#### Robot Study Circle - Forum for co-curricular activity in Robotics

Robot Study Circle known as RSC, the Prestigious Robotics Club of COEP is one of the best Robotics clubs in India. It's a totally different world where club members have created hundreds of robots for society such as Drones, Railway Track Surveillance Robot, Bomb Disposal Robots, and Badminton Playing Robots etc. Robot Study Circle is the National Champion in ROBOCON which is one of the best competitions in robotics in the world. RSC



represented India in International Robocon held at Tokyo, Japan and won 6th international position as well as Nagase Award for the country. Also, the Club has industrial collaboration with Siemens PLM as a title sponsor, Volkswagen, Janatics Pneumatics, Schmalz India, Pepperl & Fuchs, and Robolab Technologies. Members of Robot Study Circle are members of the first ever institute student chapter of THE ROBOTICS SOCIETY established in India at College of Engineering, Pune [Website: - https://www.coep.org.in/clubs/robot\_study\_circle ]





Organizing Robotic Competition for Mindspark National Champion Robocon 2017 amongst @110 teams

#### Arial Robot Study Circle - Forum for co-curricular activity in arial robotics

Arial Robot Study Circle (ARSC, COEP Tech), the premier arial robotics club of 'College of Engineering Pune Technological University', is a unique space where club members have engineered numerous aerial robots for practical use cases such as medicine delivery, shower of blooms for national celebrations and important occasions, aerial photography, automation in aerial robots and building a versatile fleet of drones in various



sizes, specifically designed for manoeuvring in challenging and critical environments. The club regularly competes in national and international drone competitions. We are elated to have attained the number one spot in the prestigious Robo Falconry event, hosted by Mindspark. [Website: - https://www.coep.org.in/content/aerialrobotstudycirclearsc#overlay-context=mycoep ]

#### The Robotics Society, India - Student Chapter at COEP Tech University

COEP Tech University Pune has established nation's first ever student chapter of TRS, India in 2018. The Robotics Society (TRS), India empowers technical institutions in India to start authorized TRS Student Chapters and to organize and mentor activities related to Robotic Science in the respective institutes. The Robotics Society This student chapter care for mentoring interested students via



student's networking and also for promoting knowledge sharing activities in the area of Robotics.

#### Subjects / Courses for BTech (Robotics & AI)

Programme Core Courses	Program Elective Course-I	Program Elective Course-II
Basics of Robotics & Al		The second second second second second
Computer Programming		Autonomous Robotics and Telecherics
Arduino Based Lab	Mobile and Micro Robotics	
Industrial Robot Programming Lab	Data Analytics	Deep Learning
Analog & Digital Electronics	Data Printy ind	Deep Learning
Analog & Digital Electronics Lab	Intelligent Manufacturing	Mechatronics System Design
Data Structures, Files & Algorithms		
Sensors for Industrial Robotics	Dynamic Control Systems	Microcontrollers Architecture and Programming
Sensors for Industrial Robotics lab	E/minosemble/com	
Microcontroller		
Microcontroller Lab	Program Specific Elective-III Program Specific Elective	
Control Systems	Program Specific Elective-III	Program Specific Elective-IV
Control Systems Lab		
AI & ML	Advanced Robotics	Biomedical Robotics
Al & ML Lab	Programming	A
Signals & Systems	Advanced Artificial Intelligence	Augmented Reality and Virtual Reality Advanced Mechatronics
Signals & Systemss Lab	Han alcatoon shorted	
Drives for Robot Systems	Micro electromechanical	
Drives for Robot Systems Lab	Systems	
Embedded Systems	Advanced Control System	Robot Dynamics and Control
Embedded Systems Lab		West and the second sec
Kinematics & Dynamics of Robots		
Robot Simulation Lab		
Basics of Material Science & Smart Materials	Program Specific Elective-V	Program Specific Elective-VI
Robot Safety & Maintenance		
Al for Robotics	Agricultural Robotics	Medical Robotics Technology
Seminar on recent advances in R & Al		
Arial Robotics Lab	Al based Agriculture	Al for Medical Applications
Robot System Design	ri odded rightellare	
Advance Al	Mechatronics for Agricuture	Mechatronics for Medical
SLAM for Navigation		Applications
Robot Operating System	Agricultural Plant & Device	Control for Biomedical
Robot Operating System Lab	Control	Instrumentation systems

Engine	ering Science Courses
Basic I	Electrical and Electronics Engineering
Engine	ering Drawing and Graphics
Engine	ering Mechanics
Engine	ering Drawing and Graphics Lab
Engine	ering Mechanics Lab
Materia	al Science Engineering
Compu	der Programming
Manufa	acturing Practices/ Fab Lab
Design	Thinking and Idea Lab

Basic Science Courses
Physics
Linear Algebra
Physics Lab
Chemistry
Univariate and Multivariate Calculus
Biology
Ordinary and Partial Differential Equations
Numerical Methods

## **COEP Technological University**

Shivajinagar, Pune - 411 005.

Website: - https://www.coep.org.in For Admission Enquiry Contact No.: 020 25507781



# **COEP Technological University**

(COEP Tech)

An Unitary Public University of Government of Maharashtra (Formerly College of Engineering Pune)

# BTech (Robotics & Artificial Intelligence) **Information Brochure**











# **COEP Technological University, Pune**

The COEP Tech University (Formerly College of Engineering Pune) was established in 1854. It is one of the oldest and premier engineering institutions in the country. COEP Tech offers undergraduate Programs in 10 disciplines and post graduate programs in 27 specializations. It is a recognized Research Center for doctoral programs of the Savitribai Phule Pune University as well as OIP Centre. COEP Tech has been consistertly ranked amongst the top 50 technical institutes in India and its alumni have a lion's share in the development of national infrastructure.

#### MTech (Robotics & Artificial Intelligence)

MTech (Robotics & AI) course at COEP Technological University Pune (Started in 2020) is first of its kind, recognized by AICTE. The two-year full time post graduate program in Robotics & Artificial Intelligence clearly addresses the very issues cited. It aims to develop professional Robotics and AI Engineers capable of solving multifaceted AI and Robotics problems and to be effective change Engineers. COEP provides reality-based learning and on the-job training to students through internships for their project work in second year of curriculum. This is an Interdisciplinary course and admits graduates from various major engineering disciplines.

#### BTech (Robotics & Artificial Intelligence)

BTech (Robotics &AI) is a AICTE recognized course, first of its kind, being started this year at COEP Technological University, Pune. It is Four-year full time undergraduate program in Robotics & Artificial Intelligence. Total six electives, four separate tracks e.g. Robotics, AI, Mechatronics, Control Systems are planned so that each student can develop in individual's area of interest.

The global industrial robotics market was valued at USD 26.52 billion in 2022 and is expected to expand at a compound annual growth rate (CAGR) of 10.5% from 2023 to 2030 (Ref.: www.grandviewresearch.com ). The Global AI market is projected to grow at CAGR of 39.4% to reach US\$ 422.37 billion by 2028 and AI marlet in India is projected to grow at a CAGR of 20.2% to reach US\$ 7.8 billion by 2025 (Ref.: www.ibef.org)

Robotics Related Areas of Applications	Artificial Intelligence Related Areas of Applications
Manufacturing	Robotics
Space Explorations	Navigation
Agriculture	Agriculture
Health care	Healthcare
Underwater Explorations	E - Commerce
Military	Application Software
Customer Services	Marketing
Education	Education
Food Industry	Social Media
Security	Human Resources
Automobiles	Automobiles
Entertainment	Gaming























STÄUBLI

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### Facilities for BTech (R&AI) at COEP Tech University

- 1. Center of Excellence in Robotics & Automation
- 2. Centralized Robotics & Automation Laboratory
- 3. Industrial Robots Laboratory
- 4. Robot Study Circle Forum for co-curricular activity in Robotics
- 5. Arial Robot Study Circle Forum for co-curricular activity in arial Robotics
- 6. The Robotics Society, India Student Chapter at COEP Tech University

#### Center of Excellence in Robotics & Automation

The center of Excellence Promotes Students and faculty to learn the Various Robotics concepts and use them in real time small projects or mini projects for the real life application. A multidisciplinary applied research center of excellence in robotics could also focus on developing new applications for robotic systems.

#### Objectives:

- 1. To become a leading research institution that supports the creation of primary research platforms for prospective researchers.
- 2. To incorporate Project based Learning to enhance creativity, Innovation and to improve learning outcomes.
- 3. To build durable and reliable robotics systems, facilitate the development of related technical standards and tools
- 4. To make progress in the field of robotics through the application of innovative research in robotics, and to participate in the ongoing transformation in these areas.
- 5. To facilitate collaboration between the industry and academia, allowing them to work towards achieving mutual benefits.





Robot Programming Training at KUKA, Pune

Robotics Lecture to Beginners at COEP

### Centralized Robotics & Automation Laboratory

This Centralized Laboratory was established on 16th Sept 2004 and relocated after renovation at the present location at Manufacturing Engg & on 27th Aug 2008.

Following systems are present in the lab.

- 1. Robosapian Programmable Biomorphic Robot, Woowee, Hong Kong
- 2. Boe-Bot Wheeled, tank, crawling, etc., PARALLEX, USA







Toddler - Parallex

- 3. Toddler Biped robot / two legged, PARALLEX, USA
- 4. Hex Crawler Six legged, PARALLEX, USA
- 5. Fire-Bird Research Platform of E-Yantra, IIT Powal
- GENIBO Artificial Intelligence based Robot Dog, Dasatech, Korea
- 7. Transducer Instrumentation Trainer Kit, Dynalog, Mumbai, India
- 8. NAO 6 A Humanoid Robot, Aldebran, Softbank, France





Mitsubishi Assista RV-5AS-D 6-dof Collaborative Robot

Robot System Engineering Laboratory

#### Centralized Industrial Robots Laboratory

This Centralized Laboratory was started on 27th Aug 2004 as a part of centralized Robotics & Automation Laboratory. It was relocated as a separate lab in Dec 2016 after arrival of ABB Robot Training Cell.

- 1. Mitsubishi Movemaster 5-dof Industrial Robot, Japan
- 2. SCORBOT- ER V plus 5-dof Industrial Robot Arm, Intelitek, USA
- 3. SCORBOT- ER VIII 5-dof Industrial Robot, Intelitek, USA
- 4. YASKAWA 6-dof Motomen series Industrial Robot, Japan
- 5. ABB 6400 IRB 6-dof Industrial Robot, ABB, Switzerland
- 6. Delta Robot Nugenix, Ichalkaranji, India
- 7. ABB 1520 ID 6-dof robot with complete training cell, ABB, Switzerland
- 8. Mitsubishi Assista RV-5AS-D 6-dof Collaborative Robot, Mitsubishi Electric Corp. Japan







**ABB 6400 iRB** 6-DoF Industrial Robot

