KK Wagh Institute of Engineering Education and Research integrates MATLAB in Engineering Curriculum

"Students and faculty members of K.K. Wagh Institute of Engineering Education and Research are making regular use of MATLAB Campus Wide license. This has helped our students use MATLAB in a wide variety of courses for various departments.

MathWorks provides free online courses, which is enabling our faculty members and students to get insights on different toolboxes. Model-Based Design is facilitating our students to simulate and generate code for targeted hardware.

MathWorks and DesignTech teams are providing us with regular support by conducting various webinars."

Prof. Dr. DM Chandwadkar, Head of Department – Electronics and Tele Communication

KK wagh Institute of Engineering Education and Research.

The K.K.Wagh Institute of Engineering Education and Research was established in 1984. It was earlier located at Bhausahebnagar in Nashik district, and later shifted to Nashik City.

The Institute is approved by the National Assessment & Accreditation Council (NAAC) with an 'A' Grade. This is the only institute in Nashik to be grouped thrice under the Platinum category by the AICTE-CII Survey of industry-linked institutes. As per the NIRF ranking survey of 2016, it was ranked 85thamongst all the engineering institutes in India.

Challenge

With increasing digitalisation, new technologies such as Internet of Things, Artificial Intelligence and Machine Learning have been gaining rapid pace.There is a growing need for friendly and interactive tools that incorporates numeric, symbolic computation and scientific visualization.

Many engineering schools now require MATLAB as their primary computing tool for experimental data analysis. MATLAB is used in the numerical analysis of engineering problems and also to generate charts & graphs

“Industries and companies visiting the institute for placements are increasingly demanding MATLAB proficiency as a key skill in students.Engineeingstudents need to be equipped to face these challenges and become “Project Ready”. Today, it is imperative to motivate students to become equipped with project-based learning from their first year itself. There is a need for systematic integration of MATLAB and Simulink into the curriculum” says Dr. D. M. Chandwadkar- Professor & Head of Electronics and Telecomminication Engineering department.

Solution

The institute's faculty members have incorporated MATLAB in many of their courses, they are also working on integrating MATLAB and Simulink across all engineering programs. The institute offers an introductory programming course that uses MATLAB and helps students to obtain a solid foundation in its usage. In Computer Engineering, MATLAB is used for data mining, artificial intelligence, machine learning, and image processing. Another example comes from the Department of Electronics & Tele-Communications, where the software is used for courses like Signals and Systems and Digital Signal Processing. Control systems, mechanical vibrations, basic engineering mechanics, electrical circuits, stats and dynamics, and numerical methods require the use of MATLAB by mechanical engineers.

Using a Campus-Wide License, researchers gain access to an updated suite of MATLAB and Simulink products family for students, faculty, and researchers, on and off-campus and on any device. There are two ways to access MATLAB software – the online mode, where no installation is required, it runs on the browser and needs an internet connection; and the offline mode, where installation is done on a laptop or PC and needs no internet connection.

Coordinators help students create MathWorks accounts, helping them gain access to various resources of MATLAB Campus-wide Licenses. Also, every single document is uploaded on the server and can be accessed by students. User guides and posters are also provided to students to help them install the software, use various commands and raise awareness on usage of specific toolboxes.

With the help of DesignTech, a MATLAB dedicated server has been configured, which helps each lab access MATLAB licenses.DesignTechhas been providing excellent supportto the institute while also immediately addressing every issue related to MATLAB or installation.

The campus conducts regular technical engagements and sessions on new updates and toolboxes for upskilling faculty member and empowering the students. The faculty and students also gain access to MathWorks learning resources like MATLAB Academic Online Training Suite (MAOTS) that support curricula and help students complete project-based assignments.
“In addition, unlike the traditional way of completing assignments, students must now utilize MATLAB graders. The Assignments are uploaded to the graders to make communication easier,” says Mr. Kiran Navale – Prof Electronics and Telecommunication Engineering department

Every faculty member at the institute is trained on MATLAB and has good experience to train others. The institute’s faculty also visits the MathWorks website to regularly look for fresh updates and tools. They also use MATLAB and Simulink extensively in their own research projects and communicate with students about its importance and benefits through webinars.

Results

Making students work-ready:MATLAB and Simulink is being used in a wide variety of domains from the Auto, Aero, Defence, IAM, Communication, Medical, natural sciences, through all disciplines of engineering to finance, and beyond. Learning engineering design skills with MATLAB and Simulink makes students ready to work in different industries.

Engaging students in leading-edge research: The tools enable students to focus on research and spend less time programming.

Specialisation in MATLABs:A specialisation in MATLABs enables learners with little or no programming experience to create MATLAB programs that help them solve real-world problems.

Quick time-to-market:With Model-Based Design and Software-in-the-Loop Simulation, control designs are evaluated earlier in the development process, resulting in shorter development cycles and a shorter time-to-market.