

7.3.1 Describe/Explain the performance of the institution in one area Distinctive to its vision, priority and thrust

INTRODUCTION OF STATE-OF-THE-ART OPEN ELECTIVE COURSE ON ROBOTICS ENGINEERING-LEGO MINDSTORMS AND TETRIX

The higher education system, especially professional courses such as Engineering in our country has been more or less discipline oriented, this model of conventional hierarchical based engineering education system is a serious impediment for the students to study & research subjects which are basically interdisciplinary in nature. .

Such problems cannot be solved overnight; however, what we can do is take few small steps in the direction of establishing an interdisciplinary research culture in academia by introducing more practical/hands-on based open elective interdisciplinary courses in our existing framework of engineering education. One such initiative by NMIT is to introduce an Open Elective course entitled “**Robotics Engineering- LEGO Mindstorms & TETRIX**” which is based on LEGO Mindstorms NXT and TETRIX system for the 2nd year undergraduate engineering program.

NMIT is the first Engineering Institute in the country to introduce such course in a *true multidisciplinary environment*. In this course, with hands-on & minds on approach students & faculty members from different engineering discipline will engage in an active teaching & learning experience leading to experimentation & exploration. The course is being offered to 3rd & 4th semester students across all under graduate disciplines as part of their curriculum. The state-of-the-art course is delivered to the students by experienced faculty members from across different engineering discipline.

Objectives of course

1. To create a true **multidisciplinary learning** environment by bringing students from different engineering disciplines.
2. To provide **Hands-on & Minds-on** training to students on Robotics using LEGO MINDSTORMS , TETRIX & ROBOTC.
3. To indulge students in **active learning** to foster their **creativity & ingenuity**.
4. To inculcate the research culture among young engineering students

5. To reinforce **STEM** (Science Technology Engineering Mathematics) education

Some of the salient features of this course are as follows:

- a. This course is in line with global standard set by **ABET** (Accreditation Board for Engineering & Technology) to reinforce STEM Education. “Robotics Engineering” Course will include state of the art tailor made curriculum developed by **Carnegie Mellon University’s Robotics Academy**.
- b. Students will learn how to develop system or process using **state of the art hardware** with **brick controllers, sensors and servo motors** coupled with building elements such as gears, axles, links, channels made up of ABS plastic & aircraft grade aluminium.
- c. Programming possibilities with National Instruments **Lab VIEW for LEGO MINDSTORMS or ROBOTC, C++, MATLAB** and variety of software.
- d. Students will learn crucial **project management skills** at an earlier stage of their engineering.
- e. Students can work on **open ended problems** unlike in the conventional lab;
- f. Students can assume the role of an Engineer or a Scientist, Perform WHAT IF? Analysis, Test their engineering skills, It doesn’t matter if the design fails, Coz they will learn how & why their design failed, this is how knowledge is enriched.
- g. Students can earn two extra credits (In place of Internship or self study component) by undergoing this course.