर्शन
- एनआइटी पटना, वीआइटी पटना समेत देश के 41 संस्थानों की टीमों ने कंपीटिशन में लिया था भाग

आइआइटी पटना के छात्रों की टीम ने डिजाइन की है यह साइकिल

ये हैं साइकिल की खूबियां

- रास्ते में आने वाली बाधाओं को पहचानने के लिए इसमें लगा अल्ट्रासोनिक सेंसर चालक को अलर्ट करता है।
- हाईस्पीड के लिए इसमें कई गियर हैं।
- इसका स्टीयरिंग गोलाकार है।
- सीट घूम सकती है। चालक के आराम के लिए इसे 30 से 75 डिग्री पर झुकाया जा सकता है।
- डिजाइन एरोडायनेमिक है ताकि घर्षण बल न्यूनतम रहे।
- अगले एवं पिछले पहिये का अनुपात 20:26 है ताकि चालक को सामने बेहतर ढंग से नजर आये।

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