

VALUE ADDED COURSES (VAC):

The Value Added Courses aim to provide additional learner centric graded skill oriented technical training, with the primary objective of improving the employability skills of engineering students. The main objectives of the program are:

1. To provide students an understanding of the expectations of industry.
2. To improve employability skills of engineering students
3. To bridge the skill gaps and make students industry ready.
4. To provide an opportunity to students to develop inter-disciplinary skills.

The Courses focus on skill development and more than 50% of the time is spent on practical training and problem solving, to provide the requisite understanding towards application of academic topics from engineering disciplines into real world engineering projects.

Note:

1. The proposed course should be lead by VAC Coordinator of the Department
2. The proposed course is to be handled with internal faculty (VAC Instructors) and invited guest lecturers from Industry (with whom MoU is done).

MATLAB Programming (Value Added Course)

VAC Coordinator: Prof. B.Abdul Rahim, HOD, Dept. of ECE

VAC Instructors: Fahimuddin.Shaik, Assistant Professor, Department of ECE

S.Asif Hussain, Assistant Professor, Department of ECE

And

Resource Person(s) from Industry

Course Structure:

Course	Class	No. Of Students (Max)	Duration	Date
Matlab Programming	M.Tech I Sem & IV. B.Tech	82	3 hrs/week (Maximum of 30 hours)	05.02.2014 to 20.02.2014

Prerequisite:

1. C Programming, Basics of Engineering Mathematics
2. No prior knowledge of Matlab is required. Basic computer literacy is expected.

Course Objectives:

1. To Impart the Knowledge to the students with MATLAB software. *[This enhances programming knowledge in Research and Development].*
2. To provide a working introduction to the Matlab technical computing environment. *[Themes of data analysis, visualization, and programming].*
3. To introduce students the use of a high-level programming language, Matlab. *[scientific problem solving with applications and examples from Engineering].*

About Matlab: MATLAB or (Matrix Laboratory) is a high performance fourth generation programming language which is used for technical computing. It provides multi paradigm numerical computing environment and was developed by Math Works. It is used

for integrating computation, visualization, and programming so that the programming environment becomes easy to use. The applications of MATLAB are immense. It is a powerful linear algebra tool with a very good collection of toolboxes; therefore it finds applications in research and teaching on domains of robotics and automation.

Topics to be covered:

1. Basics of Matlab and MATLAB Compiler
 - ✓ The Matlab user interface
 - ✓ Working with Matlab data types
 - ✓ Creating matrices and arrays
 - ✓ Operators and control statements
 - ✓ Using scripts and functions
 - ✓ Data import and export
 - ✓ Using the graphical features
2. Programming with simple examples
3. Discussion of Toolboxes with Applications
 - ✓ Signal Processing
 - ✓ Image Acquisition Toolbox
 - ✓ Image Processing
 - ✓ Neural Network
 - ✓ Fuzzy Logic Toolbox
4. Simulink and Hardware Interfacing (Using Kits: Lego, Raspberry Pi, Mind storms etc.)

Learning Resources and References: These are some of the links and books which can help students in increasing their knowledge base and clarification of the doubts. Please visit the links and refer the books to explore the information given:

[1] <http://www.eng-tips.com/threadminder.cfm?pid=575>

[2] <http://www.matlabtutorials.com/mathforum/>

[3] <http://www.mathworks.in/matlabcentral/>

[4] <http://www.cfd-online.com/Forums/tags/matlab.html>

[5] <http://diydrones.com/forum/topic/listForTag?tag=Matlab>

[6] MATLAB Manuals and Handbooks

[7] Duane Hanselman, Bruce Little Field “**Mastering MATLAB 7**” , Pearson Education India

Course outcomes: By the end of this course, the student will be able to

1. Understand the basics of Matlab
2. Break a complex task up into smaller, simpler tasks
3. Case Study (Any two Modules)

4. Tabulate results and Analyse

Assessment:

1. Every student has to give periodic tests consisting of Programming tasks and Objective Questions
2. At the end of the Course each student will give a presentation on a topic covered in the course

Companies Using Matlab:

Companies ranging from automotive, banking, and software implement the MATLAB software. The lists of companies in automotive sector using the MATLAB Software are:

- Volvo
- Jaguar
- Mercedes
- BMW

A company from the software sector includes:

- Adobe Photoshop

All the Banking companies which involve crunches of calculations such as Citi Bank, HDFC do implement the concepts indirectly.

Courtesy: CETPA INFOTECH PVT LTD, Noida ,
<http://www.cetpainfotech.com/technology/matlab>