

# WORKPLACE READINESS

Value Added Course



## Course Details–

Participants- Open for All

Duration - 30 hours (July 2018-19)

Course Instructor - Dr. Richa Mishra  
Ms. Shraddha Bharatiya

## Workplace Readiness

by Centre for Communication & Critical Thinking, JKLU

### Course Brief:

This course helps students craft their personal brand, face prospective employers, and prepare for the workplace.

## Evaluation Scheme–

Assignment (s): 40

Report: 20

Quiz: 40

### Learning objectives:

The students will learn to:

1. Craft a personal pitch
2. Create standout resumes and cover letters learn how to explain the different sections of your resume clearly.
3. Build online presence on LinkedIn, Facebook and Twitter
4. Practice professional etiquette and workplace best practices.



## Session Topics

<b>Career planning and review</b>	<ul style="list-style-type: none"> <li>• Completion of Career Analysis Survey by each student.</li> <li>• Analysis of skills and qualifications required for a range of occupations and associated career exploration activities within the Job Guide.</li> </ul>
<b>Resume Writing</b>	<ul style="list-style-type: none"> <li>• Why standout resumes are important.</li> <li>• How to build your own resume.</li> <li>• Do and <u>Don't</u> while creating a resume.</li> <li>• Tips on common errors</li> </ul>
<b>Cover Letter</b>	<ul style="list-style-type: none"> <li>• Structure in communication, and the idea of beginning, middle (the power of 3) and the end.</li> <li>• Relevance of a cover letter and uses examples to illustrate effective structure and content in cover letters.</li> <li>• Different application of cover letter and ask each student to write, in bullet points, what s/he would say in each section of the cover letter</li> </ul>
<b>Social Media Presence</b>	<ul style="list-style-type: none"> <li>• Relevance of Social media presence in their context</li> <li>• Personal Branding through Social Media</li> <li>• Build professional profile on LinkedIn</li> </ul>
<b>Mock Interview</b>	<ul style="list-style-type: none"> <li>• Share the before - during - after process of an interview, asks students to create a matrix of their strengths and pitfalls at each stage.</li> <li>• Mock GD's.</li> <li>• Handle FAQ's related to technical or non-technical area.</li> <li>• Learn to handle different situations in GD's or PI's</li> </ul>
<b>Practice professional etiquette (example - how to engage with a prospective employer), workplace etiquette</b>	<ul style="list-style-type: none"> <li>• How to build a strong physical presence</li> <li>• Important Components of Communication</li> <li>• Practice the art of communicating <u>effectively</u></li> <li>• Do's and don'ts list on professional communication</li> </ul>



## Value Added Course Academic Year 2018-19

# CIVIL ENGINEERING REFRESHER COURSE

Faculty: Mr. Amit Kumar and  
Mr. Vinod Vishwakarma

Course Duration: 36 Hours

Offered to: B. Tech, Semester - VII

This course reviews civil engineering fundamentals and their applications to prepare you for the Placement exam.

- Structural analysis
- Steel design
- Concrete design
- Traffic engineering
- Hydraulics
- Surveying
- Engineering economics
- Quantitative and verbal reasoning

## Course Outcome

On successful completion of this course, the students should be able to:

- Apply knowledge of mathematics, science, and engineering to understand the measurement techniques and equipment used in surveying.
- Able to design basic elements of steel structure like tension member, compression members.
- Apply conservation laws to derive governing equations of fluid flows.
- Design the Reinforced Concrete beams using limit state and working stress methods.
- Formulate Equilibrium and compatibility equations for structural members.

## Course Content:

**Module 1:** Stability and Determinacy of Structures; Review of shear force and bending moment diagrams in beams and frames; Plane trusses: method of joints and method of sections. Deflection of trusses: method of virtual work.

**Module 2:** Steel structures, Limit states and design philosophy; partial safety factors and load combinations; Analysis and design methods; Design of tension members based on net section including shear lag effects, staggered holes and block shear

**Module 3:** Reinforced concrete (RC) structures, Loadings, analytical models for analysis and design of RC structures, Design Methodologies: Working Stress Method and Limit State Method; Behavior of RC members under flexure

## Evaluation Scheme:

Components	Weightage
Assignment	10
Quiz	10
Theory Exam	40
Project 1	30
Class Participation	10
Total	100

## Course Content:

**Module 4:** objectives and Principles of surveying, classification of surveying

**Module 5:** Use of Total station, Theodolite, Autolevel, GPS

**Module 6:** Transportation engineering elements; Geometric design; Traffic flow fundamentals; uninterrupted traffic flow; Interrupted traffic flow; Pavement analysis.

**Module 7:** Synthetic design storms & Estimation of peak discharge, Urban storm drainage design, Culvert design, Detention storage design, Watershed modeling, Flood frequency analysis and hydrologic design under uncertainty.

**Module 8:** Arithmetic, Modern Math, Number System Algebra, Mensuration, Trigonometry, Geometry, Long & Short Passages, Jumbled Paragraphs; Para-summary



## Value Added Course

Academic Year 2018-19

# WASTE TO WEALTH: USE OF WASTE MATERIAL FOR ENERGY GENERATION

Faculty: Dr. Kedar Sharma

Course Duration: 35 Hours

Offered to: B. Tech, Semester - VI

This course gives basic knowledge about energy generation from municipal waste materials. It includes incineration, pyrolysis and anaerobic digestion. Cost effectiveness of various options is also discussed.

## Course Outcome

On successful completion of this course, the students should be able to:

- Various sources of municipal solid wastes
- Challenges in waste collection
- Various methods of waste disposal: Composting, incineration, pyrolysis
- Cost effectiveness of various options

## Course Content:

Module 1: various sources of municipal solid waste and their classification

Module 2: Collection and segregation of solid wastes

Module 3: Composting, Incineration and Pyrolysis

Module 4: Benefit cost ratio of various processes

## Evaluation Scheme:

Components	Weightage
Assignment	20
Quiz	20
Theory Exam	40
Project 1	10
Project 2	10
Total	100

## References:

1. Rogoff M. J. and Screve F. Waste to Energy, Technologies and Project Implementation
2. Young G C. Municipal Solid Waste to energy conversion processes Economical, Technical and Renewable comparisons





# VALUE ADDED COURSE

**Academic Year-2018-19**

Offered by

**Department of Computer Science Engineering**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
**JK Lakshmipat University**

Name of the Course

**BIG DATA ANALYTICS AND FUTURE TECHNOLOGIES**

Course Faculty (s)

**SHIVOM AGGARWAL**

Visiting faculty in HEC Paris, France and  
Associate professor, IE University, Madrid, Spain (saggarwal@faculty.ie.edu)

**DR. ALOK KUMAR**

Department of CSE, IET, JKLakshmipat University, Jaipur

Course Code

**NA**

Course Duration

**40 Hrs.**

Offered to

**B.Tech. Computer Science Engineering Students**

## Course Description

This course is focused on developing Big Data thinking among future leaders to solve some of the biggest challenges facing our society. It will prepare the B.Tech students in cutting edge field of Big Data and associated technologies from a implementation and problem solving perspective. This course is offered for the students interested in building a career in Big Data Science. As a result, during the course relevant information will be presented on Big Data definition, use cases, tools/models, security and future technologies associated with Big Data. It will help the students in inculcating the skills required to succeed in the modern day organizations as well as starting their own ventures in the area of Big Data analytics. And is an extension of the curriculum model, "Learning @JKLU", designed to shape students into future ready professionals and global leaders.

## Course Outcome

*On successful completion of this course, the students should be able to:*

- Explain Big Data technologies challenges and solutions for businesses.
- Install and configure R for statistical analysis.
- Identify potential data sources, combine it and analyze
- Explain how to set up for Big Data strategy, financial impact & cost-benefit analysis
- Choose among variety of technologies and methodologies of Big Data analytics
- Perform Regression analysis – OLS (Ordinary Least Square), GLM (Generalized Linear Models) & SEM (Structural Equation Models)
- Discuss Information security Importance, Investment and Implications
- Utilize NLTK for designing neural networks and using existing libraries for NLP algorithms

## Course Contents

**Module 1:** Overview of Big Data – Definition, Measurement (Volume, Velocity, Variety), Usage, Differences from Open Data, Public/Proprietary Data, Trends in hardware & software industries shaping Big Data

**Module 2:** R Installation & Configuration, Basic of R programming – Origin, Usage and current progress, An introduction to language and how to use R for doing statistical analysis and graphics Challenges of pursuing Big Data Strategy, How to identify potential data sources, which data can be combined, Should we combine first then analyze, or analyze first and then combine?

**Module 3:** People & Process: Skill-sets required, how & where to find talent, how can you manage such talent, what business process we can set up for Big Data strategy, Financial impact & cost-benefit analysis: “Big Data Strategy is costly, can we skip it?”

State of the art of Big Data Tools & Models. What managers need to know about Big Data tools? How can you choose among variety of technologies and methodologies of Big Data analytics? Who is doing what? Which companies are building tools, what type of tools? Which companies are using them? (Success stories)

**Module 4:** R problem solving and large data structures, Compustat (Wharton Research Data Services) database on public listed US firms, Usage of business understanding and frameworks to posit objectives to be achieved and how to use data to solve them, Regression analysis – OLS (Ordinary Least Square), GLM (Generalized Linear Models) & SEM (Structural Equation Models)

**Module 5:** Stages of new technology diffusion- Security comes much later! Two perspectives of Big Data: Within Organization & Outside (in the environment such as Markets), i.e., Internal & External Big Data. Data Privacy: An issue or opportunity

**Module 6:** Information security: Importance, Investment and Implications, Social engineering, hackers and usage of advanced technologies such as IoT (botnets) for cyberwarfare, Data Privacy: An issue or opportunity. Cyberwarfare as a tool for geo-political gains

**Module 7:** Stanford CoreNLP (Natural Language Processing): Basics and usage, Designing neural networks and using existing libraries for NLP algorithms, Text matching and sentiment analysis techniques

**Module 8:** Uses of Big Data: Where, how and why Big Data should be used in decision making? Marketing to Operational strategy is affected and driven by Big Data. Smart decision making & Big Data impact on long-term strategic decisions, Exploration vs Exploitation of Big Data: An Ambidexterity perspective

## Evaluation Scheme

Sr. No	Specifications	Marks
01	Attendance	Nil
02	Assignment	15
03	Class Participation	25
04	Quiz	Nil
05	Theory Exam	Nil
06	Theory Exam	Nil
07	Theory Exam	Nil
08	Report-1 (Group Work)	30
09	Report-2 (Case)	30
10	Report-3	Nil
11	Project -1	Nil
12	Project -2	Nil
13	Project -3	Nil
14	Lab Evaluation1	Nil
15	Lab Evaluation2	Nil
16	Course portfolio	Nil
	<b>Total (100)</b>	<b>100</b>

## References

- "The Enterprise Marketing Technology Landscape", Forbes 2018
- "7 Technology Trends That Will Dominate 2018" Forbes 2017
- "Why It's Time to Start Thinking About Enterprise Technology in Stacks" Accenture 2016
- UN Data Revolution report 2014, "A world that counts"
- Big Data: The Management Revolution, HBR article, 2012
- The Stacks Approach. Why It's Time to Start Thinking About Enterprise Technology in Stacks" Accenture 2016
- "Industrial Internet of Things: Unleashing the Potential of Connected Products and Services" World Economic Forum Report
- "Inside the Internet of Things (IoT)", Deloitte University Press 2018
- Economics of Big Data, A book chapter by Claudio Feijóo, José-Luis Gómez-Barroso and Shivom Aggarwal, Internet Economics, Publisher: Elgar Editors: Bauer & Latzer 2015.
- Hands-On Programming with R" by Garrett Grolemond
- "An Introduction to R", R Manual C-RAN Project
- Economics of Big Data, A book chapter by Claudio Feijóo, José-Luis Gómez-Barroso and Shivom Aggarwal, Internet Economics, Publisher: Elgar Editors: Bauer & Latzer 2015. How Big Data Brings Marketing and Finance Together, HBR article, 2014.
- Mobile Big Data: New Frontier of Innovation, Shivom Aggarwal & Abhishek Nayak, 2015
- The Big Cost of Big Data, Forbes article, 2012
- Compustat (Wharton Research Data Services) database on public listed US firms
- "Questions and Answers – General Data Protection Regulation", EU 2018
- Data equity: Unlocking the value of big data, a report by SAS institute, 2012.
- The Big Data Landscape, Forbes article, 2012
- Using Financial Transaction Data To Measure Economic Resilience To Natural Disasters, UN Global Pulse 2016 Project
- Case 1 (In) Evaluation framework and assessment of Big Data tools in Urban Planning, Project INSIGHT, EU FP7 project by Claudio Feijóo & Shivom Aggarwal.
- "Statistics for business and economics (11th ed)" McClave, J.T., Benson, P.G., & Sincich, T., Upper Saddle River, NJ: Pearson.
- Hands-On Programming with R" by Garrett Grolemond
- Big Data Fuels Intelligence-Driven Security, An EMC report, 2013
- "Companies Should Understand Where Cybercrime Thrives" HBR 2016
- "Questions and Answers – General Data Protection Regulation", EU 2018
- The Cyber-Resilient Enterprise: Harnessing Your Security Intelligence", Symantec 2013
- Big Data Security: Understanding the Risks, by Oren Hamami, Business Intelligence Journal
- "2017 Will Be The Year Of Cyber Warfare" Forbes 2017
- "Getting Ready to Fight the Next (Cyber) War", RAND blog 2018
- UN Data Revolution report 2014, "A world that counts"
- "Hacking for Influence— Foreign Influence Activities and Cyber-attacks", International Centre for Defence and Security Report 2018
- Online Stanford Tutorial on "Getting started with CoreNLP" (<https://interviewbubble.com/stanford-corenlp-tutorial/>)
- Recognizing Named Entities - An Introduction by Denny DeCastro and Kyle von Bredow at HumanGeo



# VALUE ADDED COURSE

**Academic Year-2018-19**

Offered by

**Department of Computer Science Engineering**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
**JK Lakshmipat University**

Name of the Course

**CONTEST PROGRAMMING**

Course Faculty (s)

**SANTOSH KUMAR VERMA**

Course Code

**NA**

Course Duration

**40 Hrs.**

Offered to

**B.Tech. Computer Science Engineering Students**

## Course Description

This Course is designed to equip learners with skills of computational problem solving with a focus on time and space efficiency. It includes analysis, selection, implementation, optimization and scalability of algorithms.

## Course Outcome

On successful completion of this course, the students should be able to:

- Identify the algorithmic way of solving problem
- Select an effective data structure and algorithm to efficiently solve the problem
- Analyze Time and Space Complexity of Solution
- Analyze Scalability of Solution
- Attempt an online/onsite national/international computational problem solving contest.
- Organize an online/onsite national/international computational problem solving contest/event
- Adapt Ethical Coding Practices.

## Course Contents

Review of Concepts of programming(C/Core Java/C++/Python); Preparing Game Plan for a Contest; Programming Language selection for a contest; Essential Data Structures for Implementing Solution to a problem; Input /Output Techniques and constraints; Test Case analysis of a problem; Hands-on problem solving approaches (Brute Force Method, Greedy Algorithms, Dynamic Programming); Complexity analysis of an algorithm; Importance of Graph algorithms; Computational Geometry; Meet-up on ACM Programming Problems; Common Codes/Routines for Programming; Time Savor: use of various libraries like Standard Template Library (STL) and python supported libraries; Exploring the working of programming judges; Setting up the online and onsite judge (Codechef, Hackerrank, Hackerearth, Geeksforgeeks, CodingNinjas, PC2, etc.); Contest Administration; Ethical coding (awareness of Plagiarism).

## Evaluation Scheme

Sr. No	Specifications	Marks
01	Attendance	10
02	Assignments	Nil
03	Class Participation	10
04	Quiz (4)	Nil
05	Theory Exam	Nil
06	Theory Exam	Nil
07	Theory Exam(Final)	Nil
08	Report-1	Nil
09	Report-2	Nil
10	Report-3	Nil
11	Project-1	Nil
12	Project-2	Nil
13	Project-3	Nil
14	Lab Evaluation1	Nil
15	Lab Evaluation2(Final)	Nil
16	Course portfolio	80
	<b>Total (100)</b>	<b>100</b>

## References

1. Laaksonen, Antti. Guide to Competitive Programming: Learning and Improving Algorithms Through Contests. Springer, 2018.
2. Laaksonen, Antti. "Competitive Programmer's Handbook." Preprint (2017).
3. Horowitz, Ellis. Fundamentals of data structures in C++. Galgotia Publications, 2006.
4. Skiena, Steven S. The algorithm design manual: Text. Vol. 1. Springer Science & Business Media, 1998.
5. Mata-Toledo, Ramon A., and Pauline K. Cushman. Schaum's outline of Introduction to Computer Science. McGraw Hill Professional, 2000.
6. Narasimha, Karumanchi. "Data Structures and Algorithms Made Easy." (2018).
7. Lafore, Robert. Object-oriented programming in C++. Pearson Education, 1997.



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**Academic Year-2018-19**

Offered by

**Department of Computer Science Engineering**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
**JK Lakshmipat University**

Name of the Course

**DATA SCIENCE USING PYTHON**

Course Faculty (s)

**SONAL JAIN**

Course Code

**NA**

Course Duration

**35 Hrs.**

Offered to

**B.Tech. Computer Science Engineering Students**

## Course Description

This course will introduce the learner to the basics of the python programming environment, including fundamental python programming techniques such as lambdas, reading and manipulating csv files, and the numpy library. The course will introduce data manipulation and cleaning techniques using the popular python pandas data science library and introduce the abstraction of the Series and DataFrame as the central data structures for data analysis, along with tutorials on how to use functions such as groupby, merge, and pivot tables effectively. By the end of this course, students will be able to take tabular data, clean it, manipulate it, and run basic inferential statistical analyses.

## Course Outcome

*On successful completion of this course, the students should be able to:*

1. Process text documents using Python
2. Applying NLP to solve real-world problems
3. Implement ML Projects involving NLP

## Course Contents

**Module 1:** Fundamentals of Data Manipulation with Python In this week you'll get an introduction to the field of data science, review common Python functionality and features which data scientists use

### **Module 2: Basic Data Processing with Pandas**

In this week of the course you'll learn the fundamentals of one of the most important toolkits Python has for data cleaning and processing -- pandas. You'll learn how to read in data into DataFrame structures, how to query these structures, and the details about such structures are indexed.

### **Module 3: More Data Processing with Pandas**

In this week you'll deepen your understanding of the python pandas library by learning how to merge DataFrames, generate summary tables, group data into logical pieces, and manipulate dates. We'll also refresh your understanding of scales of data, and discuss issues with creating metrics for analysis. The week ends with a more significant programming assignment.

## Evaluation Scheme

Prerequisites		
Evaluation Scheme		
Sr. No	Specifications	Marks
1	Assignments	40
2	Class Participation	20
3	Lab Evaluation	40
	<b>Total (100)</b>	<b>100</b>

## References

Online Coursera and Cognitive AI modules



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Name of the Course  
**EXCEL FOR BUSINESS**

Course Faculty (s)  
**DR. SONAL JAIN, SANTOSH KUMAR VERMA**

Course Code  
**NA**

Course Duration  
**30 Hrs.**

Offered to  
**B.Tech. Computer Science Engineering Students**

## Course Description

This course is intended to develop one of the most critical and fundamental digital skills today. Spreadsheet software remain one of the most ubiquitous software used in workplaces across the world. Innovative use of this software is important for efficiently solving a large number of business problems.



## Course Outcome

On successful completion of this course, the students should be able to:

- Utilize advanced features of Excel for analyzing and solving business problems.
- Design sophisticated spreadsheets, including professional dashboards, and perform complex computations.
- Manage and analyze large datasets efficiently as well as present data through tables and charts.
- Validate data and prevent errors in spreadsheets, create automation, apply advanced formulas and conditional logic to help make decisions and create spreadsheets that help forecast and model data.
- Design and develop group workflows using spreadsheets.

## Course Contents

- Excel Basics
- Calculate Your Data
- Add Charts and Graphics
- Analyze your Data
- Work with Cells and Worksheets
- Format your Workbook
- Collaborate with Others
- Work with Macros and the Web

## Evaluation Scheme

Sr. No	Specifications	Marks
01	Attendance	Nil
02	Assignments	20
03	Class Participation	Nil
04	Quiz (4)	20
05	Theory Exam	Nil
06	Theory Exam	Nil
07	Theory Exam(Final)	Nil
08	Report-1	Nil
09	Report-2	Nil
10	Report-3	Nil
11	Project-1	40
12	Project-2	Nil
13	Project-3	Nil
14	Lab Evaluation1	20
15	Lab Evaluation2(Final)	Nil
16	Course portfolio	Nil
	<b>Total (100)</b>	<b>100</b>

## References

1. Walkenbach, John. MICROSOFT EXCEL 2007 BIBLE (With CD). John Wiley & Sons, 2007.
2. Walkenbach, John. Excel charts. John Wiley & Sons, Inc., 2002.
3. Walkenbach, John. Excel 2010 bible. Vol. 593. John Wiley & Sons, 2010.
4. Bourg, David M. Excel Scientific and Engineering Cookbook: Adding Excel to Your Analysis Arsenal. " O'Reilly Media, Inc. ", 2006.
- 5.Simon, Jinjer L. Excel programming: your visual blueprint for creating interactive spreadsheets. Wiley, 2005.
- 6.Walkenbach, John. Microsoft Excel 2000 power programming with VBA. John Wiley & Sons, Inc., 1999.
- 7.Bloch, Sylvan Charles. Excel for engineers and scientists. John Wiley & Sons, Inc., 1999.



# VALUE ADDED COURSE

Academic Year-2018-19

Offered by

**Department of Computer Science Engineering**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
JK Lakshmipat University

Name of the Course  
**HANDS ON LINUX**

Course Faculty (s)  
**DR. GIREESH KUMAR**

Course Code  
**NA**

Course Duration  
**30 Hrs.**

Offered to  
**B.Tech. Computer Science Engineering Students**

## Course Description

This course explores the various tools and techniques commonly used by Linux system administrators and end users to achieve their day-to-day work in a Linux environment.

## Course Outcome

- To implement basic LINUX commands, manage files and directories
- To utilize the vi editor, work with Linux security mechanisms to protect files and programs
- To work with the Linux shell to control the flow and processing of data through pipelines
- To design and write shell programs of moderate complexity, and manage multiple concurrent processes in order to achieve higher utilization of Linux.

## Course Contents

### Module1: Getting Started.

- What is Linux/Unix?
- Components of Linux System.
- Logging In
- Try a Few More Commands
- History of Linux.
- Basic features
- Logging Out
- Changing Your Password

### Module2: Basic LINUX commands and its Use.

- Execution of various file/directory handling commands.
- Commands related to standard I/O, Redirection, Pipes and Filters.
- Examples/Exercise

### Module3: Editing with vi

- What is vi?
- Command Mode and Insert Mode
- Getting Started
- Inserting Text
- Undo Last Command
- Save Your Work or Abort the Session
- The vi Buffering Process
- Modes Diagram
- Moving the Cursor Around
- Deleting a Character or Line
- Opening a New Line

### Module4: Shell Programming Concepts

- What is a Shell?
- Why Use Shell Scripts?
- Shell Programming: Control Structure
- Shell Programming: Examples
- What is a Shell Script?
- Shell Programming: Introduction
- Shell Programming: Working with files

### Module5: Process Management Commands in Linux.

### Module6: To study the various File Access Permission and different types users in LINUX.

## Evaluation Scheme

Evaluation Scheme		
Sr. No	Specifications	Marks
01	Assignments	20
02	Quiz	20
03	Lab Evaluation-I	30
04	Lab Evaluation-II	30
	<b>Total (100)</b>	<b>100</b>

## References

1. Richard Blum, Christine Bresnahan. Linux Command Line and Shell Scripting Bible, Wiley, 2015.
2. Daniel P. Bovet, Marco Cesati. Understanding the Linux Kernel, O'Reilly media 3rd Edition, 2005.
3. M. G. Venkateshmurthy. Introduction to Unix & Shell Programming, Pearson Education, 2009.
4. Jason Cannon, Linux for Beginners: An Introduction to the Linux Operating System and Command, 2013.



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**Academic Year-2018-19**

Offered by

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**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
**JK Lakshmipat University**

Name of the Course

**INTRODUCTION TO NETWORKS, SWITCHING AND ROUTING**

Course Faculty (s)

**DEVENDRA BHAVSAR**

Course Code

**NA**

Course Duration

**45 Hrs.**

Offered to

**B.Tech. Computer Science Engineering Students**

## Course Description

Introduction to Networks Switching and Routing introduces Computer Networks architectures, models, protocols, and networking elements – functions needed to support the operations and priorities of Fortune 500 companies to small innovative retailers. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. This course also covers components and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. By the end of the course, students will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes. The course includes activities using Packet Tracer, hands-on lab work, and a wide array of assessment types and tools.

## Course Outcome

On successful completion of this course, the students should be able to:

1. Build simple LANs, perform basic configurations for routers and switches, and implement IPv4 and IPv6 addressing schemes.
2. Define the role of a centralized Security Intelligence solution and how it integrates with other IT enterprise security components
3. Configure routers, switches, and end devices to provide access to local and remote network resources and to enable end-to-end connectivity between remote devices.
4. Configure and troubleshoot connectivity a small network using security best practices.
5. Develop critical thinking and problem-solving skills using real equipment and Cisco Packet Tracer.
6. Develop basic skills of routing, switching, and advanced technologies to prepare for the Cisco CCNA exam, networking related degree programs, and entry-level networking careers.
7. Configure Ethernet switch ports and implement VLANs.
8. Implement static routing.
9. Implement DHCP on a router.
10. Implement network address translation (NAT).
11. Implement access control lists (ACLs) to filter traffic.

## Course Contents

**Module 1:** Explore the Network: Globally Connected, LANs, WANs, and the Internet, Network as a Platform, Configure a Network Operating System: IOS Bootcamp, Basic Device Configuration, Address Schemes Physical Layer Protocols.

**Module 2:** Network Media, Data Link Layer Protocols Media Access Control, Ethernet Protocol, LAN Switches, Address Resolution Protocol, Network Layer Protocols, Routing, Routers, Configuring a Cisco Router, IPv4 Network Addresses, IPv6 Network Addresses, Connectivity Verification, Subnetting an IPv4 Network, Addressing Schemes, Design Considerations for IPv6.

**Module 3:** Transport Layer Protocols, TCP and UDP, Application Layer Protocols Well-Known Application Layer Protocols and Services Network Design, Network Security, Basic Network Performance, Network Troubleshooting, Router Initial Configuration, Routing Decisions, Router Operation, Implement Static Routes, Configure Static and Default Routes, Troubleshoot Static and Default Routes.

**Module 4:** Dynamic Routing Protocols, RIPv2, Routing Table, Switched Networks: LAN Design, Switched Environment, Basic Switch Configuration, Switch Security, VLAN Segmentation, VLAN Implementations, Inter-VLAN Routing Using Routers.

**Module 5:** Access Control Lists (ACL): ACL Operation, Standard IPv4 ACLs, Troubleshoot ACLs DHCPv4, DHCPv6 NAT Operation, Configure NAT, Troubleshoot NAT Device Discovery, Device Management and Device Maintenance.

## Evaluation Scheme

Prerequisites		No
Evaluation Scheme		
Sr. No	Specifications	Marks
1	Quiz (CISCO Chapter Exams)	40
2	Theory Exam-III (CISCO Final Exam)	40
3	Lab Evaluation-II (CISCO Lab Exam)	20
	<b>Total (100)</b>	<b>100</b>

## References

### Text Books:

1. Lammle, T. (2016). CCNA Routing and Switching Complete Study Guide: Exam 100-105, Exam 200-105, Exam 200-125. John Wiley & Sons.
2. Lammle, T. (2013). CCNA routing and switching study guide: exams 100-101, 200-101, and 200-120. John Wiley & Sons.
3. Lammle, T. Cisco Certified Network Associate Study Guide. 2nd. Edition

### Reference Books:

1. Stallings, W. (2004). Computer networking with Internet protocols and technology. Upper Saddle River, NJ, USA: Pearson/Prentice Hall.
2. Kurose, J., & Ross, K. (2010). Computer networks: A top down approach featuring the internet. Pearson Addison Wesley.
- Lammle, T. (2011). CCNA Cisco Certified Network Associate Deluxe Study Guide. John Wiley & Sons.



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Offered by

**Department of Computer Science Engineering**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
**JK Lakshmipat University**

Name of the Course

**NATURAL LANGUAGE PROCESSING**

Course Faculty (s)

**SONAL JAIN**

Course Code

**NA**

Course Duration

**30 Hrs.**

Offered to

**B.Tech. Computer Science Engineering Students**

## Course Description

Data is the new oil and unstructured data, especially text, images and videos contain a wealth of information. However, due to the inherent complexity in processing and analyzing this data, people often refrain from spending extra time and effort in venturing out from structured datasets to analyze these unstructured sources of data, which can be a potential gold mine. Natural Language Processing (NLP) is all about leveraging tools, techniques and algorithms to process and understand natural language based unstructured data - text, speech and so on. The intent of this course is to make you a hero in NLP so that you can start applying NLP to solve real-world problems. We start from zero and follow a comprehensive and structured approach to make you learn all the essentials in NLP. We will be covering the following aspects during the course of this workshop with hands-on examples and projects!

## Course Outcome

*On successful completion of this course, the students should be able to:*

- Process text documents using Python
- Apply NLP to solve real-world problems
- Implement ML Projects involving NLP

## Course Contents

**Module 1:** Basics of Natural Language and Python for NLP tasks, Text Processing and Wrangling, Text Understanding - POS, NER, Parsing

**Module 2:** Text Similarity and Content Recommenders, Text Clustering, Topic Modelling, Text Summarization

**Module 3:** Sentiment Analysis - Unsupervised & Supervised

## Evaluation Scheme

Prerequisites		
Evaluation Scheme		
Sr. No	Specifications	Marks
1	Assignments	40
2	Class Participation	20
3	Lab Evaluation	40
	<b>Total (100)</b>	<b>100</b>

## References

- Daniel Jurafsky and James H Martin. Speech and Language Processing, 2e, Pearson education, 2009
- James A.. Natural language Understanding 2e, Pearson Education, 1994
- Bharati A., Sangal R., Chaitanya V. Natural language processing: a Paninian perspective, PHI, 2000
- Siddiqui T., Tiwary U. S. Natural language processing and Information retrieval, OUP, 2008



# VALUE ADDED COURSE

**Academic Year-2017-18**

Offered by

**Department of Computer Science Engineering**

**INSTITUTE OF ENGINEERING AND TECHNOLOGY**

**JK Lakshmipat University**

Name of the Course

**REFRESHER COURSE IN COMPUTER SCIENCE**

Course Faculty (s)

**Dr. Sonal Jain, Dr. Alok Kumar, Prof. Gireesh Kumar,  
Prof. Devendra Bhavsar, Prof. Gireesh Kumar, Dr. Kavita Choudhary,  
Dr. S Taruna, Dr. Alok Kumar, Prof. Devendra Bhavsar, Prof. Amit Mishra**

Course Code

**NA**

Course Duration

**30 Hrs.**

Offered to

**B.Tech. Computer Science Engineering Students**

## Course Description

The course will strengthen the concepts of Programming in students



## Course Outcome

*On successful completion of this course, the students should be able to:*

1. Revive concepts of Computer Science
2. Attempt Placement Technical rounds with confidence

## Course Contents

Database Concepts, C-Programming, Operating Systems, Computer Architecture, Software Engineering, Object Oriented Concept-Java, Networking, Data Structures and Design & Analysis of Algorithm, Web Technologies

## Evaluation Scheme

Prerequisites		
Evaluation Scheme		
Sr. No	Specifications	Marks
1	Quiz	40
2	Class Participation	20
3	Mock Interview	40
	<b>Total (100)</b>	<b>100</b>

## References

Materials Suggested by individual faculties



# VALUE ADDED COURSE

**Academic Year-2018-19**

Offered by

**Department of Computer Science Engineering**  
**INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
**JK Lakshmipat University**

Name of the Course

**SCALING AND CONNECTING NETWORKS**

Course Faculty (s)

**DEVENDRA BHAVSAR**

Course Code

**NA**

Course Duration

**45 Hrs.**

Offered to

**B.Tech. Computer Science Engineering Students**

## Course Description

Scaling and Connecting Networks covers the architecture, components, and operations of routers and switches in larger and more complex networks. This course also discusses the WAN technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Students learn how to configure routers and switches for advanced functionality. The course includes activities using Packet Tracer, hands-on lab work, and a wide array of assessment types and tools.

## Course Outcome

On successful completion of this course, the students should be able to:

1. Configure and troubleshoot routers and switches.
2. Resolve common issues with OSPF, EIGRP, and STP in both IPv4 and IPv6 networks.
3. Implement a WLAN in a small-to-medium network.
4. Resolve common issues with data link protocols.
5. Resolve common issues with OSPF, EIGRP, and STP in both IPv4 and IPv6 networks.
6. Implement virtual private network (VPN) operations in a complex networks.

## Course Contents

**Module 1:** LAN Design: Campus Wired LAN Designs, Selecting Network Devices, Scaling VLANs, VTP, Extended VLANs, and DTP, Troubleshoot Multi-VLAN Issues, Layer 3 Switching, STP: Spanning Tree Concepts, Varieties of Spanning Tree Protocols, Spanning Tree Configuration, Link Aggregation Concepts, Link Aggregation Configuration, First Hop Redundancy Protocols.

**Module 2:** Dynamic Routing Protocol, Distance Vector Dynamic Routing, Link-State Dynamic Routing, EIGRP Characteristics, Implement EIGRP for IPv4, EIGRP Operation Implement EIGRP for IPv6, Troubleshoot EIGRP Single-Area OSPF: OSPF Characteristics, Single-Area OSPFv2 Single-Area OSPFv3.

**Module 3:** Multiarea OSPF operation, Configuring Multiarea OSPF operation, Advanced Single-Area OSPF Configurations, Troubleshooting Single-Area OSPF Implementations, WAN Concepts, WAN Technologies Overview, Selecting a WAN Technology.

**Module 4:** Serial Point-to-Point Overview, PPP Operation, Configure PPP, Troubleshooting PPP, Remote Access Connections, PPPoE, VPNs, GRE, BGP, Access Control Lists, Standard ACL Operation and Configuration Review, Extended IPv4 ACLs, IPv6 ACLs, Troubleshoot ACLs

**Module 5:** Network Security and Monitoring, LAN Security, SNMP, Cisco Switch Port Analyzer (SPAN), Quality of Service, QoS Overview, QoS Mechanisms, Network Evolution, Internet of Things, Cloud and Virtualization, Network Programming and Troubleshooting, Troubleshooting Methodology, Troubleshooting Scenarios.

## Evaluation Scheme

Prerequisites		Introduction to Networks, Switching and Routing
Evaluation Scheme		
Sr. No	Specifications	Marks
1	Quiz (CISCO Chapter Exams)	40
2	Theory Exam-III (CISCO Final Exam)	40
3	Lab Evaluation-II (CISCO Lab Exam)	20
Total (100)		100

## References

### Text Books:

1. Lammle, T. (2016). CCNA Routing and Switching Complete Study Guide: Exam 100-105, Exam 200-105, Exam 200-125. John Wiley & Sons.
2. Lammle, T. (2013). CCNA routing and switching study guide: exams 100-101, 200-101, and 200-120. John Wiley & Sons.
3. Lammle, T. Cisco Certified Network Associate Study Guide. 2nd. Edition

### Reference Books:

1. Stallings, W. (2004). Computer networking with Internet protocols and technology. Upper Saddle River, NJ, USA: Pearson/Prentice Hall.
2. Kurose, J., & Ross, K. (2010). Computer networks: A top down approach featuring the internet. Pearson Addison Wesley.
3. Lammle, T. (2011). CCNA Cisco Certified Network Associate Deluxe Study Guide. John Wiley & Sons.



**Value Added Course**  
Academic Year 2018-19

# DIGITAL SYSTEM DESIGN USING FPGA

Faculty: Dr. Devika Kataria  
Mr. Divanshu Jain

Course Duration: 36 Hours

Offered: 2017-21 B.Tech. EE; 2017-21  
B.Tech. ECE

The course helps students design Digital logic circuits using VHDL programming and implement the design on FPGA boards.

## Course Outcome

After the completion of the course, the student would be able to

1. Describe Hardware description languages (HDL).
2. Design Digital Circuits.
3. Write behavioral, structural and dataflow models of digital circuits.
4. Synthesize RTL models to standard cell libraries and FPGAs.
5. Implement FSM using HDL.

## Course Content

### Module 1

Hardware design of advanced digital circuits using VHDL programming: Behavioral, Data flow, Structural Models, Library, Packages, Functions, Procedures, Processes.

### Module 2

Understand the Verilog HDL language basics, Use Verilog HDL building blocks (design units) including modules, ports, processes, and assignments, Model code styles including behavioral code style and structural code style

### Module 3

Design of logic machines. Finite state machines, gate array designs. Design of energy efficient architectures

## Evaluation Scheme:

Components	Weightage
Assignment	10
Quiz	20
Theory Exam-III	30
Project I	20
Project III	20
Total	100

1. Ronald J. Tocci, Widmer and Moss, "Digital Systems-Principles and Applications", Pearson Education, 10th Edition.
2. Jayaram Bhasker, "A VHDL Primer", Prentice Hall, 3rd edition.



## Value Added Course Academic Year 2018-19

# ELECTRICAL POWER SYSTEMS

Faculty: Dr. Jagdish Prasad Sharma

Course Duration: 30 Hours

Offered: 2018-22 B. Tech. EEE

This course familiarizes you with standards and policies of the electric utility industry, and provides you with basic vocabulary used in the business. It introduces the electric power system, from generation of the electricity all the way to the wall plug. You will learn about the segments of the system, and common components like power cables and transformers. This course is for individuals considering a career in the energy field (who have a high school diploma, at minimum, and basic knowledge of mathematics), and existing energy sector employees with less than three years of experience who have not completed similar training and would benefit from a course of foundational industry concepts.

## Course Outcome

On successful completion of this course, students should be able to

1. Identify the segments of the electrical power system and common electrical power components.
2. Differentiate between low, medium and high circuit breakers. Also evaluate the difference between switches and circuit breakers.
3. Differentiate the parts of a smart grid and identify the benefits of each part.
4. Identify reasons that renewable energy sources are sustainable and fossil fuels are unsustainable.

## Course Content

### Module 1

Substations layout & Transformers; Generation; Transmission & Sub transmission and Distribution, Equipment grounding, Neutral grounding

### Module 2

System Design & Switching, Relay, Circuit breakers, switches, electromechanical devices

### Module 3

Renewable Energy & Smart Grid Technologies, Smart Grid Risks; Smart Grid, Utilities & Customers; Smart Grid & the Environment and Renewable Energy.

## Evaluation Scheme:

Components	Weightage
Class Participation	20
Quiz 1	35
Quiz 2	35
Attendance	10
Total	100

1. J. Nagrath and D. P. Kothari, "Power System Engineering", TMH publication.
2. C. L. Wadhwa, "Electrical Power System", New age international publisher.
3. Coursera material on electric-power-systems, available at: <https://www.coursera.org/learn/electric-power-systems/resources/IAR01>.
4. Central Electrical Authority Reports, available at: <http://cea.nic.in/monthlyexesummary.html>



**Value Added Course**  
Academic Year 2018-19

# ELECTRIC VEHICLE CHARGING TECHNOLOGIES

Faculty: H. P. Agrawal

Course Duration: 30 Hours

Offered: 2017-21 B. Tech. ECE; 2017-21  
B. Tech. EE

This course is aimed at developing the required understanding the principle operation and design of adequate Charging Infrastructure. It focusses to ensure safe, reliable, accessible and affordable Charging Infrastructure and eco-system. Students able to develop proactively support creation of EV Charging Infrastructure with the identification and mitigation of safety hazards. The course will help students to work on live projects on charging systems of electric vehicle to gain advance knowledge and same time apply the skill gained.

## Course Outcome

On successful completion of this course, the students should be able to:

1. Learn operation principle of electric cars.
2. Analyze the charging of EV
3. Identify the types of charging stations.
4. Apply suitable charging infrastructure technologies and innovations for EV.
5. Determine an optimal charging strategy for a long-range EV

## Course Content

### Module 1: Introduction (06 Hrs.)

Introduction to Electric Vehicle

Electric motor

Power electronic in an electric car  
Regenerative braking

### Module 2: Battery Technology for EVs (08 Hrs.)

Storage technologies for EV

Battery working principles

Battery losses

Li-ion batteries

### Module 3: Charging Technology of EVs (08 Hrs.)

Type of AC charging

Type of DC charging

Fast charging and its limitations

Smart charging and applications

Vehicle to grid (V2G) technology

### Module 4: New trends of EV charging (08 Hrs.)

Wireless charging of EV

On-road charging of EV

Charging EVs from renewables

## Evaluation Scheme:

Components	Weightage
Assignment	20
Class Participation	20
Quiz	30
Lab Evaluation-1	30
Total	100

1. Mehrdad Ehsani, Uimin Gao and Ali Emadi, "Modern Electric, Hybrid Electric and Fuel Cell Vehicles – Fundamentals, Theory and Design", Second Edition – CRC Press, 2010.
2. James Larminie and John Lowry, "Electric Vehicle Technology Explained", John Wiley & Sons Ltd, 2003.
3. Sandeep Dhameja, "Electric Vehicle Battery Systems", Newnes, New Delhi, 2002.



**Value Added Course**  
Academic Year 2018-19

## EMBEDDED SYSTEM PROJECTS

Faculty: Dr. Devika Kataria  
Mr. Divanshu Doodeja

Course Duration: 30 Hours

Offered: 2016-20 B.Tech. ECE, 2016-20  
B.Tech. EE, 2016-20 B.Tech. CSE

The course provides hands-on experience on Embedded systems and IoT. The students will be able to develop innovative projects using microcontrollers and upload the data to cloud server.

### Course Outcome

On successful completion of this course, students should be able

1. Develop C programs on microcontroller for reading or writing to ports.
2. Interface sensors with microcontroller and read the sensor values in digital form.
3. Process the sensor values (for edge device) and transmit the results to server/users.
4. Design printed circuit board layout and implement the hardware with optimum components with minimum energy consumption and cost.

### Course Content

Familiarization with MSP430 architecture and Code composer Studio, MSP430 Programming with C, Working with I/O ports, Interrupt handling, Signal Processing, Digital Communication with internal UART, SPI, I2C Protocols

### Evaluation Scheme:

Components	Weightage
Quizzes	10
MID TERM Theory Exam	20
END TERM Theory Exam	20
Project - 1	50
Total	100

1. John H. Davies, "MSP430 Microcontroller Basics", Newnes, Elsevier.
2. Datasheet - Mixed Signal Microcontroller, Texas instruments, available at: [https://www.ti.com/lit/ds/slas735j/slas735j.pdf?ts=1611070322916&ref\\_url=https%253A%252F%252Fwww.google.com%252F](https://www.ti.com/lit/ds/slas735j/slas735j.pdf?ts=1611070322916&ref_url=https%253A%252F%252Fwww.google.com%252F).



## Value Added Course Academic Year 2018-19

# MATLAB PROGRAMMING IN COMMUNICATION SYSTEMS

Faculty: Dr. Divyang Rawal  
Mr. Divanshu Jain

Course Duration: 30 Hours

Offered: 2016-20 B.Tech. ECE; 2016-20  
B.Tech. EE

This course is designed to help the students to understand wireless communication systems and use of MATLAB programming to implement. The course involves the MATLAB programming for Digital and Wireless Communication with emphasis on OFDM and MIMO Simulations to verify the communication performance.

## Course Outcome

On successful completion of this course, the participants should be able to:

- 1.Explain fundamental concept related to Digital and Wireless communication.
- 2.Design, Simulate and Analyze basic communication system using MATLAB.
- 3.Implement and analyze various diversity techniques using MATLAB to improve the SNR.
- 4.Design and Simulate OFDM system using MATLAB to generate high data rate communication with a sensitivity to sustainability

## Course Content

### Module 1

Basic of Digital and Wireless Communication system and its performance. Understanding and Simulation of flat fading. Matlab Programming for Transmitter and Receiver Diversity systems

### Module 2

Understanding Multipath fading and Use of OFDM and Cyclic prefix in Communication System. Simulation of OFDM system over multipath channel.

### Module 3

Understanding Simulation of Spatial Multiplexing MIMO systems. Design a Communication system using Matlab Programming.

## Evaluation Scheme:

Components	Weightage
Class Participation	20
Quiz - 1	35
Quiz - 2	35
Attendance	10
Total	100

- 1.Theodore S. Rappaport, "Wireless Communication Principles and Practice", second edition, Pearson Education, 2002.
- 2.Theodore S. Rappaport, "Wireless Communications", Cambridge University Press, 2005.
- 3.E-resource: <http://www.dsblog.com/>





## Value Added Course Academic Year 2018-19

# TRANSFORMER TESTING

Faculty: Dr. Jagdish Prasad Sharma

Course Duration: 32 Hours

Offered: 2015-19 B.Tech. EE

This course provides hands-on practice on routine test to conform performance of Transformer. The importance of planning and preparation for the project, from engineering to commissioning and start up, will be emphasized. In this course, routine test such as magnetic balance test, insulation resistance test, vector group, magnetic balance test and earthing pit resistance measurement etc. were covered. The course will also develop understanding about the safety considerations for power transformer

## Course Outcome

On successful completion of this course, students should be able to

1. Describe the major categories and the most common designs of transformers.
2. Identify power, instrument and distribution transformer components and auxiliary equipment.
3. Demonstrate routine and diagnostic inspections and point out potential problems and hazards.
4. Interpret nameplate data and use the data to set up correct test procedures. Simulate appropriate tests to evaluate the condition and perform maintenance on transformers.
5. Discuss testing and troubleshooting procedures for transformer.

## Course Content

### Module I

Introduction, Safety for Technicians, Transformer Types, Transformer Designs, Cooling, Components and Indicators, Nameplate Data, Inspections, Visual (Routine) Inspections, Recommendations for Testing and Maintenance.

### Module II

Transformer DC, General Safety Precautions, DC Testing, Insulation Resistance, Winding Resistance, Power Factor, testing and maintenance procedure.

### Module III

Magnetic balance test, insulation resistance test, open circuit test, vector group, magnetic balance test and earthing pit resistance measurement

## Evaluation Scheme:

Components	Weightage
Class Participation	20
Quiz - 1	35
Quiz - 2	35
Attendance	10
Total	100

1. Manual – Standardization manual on power transformer, Indian Electrical & Electronics Manufacturers Association (IEEMA).
2. S. Rao, “Testing, commissioning, operation and maintenance of electrical equipment”, Khanna Publishers, New Delhi.



**JK LAKSHMIPAT UNIVERSITY**  
**Institute of Management**

## Value Added Course

Academic Year- 2018-19

## LIBERAL ARTS

Course Duration: 30-34 hours

Offered to: Students of MBA- Sem. IV, BBA/  
B.Com (H)- Sem. VI

### OVERVIEW:

JKLU is creating some great opportunities for students to learn in a holistic manner. To nurture interdisciplinary thinking, JKLU is organising a Liberal Arts Week from 12th-17th February 2019 at the University on three impactful topics - Business and Sustainability, Governance and Public Policy, and Law and Ethics.

These courses are being delivered over 6 days by some of the best experts for these topics in the country at your very own University.

We believe that is a very interesting opportunity for the students to learn more about some of the most significant topics in that impact the world and society at large from world class external faculty and experts. These can become some things worth highlighting in their CV, cover letters and SOPs, in their conversations and to enhance their awareness and decision making skills.

## COURSES WITH FACULTY PROFILE LINKS

Course - Business and Sustainability

Faculty - Meena Vaidyanathan

Dates - 12th and 13th February

Duration - 10-11 hours

Course - Public Policy and Governance

Faculty - Mitali Nikore and Ankitha

Cheerakathil

Dates - 14th and 15th February

Duration - 10-12 hours

Course - Law and Ethics

Faculty - Yugank Goyal

Dates - 16th and 17th February

Duration - 10-11 hours

## EVALUATION SCHEME

Component	Weightage
Class Participation and Class Attendance	20%
Assignment Report and Presentation	50%
Quizzes	30%

## REFERENCES

Participants will be provided recorded lectures for pre-requisites and the online classes. No books will be prescribed.



## Value Added Course

Academic Year 2018-19

### 3D MODELLING USING CREO

Faculty: Mechanical Engineering

Mechanical Engineering Department is conducting a student's in-house training program on CREO software.

#### Course Outcome

After the completion of this course students will be able to

- Understand the concept of engineering drawing.
- 3D modelling using creo2.0 software.
- Create assembly from the part.

#### Course Content:

##### Day 1

Introduction to CAD/CAM/CAE Software, Sketcher Module, Part Module Extrude, Revolve

##### Day 2

Work Practice, Datum Features Plane and Axis, Sweep, Pattern.

##### Day 3

Work Practice, Dress up features (Hole, Shell, Draft), Round, Chamfer, Blend Tool

##### Day 4

Sweep Blend, Assignments, Work Practice, Relation, Family table, UDF.

##### Day 5

Design Capture, Copy, Assembly Top down and Bottom up, Assembly Assignment

##### Day 6

Work Practice, Flexible Modelling, Detailing

#### Evaluation Scheme:

Components	Weightage
Work Practice 1	10
Work Practice 2	10
Work Practice 3	15
Work Practice 4	15
Full Day Assignment	25
Full Day Assignment	25
Total	100

#### References:

1. Mastering CAD/CAM, Ibrahim Zeid, McGraw Hill Education; 2nd edition (7 August 2006).
2. CAD/CAM Paperback, M. Groover, Pearson, Kindle Edition, 2003.



## Value Added Course

Academic Year 2018-19

# AUTOCAD

### Faculty: Mechanical Engineering

The Department of Mechanical Engineering is planning to conduct AutoCAD training program for 3rd year students of Mechanical Engineering Department from 11th March 2019 to 16th March 2019.

### Course Outcome

After the completion of this course students will be able to

- Understand the concept of engineering drawing.
- 2D modelling using AutoCAD software.
- Create parts of assembled components.

### Course Content:

#### Day 1

Introduction, Basics of AutoCAD, and Application, Geometry and Viewing , Assignment-1

#### Day 2

Geometry and Precision, Layers, Assignment-2

#### Day 3

Properties, Modifying, Assignment-3

#### Day 4

Blocks and Layout (session-1), Blocks and Layout (session-2), Assignment-4

#### Day 5

Notes and Labels, Dimensions and Printing, Assignment-5

#### Day 6

Assignment-6 and Practice session-1, Practice session-2

### Evaluation Scheme:

Components	Weightage
Assignment 1	20
Assignment 2	20
Assignment 3	20
Assignment 4	20
Assignment 5	20
Total	100

### References:

1. Mastering AutoCAD 2018 and AutoCAD LT 2018, George Omura, Brian C. Benton
2. AutoCAD 2020 For Beginners by CADFolks



**Value Added Course**  
Academic Year 2018-19

# DESIGN AND FABRICATION OF 4-WHEELER CHASSIS

Faculty: Mechanical Engineering

This course is offered by ME Department to 3rd year students from 10 to 15 Dec 2018.

In this workshop the Frame of a car provides the skeletal structure of the vehicle. It provides the primary means of ensuring the safety of the driver. In particular, the material selection and standards for tube thicknesses for various parts of the frame ensures that a properly designed frame will protect the driver in the case of a crash. The team then calculated a safety factor as 1.5.

In order to create and test our frame we used CATIA V5R20 CAD software and FEA simulations. We created the frame from scratch to help gain insight into how the frame was put together.

In the design process of the frame the major issues we had to take into consideration were structural rigidity, manufacturability, ergonomics, and overall weight. Of paramount concern in any car is the safety and survivability of the frame and by extension the driver. The frame must be tested to ensure that in the event of a crash no part of the frame with break or experience enough deflection to put the driver at risk. To aid in this analysis the proper geometric rules in regard to triangulation of structural members and cockpit design were used. Though our car complies with standard frame rules we based our own static FEA analysis of the frame on these same tests.

## Course Outcome

1. Able to do 3D modelling of products
2. Able to import the 3D models to different software.
3. Able to do static and dynamic analysis with various loading conditions.
4. Able to select and apply material properties to the product

## Evaluation Scheme:

Components	Weightage
Hands on practice	50
Viva	50
Total	100

## References:

1. Automotive Chassis- Heldt .P. M, Chilton Co., (Nyack, N.Y., P.M. Heldt, 1945) Literary Licensing, LLC, 2012.
2. Automotive Mechanics- N.K. Giri, 8th Edition, Khanna Publications, New Delhi, 2008.
3. Automobile Engineering / William H Crouse
4. Text Book Automobile Engineering-Manzoor, .Nawazish Mehdi & .Yosuf Ali, Frontline Publications.
5. Kamaraju Ramakrishna, "Automobile Engineering", PHI Learning, New Delhi, 1st Print, 2012.
6. Jain & Asthana, "Automobile Engineering", Tata McGraw-Hill, New Delhi, 2002