GURU NANAK DEV ENGINEERING COLLEGE, BIDAR, KARNATAKA

VALUE ADDED COURSES

SYLLABUS

Session 2018-2019

PRINCIPAL
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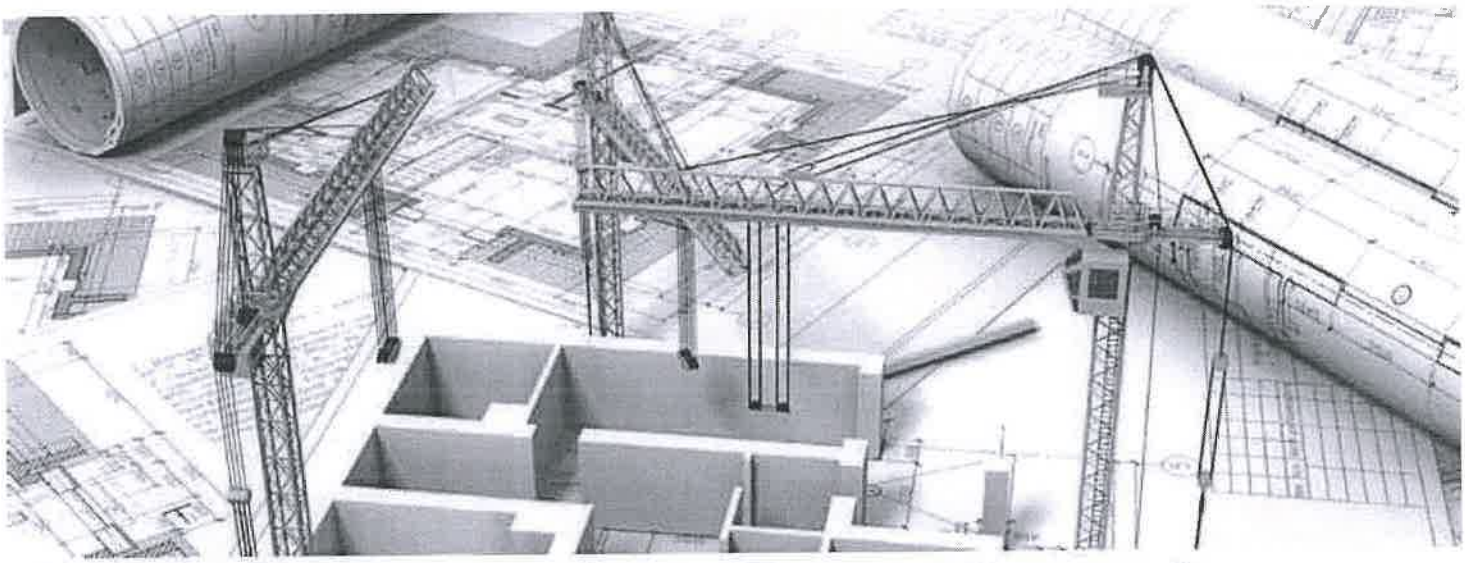

Civil Engineering Department

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Law For Engineer

Total Duration: 35 Hrs.

Course Objectives:

The aim of the course is provide general exposure to the students about the elementary knowledge of law that would be of utility in their profession; to enable the students to appreciate the importance of law and its impact on business and society.

Course Outcome:

1. Identify and explore the basic features and modalities about Indian constitution.
2. Differentiate and relate the functioning of Indian parliamentary system at the center and statelevel.
3. Differentiate different aspects of Indian Legal System and its related bodies.
4. Discover and apply different laws and regulations related to engineering practices.
5. Correlate role of engineers with different organizations and governance models

Detailed Syllabus:

Unit I - Introduction to Law and Law Making

Law: its meaning, sources and concepts; Constitutional Law with emphasis on Fundamental Rights, Directive Principles of State Policy and Fundamental Duties; Law making in India.

Unit II – General Principles of Contract under Indian Contract Act, 1872

Sec. 1 to 75 of Indian Contract Act and including Government as contracting party, Kinds of government contracts and dispute settlement, Standard form contracts; Promissory Estoppel and Legitimate Expectations

Unit III – Adjudicatory System in India

Adjudicatory System in India as under the Constitution and statutes; Tribunals and Commissions like Competition Tribunal and Consumer Protection Commissions; Alternative Dispute Resolution: Nature, Scope and Types; Arbitration and Conciliation Act, 1996; Legal Services Authority Act, 1986.

Unit IV – Law Relating to Intellectual Property

Concept of Property, Types of Property; Introduction to IPR; Types of IPR: Copyrights, Patents, Trademarks, Designs, Trade Secrets, Plant Varieties and Geographical Indications; Infringement of IPRs and Remedies available under the Indian Law.

Unit V – Privacy in Governance and Transparency

Confidentiality in Government Business/Administration: Official Secrets Act, 1923; Right to Information Act, 2005 covering, Evolution and concept; Practice and procedures; Privileged Communications under the Indian Evidence Act, 1872; Offences under the Information Technology Act, 2000 with special reference to Protected Systems; Labour Disputes and the Settlement – Industrial Disputes Act, 1947; Collective bargaining; Industrial Employment (Standing Orders) Act, 1946; Payment of Wages Act, 1936.

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Reference:

1. D.D. Basu (1996), Shorter Constitution of India, Prentice Hall of India
1. M.P. Jain (2005), Indian Constitutional Law, Wadhwa & Co.
2. M.P. Singh (1998), Constitutional Law of India, Eastern Book Co.
3. P.M. Bakshi (2003), Constitution of India, Universal Law Publishing Co.
4. H.M. Seervai (1993), Constitutional Law of India, Tripathi Publications

5. Agarwal H.O.(2008), International Law and Human Rights, Central Law Publications
6. S.K. Awasthi & R.P. Kataria(2006), Law relating to Protection of Human Rights, Orient Publishing
7. S.K. Kapur(2001), Human Rights under International Law and Indian Law, Central Law Agency Meena Rao (2006), Fundamental concepts in Law of Contract, 3rd Edn. Professional Offset
8. Neelima Chandiramani (2000),The Law of Contract: An Outline, 2nd Edn. Avinash Publications
9. Mum Avtarsingh(2002), Law of Contract, Eastern Book Co.
10. Dutt(1994), Indian Contract Act, Eastern Law House
11. Anson W.R.(1979), Law of Contract, Oxford University Press
12. Kwatra G.K.(2005), The Arbitration & Conciliation of Law in India with case law on UNCITRAL Model Law on Arbitration, Indian Council of Arbitration Effective

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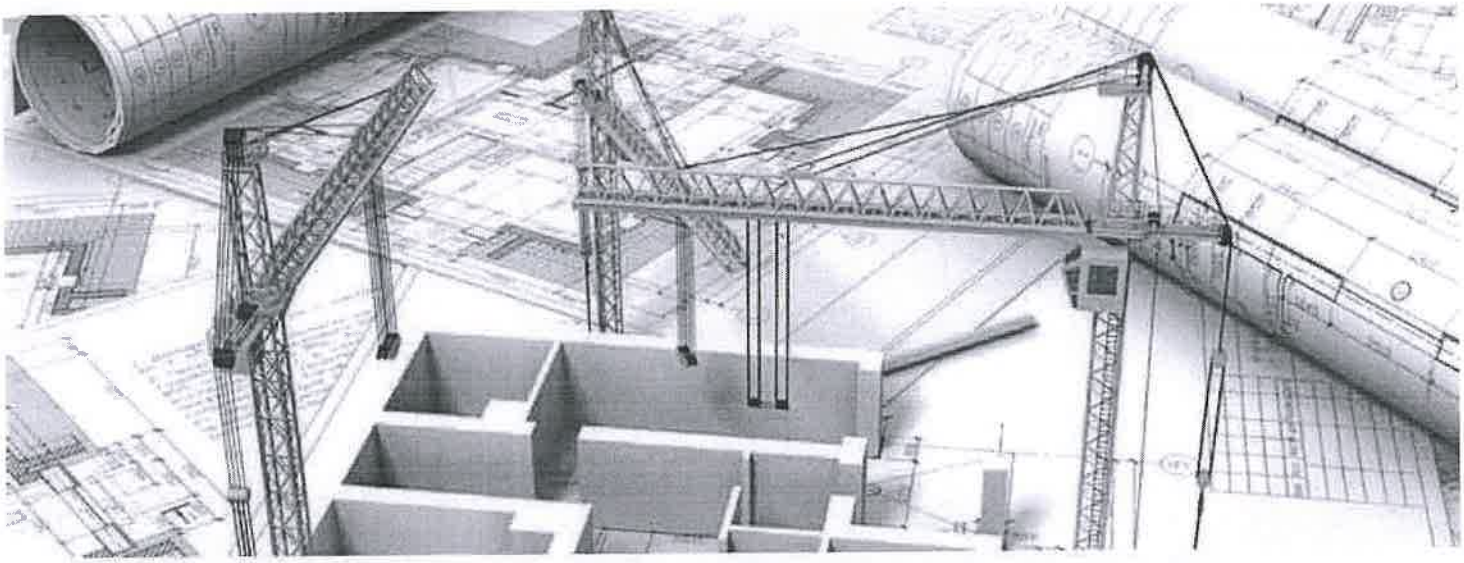

Civil Engineering Department

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ANSYS

Total Duration: 36 Hrs.

Course Objectives:

To impart knowledge on

1. Basic solid mechanics concept
2. ANSYS® Structural Training
3. ANSYS® 1D,2D & 3D FE Analysis
4. ANSYS® Workbench FE Analysis

Course Outcome:

1. Get familiarized with the basic concepts of solid mechanic
2. Use ANSYS® FEA for numerical simulation
3. Demonstrate the 1D, 2D and 3D ANSYS® FEA
4. Understand ANSYS® Workbench platform.
5. Use ANSYS® for the new product development.

Detailed Syllabus:

UNIT I

BASIC SOLID MECHANICS

Concept of FBD, Different Sources of Loads, Load Path, Concepts of Stress & Strain, Engineering Materials. Stress ,Designation, Combined Stresses, Stress Transformation, Principal Stresses, Theories of Failure, Stress Concentration.

UNIT II

ANSYS® 16.0 – STRUCTURAL TRAINING (1D PROBLEMS

Demonstration on Various Menu's in ANSYS® GUI. Workshops on 1D Problems. Hands-on Training in various 1D problems like bar, beam etc.,

UNIT III

ANSYS® 16.0 – STRUCTURAL TRAINING (2D PROBLEMS)

Workshops on 2D Meshing and Workshops on 2D Analysis. Hands-on Training in various 2D problems like planar symmetry problems, plane stress problems, plane strain problems & axi-symmetric problems.

UNIT IV

ANSYS® 16.0 – STRUCTURAL TRAINING (3D PROBLEMS)

Workshops on 3D Meshing and Workshops on 3D Analysis. Hands-on Training in various 3D problems.

UNIT V

ANSYS® 16.0 – WORKBENCH TRAINING

Workshops on ANSYS Workbench. Hands-on Training in ANSYS Workbench. Introduction to Composite Modeling inANSYS® Workbench.

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Text Book:

1. Erdogan Madenei, Ibrahim Guven, "The Finite Element Method and Applications in Engineering Using ANSYS®",
Springer, 2011.
2. Srinivas Paleti, Sambana Krishna Chaitanya, Datti Rajesh Kumar, "Finite element analysis using ANSYS 11.0", PHI, 2010.

Reference Book:

1. Sham Tickoo, "ANSYS Workbench 14.0 for Engineers and Designers", DreamTech Press, 2013.

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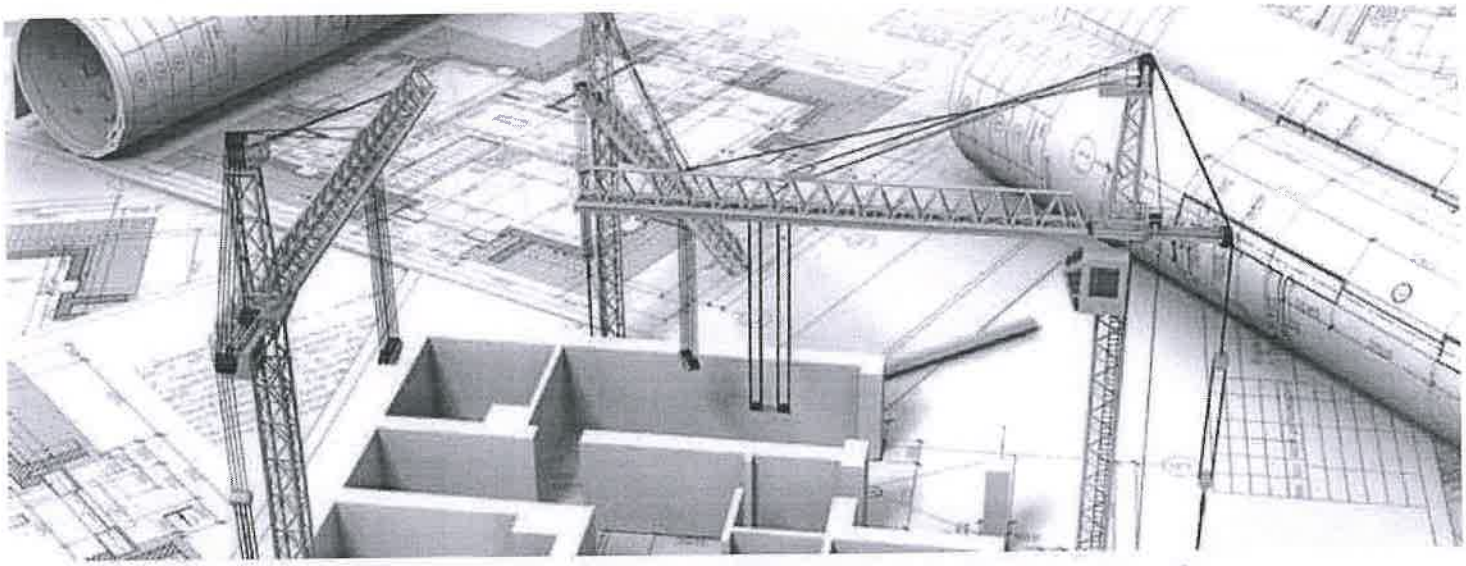

Civil Engineering Department

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Personal Development and Grooming

Total Duration: 35 Hrs.

Course Description

The objective of the programme is to build self-confidence, enhance self-esteem and improve overall personality of the participants. The programme aims at grooming the participants through sensitizing them about proper behavior, socially and professionally, in formal and informal circumstances

Learning objective

1. Capable of performing better in their roles as leaders based on the situation.
2. Create awareness in the participants with regard to the different aspects of interpersonal relations
3. Improve participants to be better communicators by providing them with relevant inputs and also sharpening their skills

Detailed Syllabus:

Unit I - Leadership

Leadership: Introduction to Leadership, Leadership Power, Leadership Styles, Leadership in Administration, Interpersonal Relations: Introduction to Interpersonal Relations, Analysis Relations of different ego states, Analysis of Transactions, Analysis of Strokes, Analysis of Life position

Unit II – Communication

Communication: Introduction to Communication, Flow of Communication, Listening, Barriers of Communication, How to overcome barriers of communication, Stress: Introduction to Stress, Causes of Stress, Impact Management Stress, Managing Stress.

Unit III – Group Dynamics

Group Dynamics: Importance of groups in organization, and Team Interactions in group, Group Building Decision Taking, Team Building, Interaction with the Team, How to build a good team ,Conflict: Introduction to Conflict, Causes of Conflict, Management Managing Conflict.

Unit IV – Peformance

Performance: Introduction to Performance Appraisal, Appraisal Vertical Appraisal, Horizontal Appraisal, 360° Performance Appraisal, Methods of improving Techniques of Performance Appraisal ,Time as a Resource, Identify Important Time Management Wasters, Individual Time Management Styles, Techniques for better Time Management.

Unit V – Motivation

Motivation: Introduction to Motivation, Relevance and types of Motivation, Motivating the subordinates, Analysis of Motivation

References Book

1. 1. "Personality Development and Soft Skills" by Barun Mitra
2. 2. "Personality Development" by Swami Vivekananda
3. 3. "The Power of your Subconscious Mind" by Joseph Murphy

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Session 2018-2019

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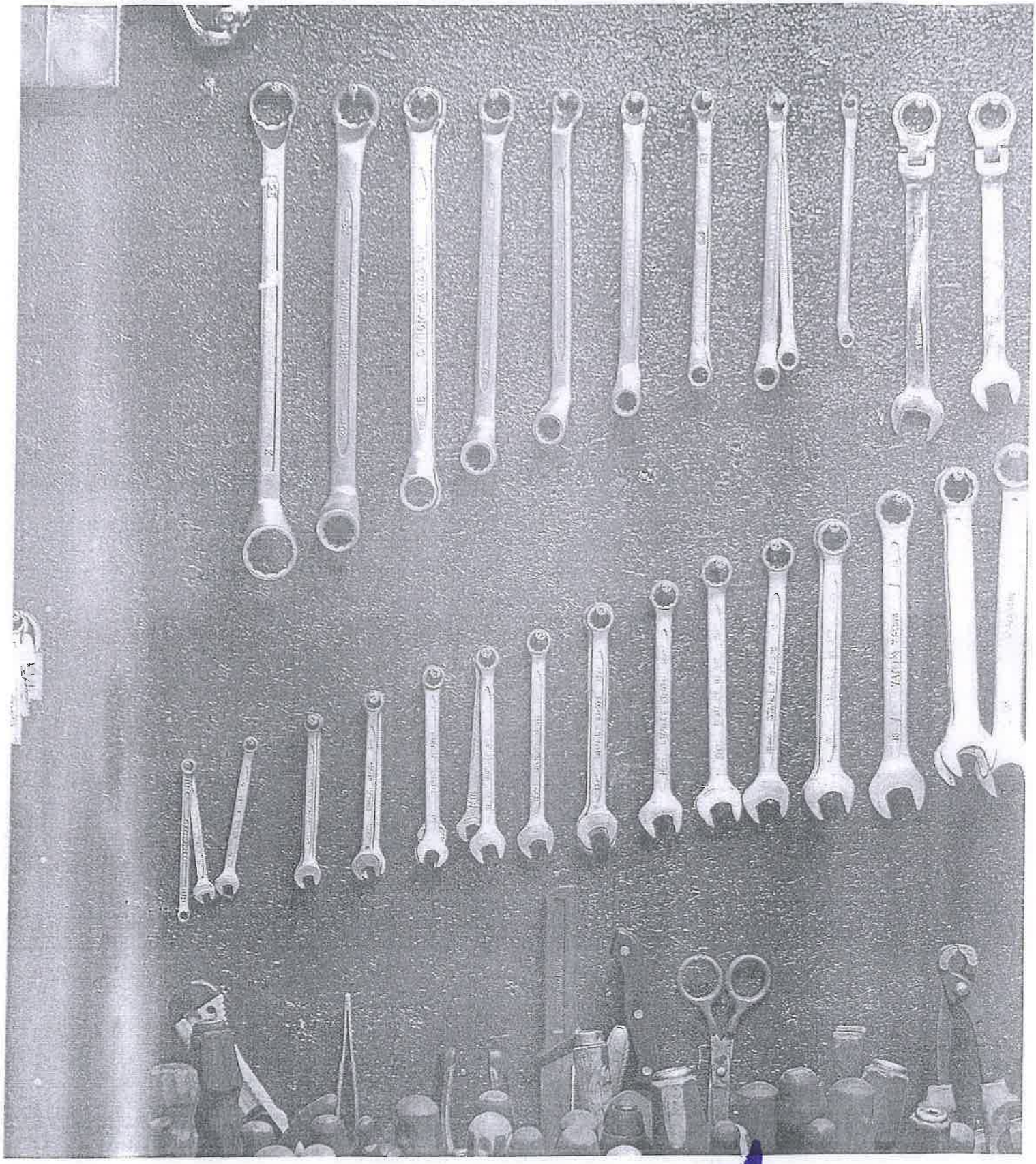
DEPARTMENT OF MECHANICAL ENGINEERING



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3-D Printing

Total Duration: 30 Hrs.

Course Objectives:

3D Printing is a method of creation that requires computer skills. This course will allow students to discover the potential of 3D printing. This course is an excellent option for anyone who ever wanted to prototype an invention, create a work of art, customize a product

Course Outcomes:

Upon completion of this course, students will be able to:

- Demonstrate knowledge of key historical factors that have shaped manufacturing over the centuries Explain current and emerging 3D printing applications in a variety of industries
- Describe the advantages and limitations of each 3D printing technology
- Evaluate real-life scenarios and recommend the appropriate use of 3D printing technology
- Identify opportunities to apply 3D printing technology for time and cost savings
- Discuss the economic implications of 3D printing including its impact on startup businesses and supply chains
- Design and print objects containing moving parts without assembly

About 3D Printing

Industries and institutions are fast adopting 3D Printing. They employ engineers and designers with 3D printing training as prototype and product engineers. 3D Printing experts are employed in design houses that provide 3D design, 3D computer-aided design (CAD) modeling, biological and scientific modeling.

Detailed Syllabus:

MODULE- I

Introduction to 3D Printing.Types of 3D Printing ,Working Principal of 3D Printer

MODULE-II

Principle Processes-Extrusion, Wire granular Lamination, Photo polymerization, Materials-Paper, plastics,Metals,Ceramic s, Glass , Wood, Fiber, Sand, Biological

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tissues Hydrogels, Graphene, Material selection-Processes,applications,limitations

MODULE-III

Inkjet Technology Printer-Working principles , Positioning systems, Print head, print bed, Frames, Motion control; print head considerations- Continuous Inkjet , Thermal Inkjet, Piezoelectric Drop on Demand

MODULE-IV

Material formulation for jetting: Liquid based fabrication Continuous Multijet Powder based fabricxation-color jet

MODULE-V

Industrial Applications; Product Models, manufacturing –Printed electronics, Biopolymers, Packaging,Healthcare , Food , Medical,Biotechnoly,Display : Open Source: Future Trends

References Book

1. Functonal Design for 3D Printing: Designing Printed Things for Every Usebook – Clifford Smyth
2. 3D concrete PrintingTechnology: Construction and Building Applications –Jay G Sanjayan Publisher Butterworth Heinemannh
3. 3D Printing Technology, Applications and Selection –Rafiq Noorani

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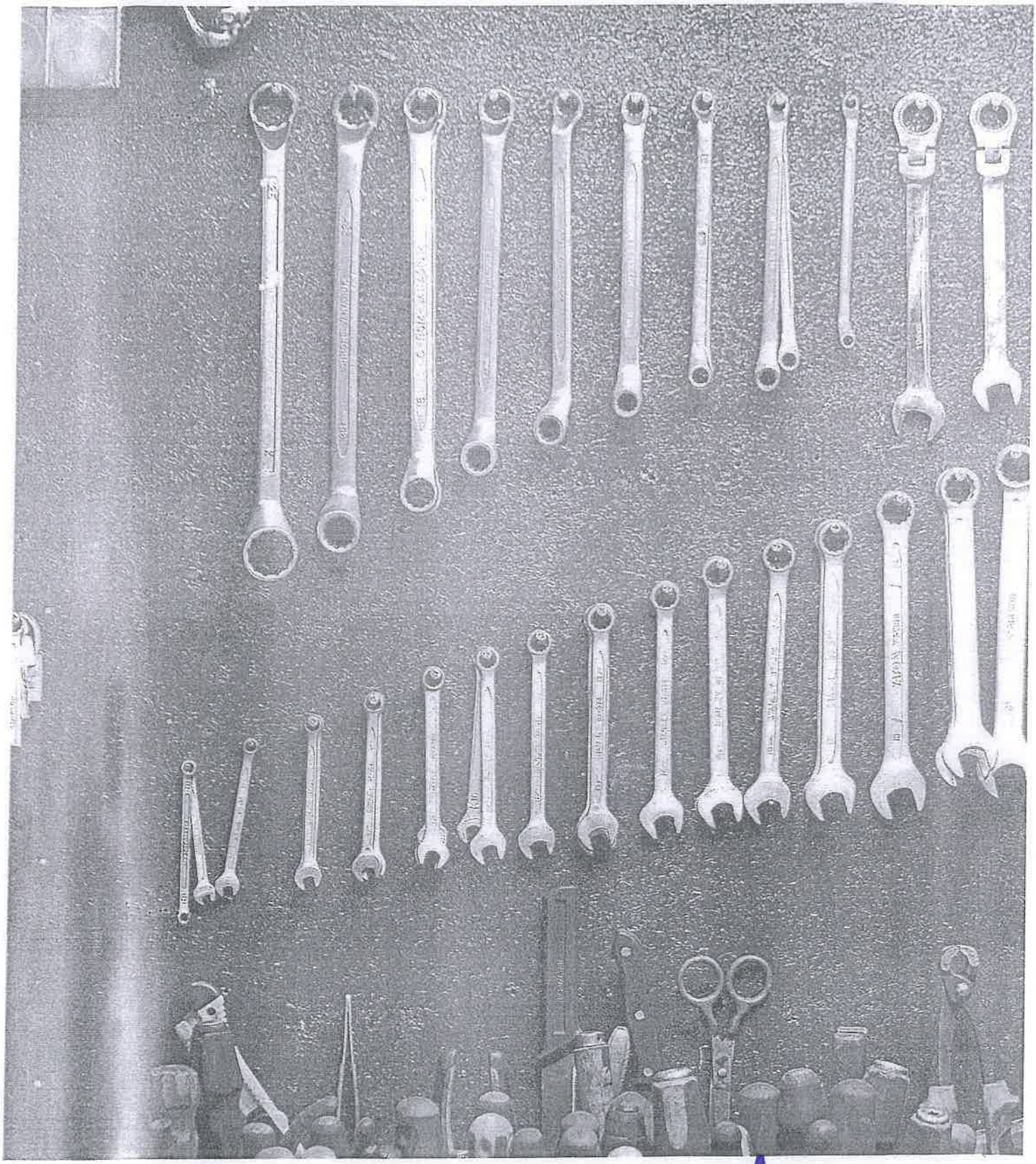
DEPARTMENT OF MECHANICAL ENGINEERING



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Desktop Publication (DTP)

Total Duration: 30 Hrs.

Course Objectives:
This course provides an opportunity to produce a series of publications suitable for portfolio inclusion. Students will use industry-standard page-layout and graphics software. They will gain a thorough grounding in print production technology and procedures, including how to communicate with other print professionals, estimate costs, and deal with digital output

Course Outcome:
•Acquire and apply the skills to write works of fiction and non-fiction, edit professionally, create digital content, design print and web-based products, develop and manage writing and editing projects
• apply and creatively adapt theoretical and technical knowledge and skills to reflect the needs and expectations of varied readerships and markets

MODULE I:
Introduction to DTP, Introduction to Printing, Types of Printing, Offset Printing, Working of offset Printing, Transparent Printout, Negative & Positives for Plate ware making, Use of DeskTop Publishing in Publications, Importance of D. T. Pin Publication, Advantage of D. T. Pin Publication, Mixing of graphics & Image in a single page production, Laser printers - Use, Types, Advantage of laser printer in publication

MODULE II:
Introduction to adobe PageMaker/In-Design, PageMaker tool box, PageMaker palettes Menus, Icons and dialog box, the control palette, page layout, creating and saving documents, typography, Modifying character attributes, importing graphics, Editing and cropping images, Using the picture palette, The color palette.

MODULE III:
Introduction to Coral Draw graphics, Features of Corel Draw, Corel Draw Interface, Tool Box, Effects, Drawing and Coloring, Creating Basic Shapes, Working with Bitmaps, Applying effects on Bitmaps, Introduction to Text Tool, Artistic and paragraph text, Wrapping Text around Object.

MODULE IV:
Introduction to Basics of Quark express, navigating a QuarkXPress Document, Setting Up the Document, multi-page documents, formatting text, Manipulating Graphics

MODULE V :
Introduction to Photoshop, Understanding Tools & Workspace, Image/Photo Editing-Mixing- Enhancements, Converting Color to b/w and b/w to Color, Shortcuts to work efficiently, Creating Web Graphics.

TEXT & REFERENCE BOOKS:
1.Adobe PAGE MAKER .
2.Prakhar complete course for DTP

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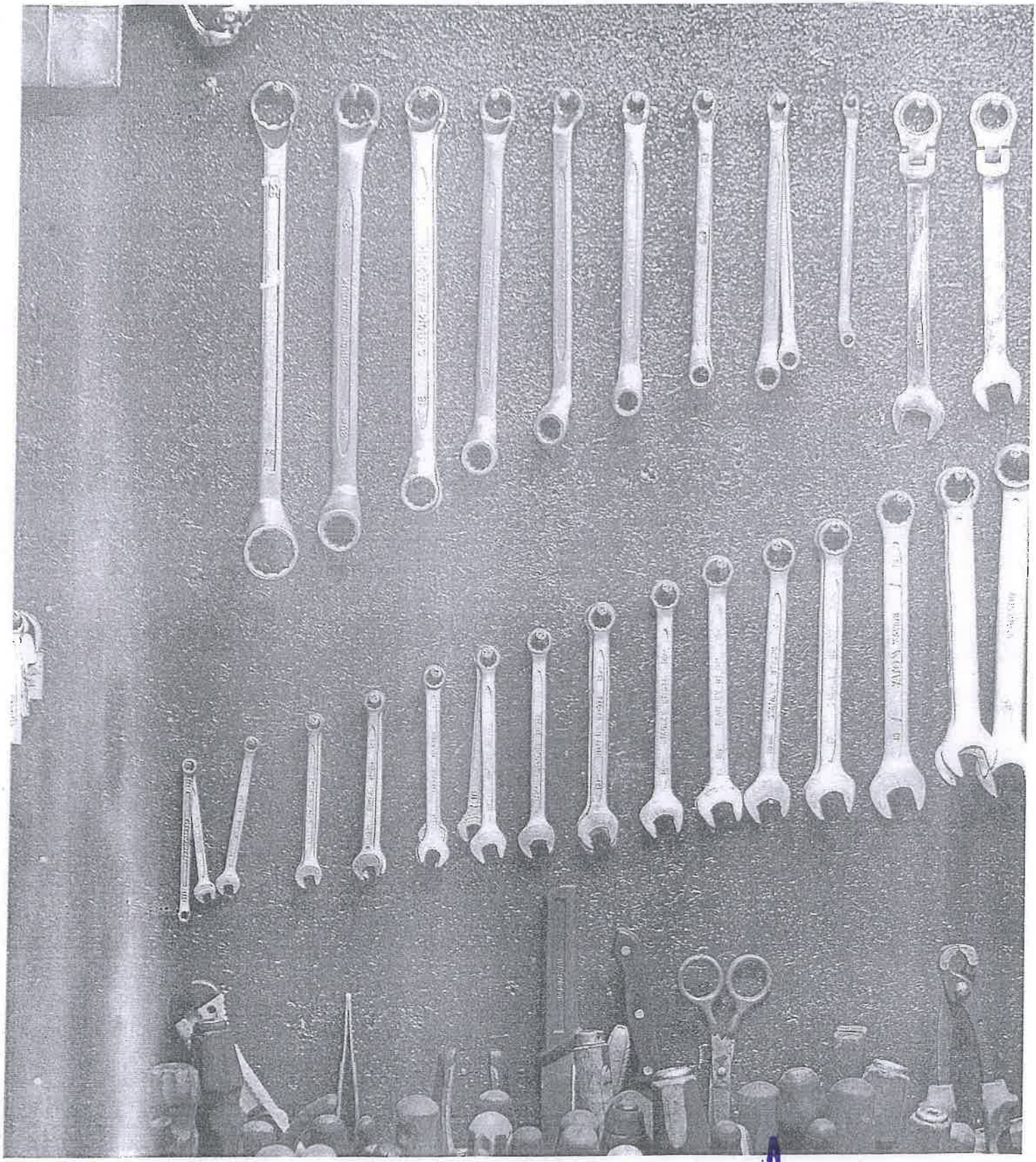

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ROBOTIC PROGRAMMING

Total Duration: 30hrs

COURSE OBJECTIVES:

To impart knowledge on

- Fundamentals of robot working, programming and integration in a manufacturing process
- Working of robot mechanical, power, measuring and control system, robot kinematics, dynamic,control and programming, Kinematics, path planning and control.
- Visualization on the view of the robotics impact in human future

COURSE OUTCOMES :

Upon completion of the course students will be able to

- Identify the importance of robotics in today and future goods production
- Explore knowledge on basics of robotics programming like VAL, AML
- Perform robot configuration and subsystems
- Analyze the principles of robot programming and handle with typical robot

MODULE I

Fundamentals of robot programming

- Robot – Definition
- Robot Anatomy
- Co-ordinate Systems,
- Pitch, Yaw, Roll, Joint Notations, Speed of Motion, Pay Load
- Robot Parts and Functions
- Need for Robots
- Different Applications

MODULE II

- Introduction to Robo DK
- 3D Mouse Navigation
- Keyboard Shortcuts
- Menu icons
- Robot controls and Simulation

MODULE III

- Robotics
- Computer Vision
- Microworld Simulation
- Introduction to dLife
- ControlCenter
- dLife Examples

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MODULE IV

- Vision
- Introduction to Python and Pyro
- Control Paradigms

MODULE V

- Manipulation
- Learning
- Mapping
- Multi-robot communication

WEB REFERENCES:

1. http://www.robotc.net/
2. http://www.toptal.com/robotics/programming-a-robot-an-introductory-tutorial
3. http://www.robotmaster.com/en/why-robotmaster

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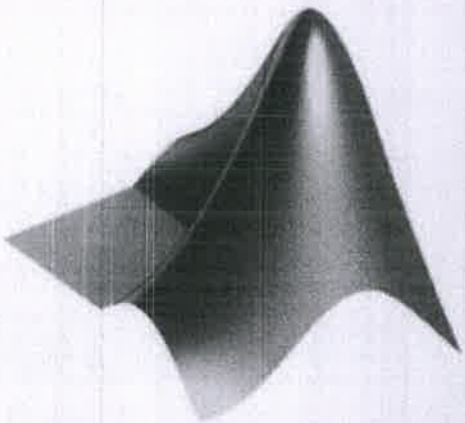

MATLAB

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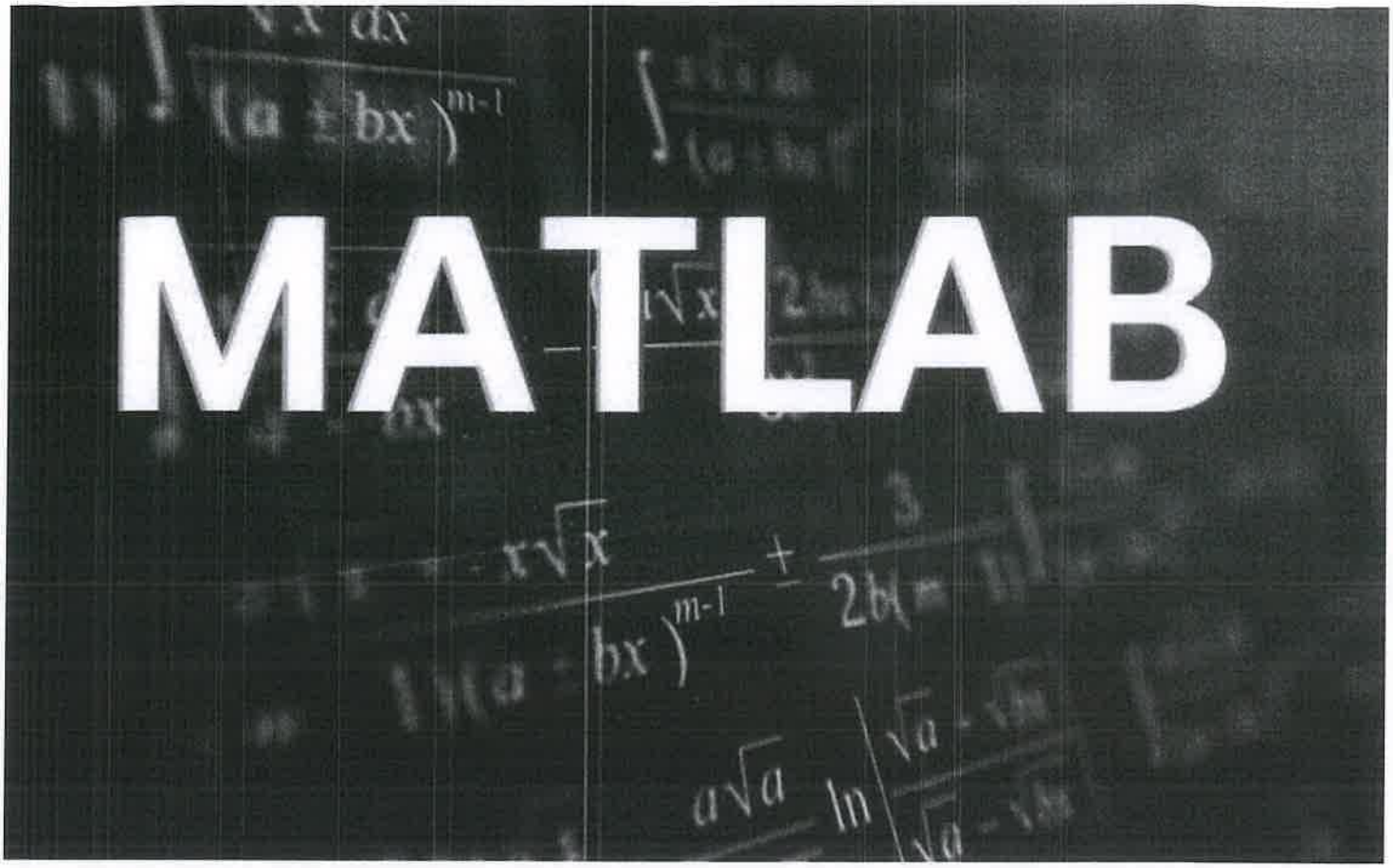

ELECTRICAL AND ELECTRONICS ENGINEERING

Mat lab for Engineers

Total Duration: 30 hrs

Course Objectives:

- MATLAB introduces students to basic MATLAB programming concepts.
- MATLAB is a software package for carrying out numerical computations and analyses.
- It uses blocks of data called matrices (MATLAB stands for matrix laboratory).
- MATLAB is probably the most commonly used scientific and engineering numerical software

About Mat lab:

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.

Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Understand fundamental operations in Matlab.	K3
CO2	Perform statistical data analysis, data interpolation by Matlab.	K4
CO3	Solve differentiation equation with Matlab.	K4
CO4	Acquire a reasonable level of competence in designing optimization algorithms, solve linearprogramming, constrained and unconstrained optimization problems by Matlab.	K4
CO5	Apply Matlab to solve practical engineering problems.	K3

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Detailed syllabus:

Topic 1: Introduction to MATLAB, Creating Variables, Some Useful MATLAB Functions, Data Types.

Topic 2: Script Files.

Topic 3: Introduction to Arrays, Graphing.

Topic 4: Good Programming Practices.

Topic 5: Input and Output Statements.

Topic 6: Conditional Statements.

Topic 7: Loops.

Topic 8: Nested Loops.

Topic 9: Arrays.

Topic 10: Array Functions.

Textbooks

- MATLAB: A Practical Introduction to Programming and Problem Solving, 3rd edition, Stormy Attaway,Elsevier

Reference Books:

- Bansal/Goel/Sharma-MATLAB and its Applications in Engineering-Pearson Education India; Second edition (1 March 2016) Peter I. Kattan
- MATLAB For Beginners: A Gentle Approach
- Gander, Walter-Learning MATLAB A Problem Solving Approach
- Lipsman, R.L. (et al.) -Multivariable Calculus with MATLAB®
- Quarteroni, Alfio, Saleri, Fausto, Gervasio, Paola-Scientific Computing with MATLAB and Octave- Springer

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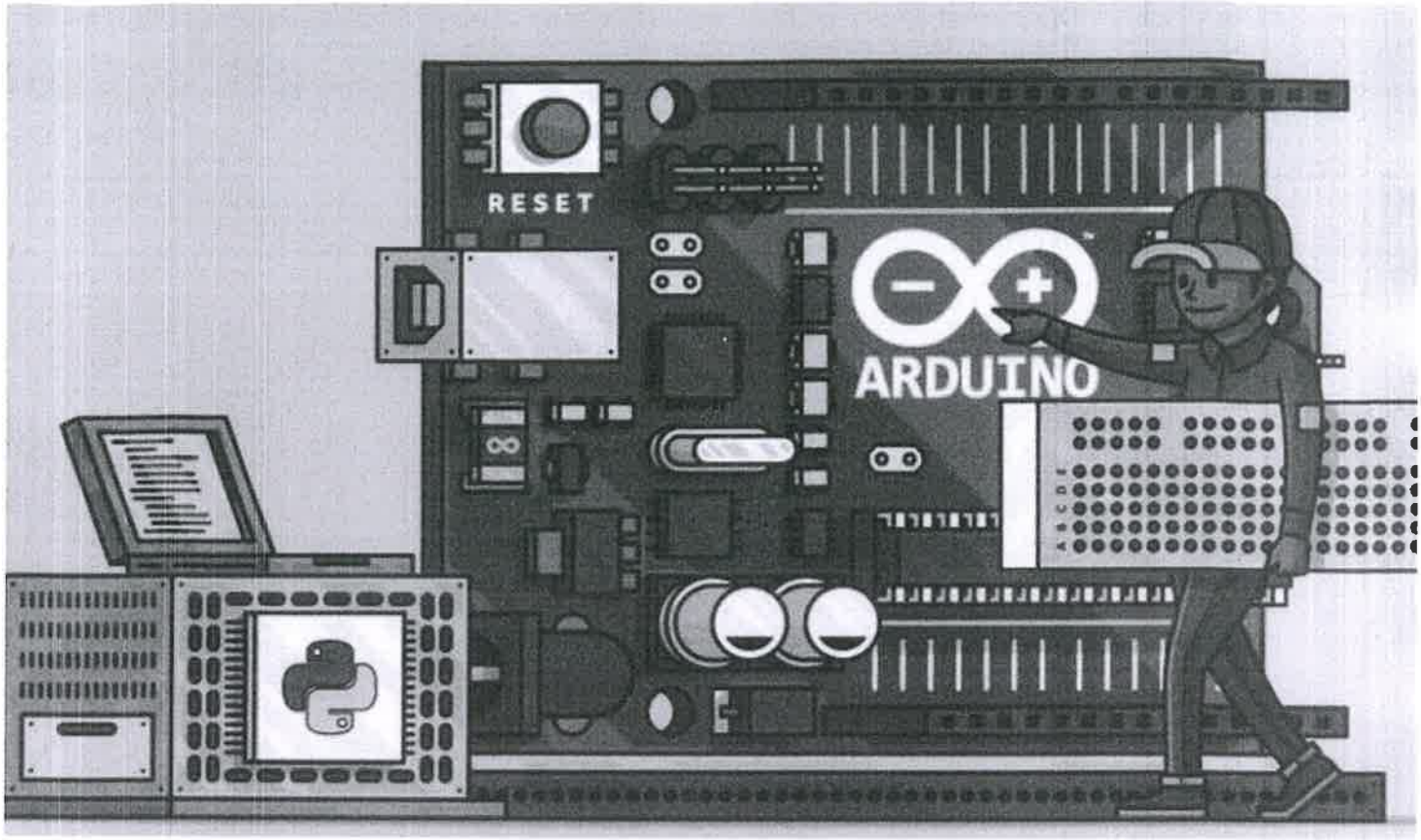
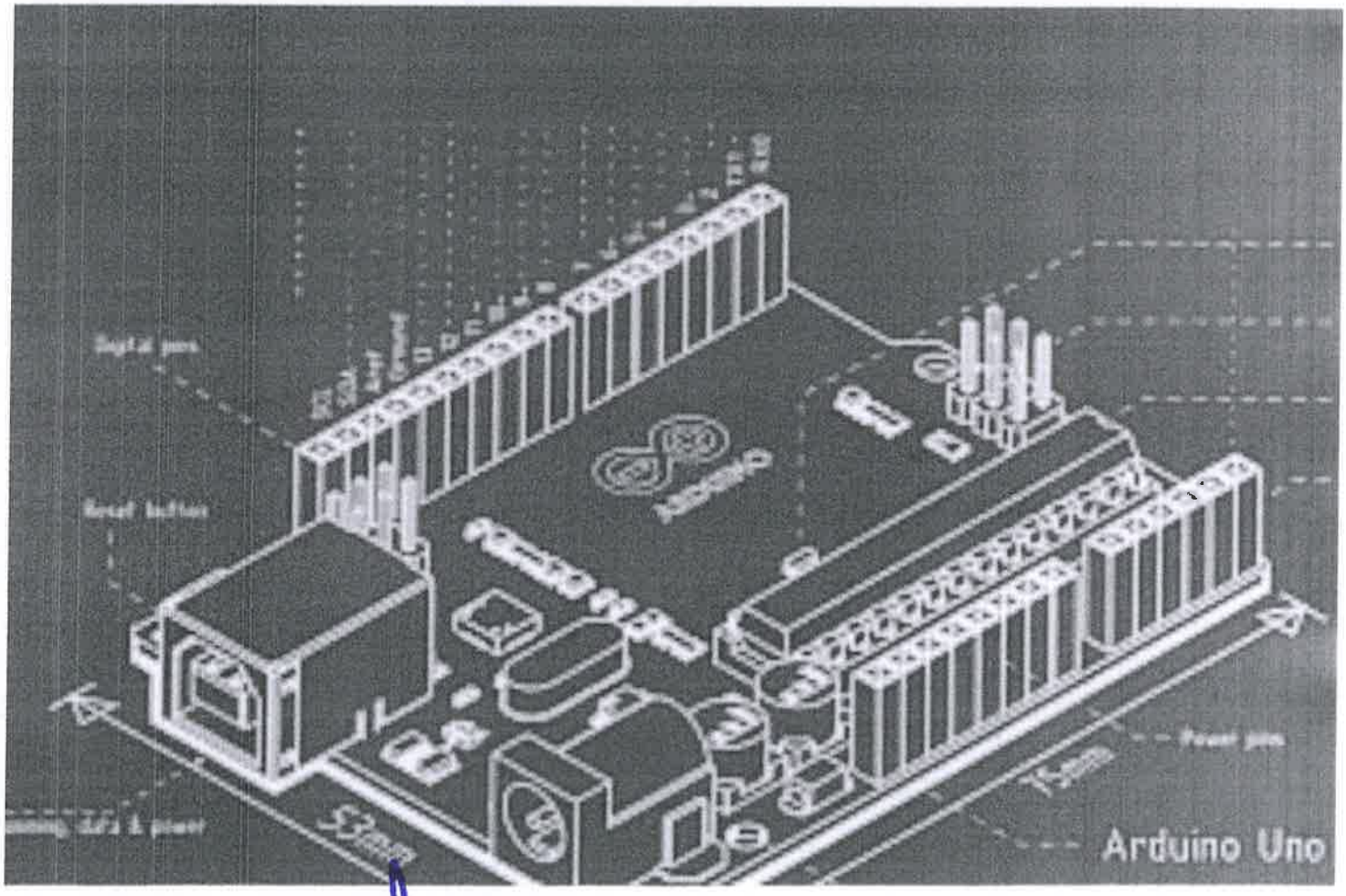


ELECTRICAL AND ELECTRONICS ENGINEERING



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ARDUINO Programming

Total Duration : 30 hrs

Course Objectives:

To impart knowledge on

- Relation between python and ARDUINO programming for developing applications.
- The working of python ARDUINO prototyping and networking.

About ARDUINO:

Arduino is an open-source platform that is a combination of hardware and software. Arduino is easily accessible - even for those who don't know much about electronics. Arduino boards are simple a type of microcontroller. They are able to read inputs from the sensors and turn those inputs into output.

Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Understand the basics of Ardunio.	K3
CO2	Develop simple programs using ARDUINO IDE.	K4
CO3	Create programs and interfacing ARDUINO with FIRMATA protocol.	K4
CO4	Design GUI for different applications.	K4
CO5	Develop web application using python.	K4

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Detailed syllabus:

UNIT I GETTING STARTED WITH PYTHON AND ARDUINO

Introduction to Python-Installing Python and Setup tools -The fundamentals of Python programming-Introduction to Arduino-Getting Started with the Arduino IDE-Introduction to Arduino programming

UNIT II WORKING WITH FIRMATA PROTOCOL AND THE PYSERIAL LIBRARY

Connecting the Arduino board- Introducing the Firmata protocol- Getting started with pySerial-Bridging pySerial and Firmata- Motion-triggered LEDs- Using a standalone Arduino sketch- Using Python and Firmata

UNIT III PYTHON-ARDUINO PROTOTYPING

Prototyping- Working with pyFirmata methods- Prototyping templates using Firmata- Prototyping with the I2C protocol

UNIT IV WORKING WITH THE PYTHON GUI

Learning Tinker for GUI design- Your first Python GUI program- Widgets- Storing and plotting Arduino data - Working with files in Python- Getting started with matplotlib-Plotting real-time Arduino data

UNIT V INTRODUCTION TO ARDUINO NETWORKING

Arduino and the computer networking- Developing web applications using Python- RESTful web applications with Arduino and Python- MQTT – A lightweight messaging protocol

WEB REFERENCES:

- http://www-01.ibm.com/software/data/infosphere/hadoop/what-is-big-data-analytics.html
- https://education.emc.com/guest/campaign/data_science.aspx
- https://www.thoughtworks.com/big-data-analytics 4. http://birtanalytics.actuate.com/what-is-big-
- data-analytics

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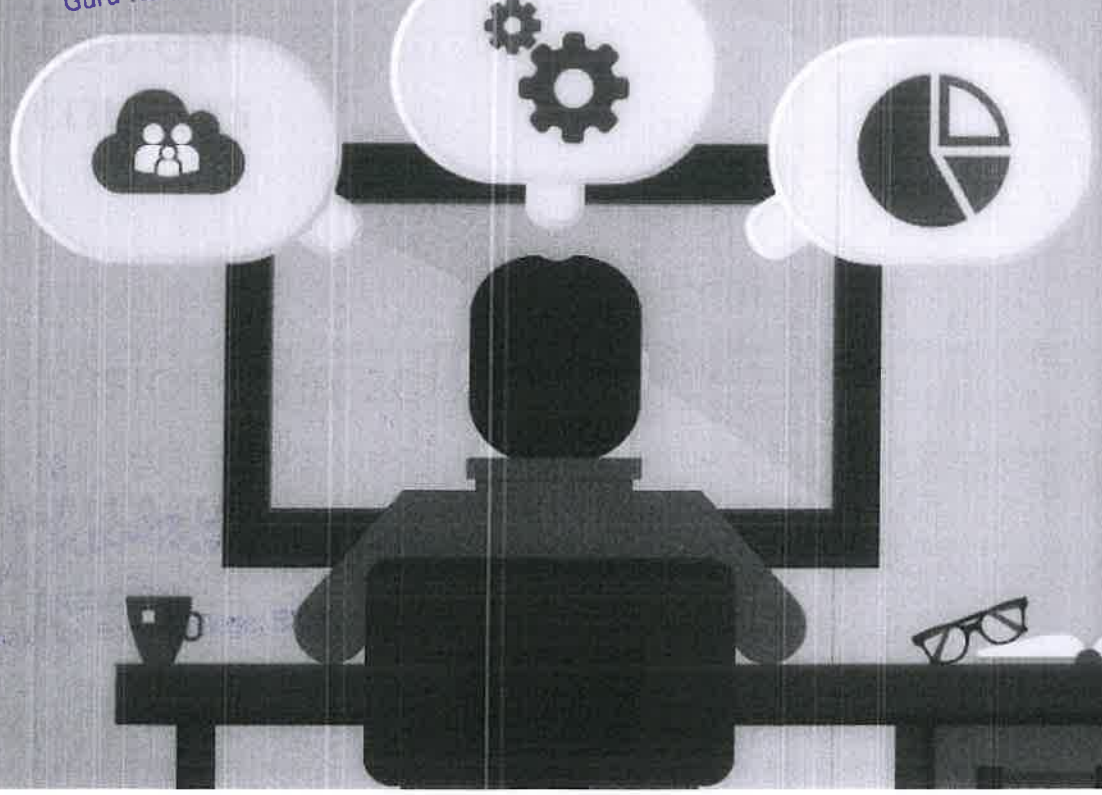

ELECTRICAL AND ELECTRONICS ENGINEERING

JAVA Programming

Total Duration: 30 hrs

Course Objectives:

To impart knowledge on

- The principles and practice of object oriented analysis and design in the construction of robust, maintainable programs which satisfy the requirements given
- Competence to design, write, compile, test and execute straightforward programs using a high level language;
- Have an awareness of the need for a professional approach to design and the importance of good documentation to the finished programs.
- To be able to implement, compile, test and run Java programs comprising more than one class, to address a particular software problem.

About JAVA:

Java is a general-purpose, class-based, object-oriented programming language designed for having lesser implementation dependencies. Java is a programming language and a platform. Java is a high level, robust, object-oriented and secure programming language.Java was developed by Sun Microsystems. Java is fast, secure, and reliable. Therefore. It is widely used for developing Java applications in laptops, data centers, game consoles, scientific supercomputers, cell phones, etc.

Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Understand various types of selection constructs in a Java program.	K3
CO2	Use built-in classes found in the Java API	K4
CO3	Create Java programs that leverage the object-oriented features of the Java language.	K4
CO4	Apply error-handling techniques using exception handling.	K4
CO5	Provide solution to a given set of requirements using threads, multithreading and synchronization.	K3

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Detailed syllabus:

MODULE 1: Java Fundamentals

Introduction to Java – Features of java – JVM – API document – Naming conventions and Data types - Data types in java – Operators

MODULE 2: Declarations, Initializations and Scoping

Accepting Input from the keyboard – Reading Input with Scanner class- Arrays – Single Dimensional Array – Two dimensional Array – Jagged arrays – Strings- String Buffer and String Builder class- Access specifier

MODULE 3: Flow Control

If else statement- do while loop – for loop – Nested for loops – for each loops – switch statement – break statement- continue statement – return statement

MODULE 4: Object Oriented Concepts

Classes and objects – Methods in java – Relationship between objects – Inheritance – Polymorphism- Type casting – Abstract Classes – Interfaces – Packages

MODULE 5: API Contents

Java 3D- Java Advanced Imaging – Java Mail – Java Message Service – Java Media Framework –Java Naming and Directory Interface – Java OpenGL

MODULE 6: Exceptions, Generics and Collections

Errors in java Program – Exception handling mechanism – throw clause- Types of Exceptions -Generic classes – Collection objects – Sets – Lists – Queues – Maps – Stack class- HashSet class –ArrayList class – Vector class – StringTokenzier class – Calendar class- Date class

MODULE 7: Threads

Single tasking – Multi tasking – Uses of threads – Thread class methods – Deadlock of threads –thread Communication – Thread priorities – Thread group – Daemon threads – Application ofthreads.

WEB REFERENCES:

- http://www3.ntu.edu.sg/home/ehchua/programming/java/j2_basics.html
- http://beginnersbook.com/java-tutorial-for-beginners-with-examples/

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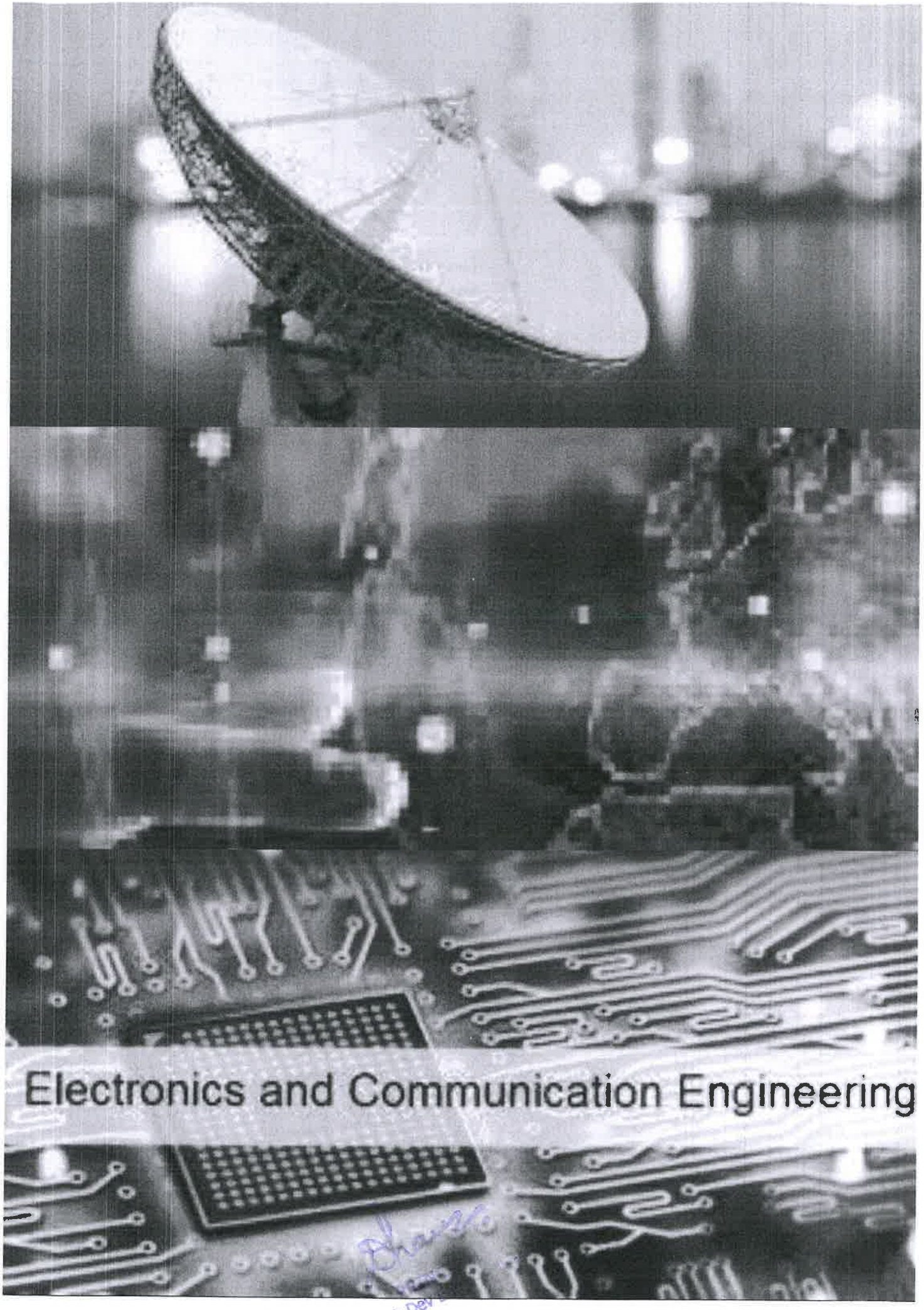


Electronics and Communication Engineering

ARDUINO
Programming

Total Duration: 30 Hrs.

Pre-requisites of course: C Programming, Microcontroller, Microprocessor

Course Objectives:

To impart knowledge on

1. Relation between python and ARDUINO programming for developing applications
2. The working of python ARDUINO prototyping and networking

About Arduino: Arduino is an open-source hardware and software company, project, and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices.

Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Develop simple programs using ARDUINO IDE	K3
CO2	Create programs and interfacing ARDUINO with FIRMATA protocol	K6
CO3	Design GUI for different applications	K4
CO4	Develop web application using python	K3

KL-Bloom's Knowledge Level (K1, K2, K3, K4, K5.K6)

K_1-Remember K_2 - Understand K_3-Apply K_4.- Analyze K_5.- Evaluate K_6.- Create

Detailed Syllabus:

UNIT-I

GETTING STARTED WITH PYTHON AND ARDUINO:
Introduction to Python-Installing Python and Setup tools -The fundamentals of Python programming Introduction to Arduino-Getting Started with the Arduino IDE-Introduction to Arduino programming.

UNIT-II

WORKING WITH FIRMATA PROTOCOL AND THE PYSERIAL LIBRARY:
Connecting the Arduino board- Introducing the Firmata protocol- Getting started with pySerial Bridging pySerial and Firmata- Motion-triggered LEDs- Using a standalone Arduino sketch- Using Python and Firmata

UNIT –III

PYTHON-ARDUINO PROTOTYPING:
Prototyping- Working with pyFirmata methods- Prototyping templates using Firmata- Prototyping with the I2C protocol

UNIT-IV

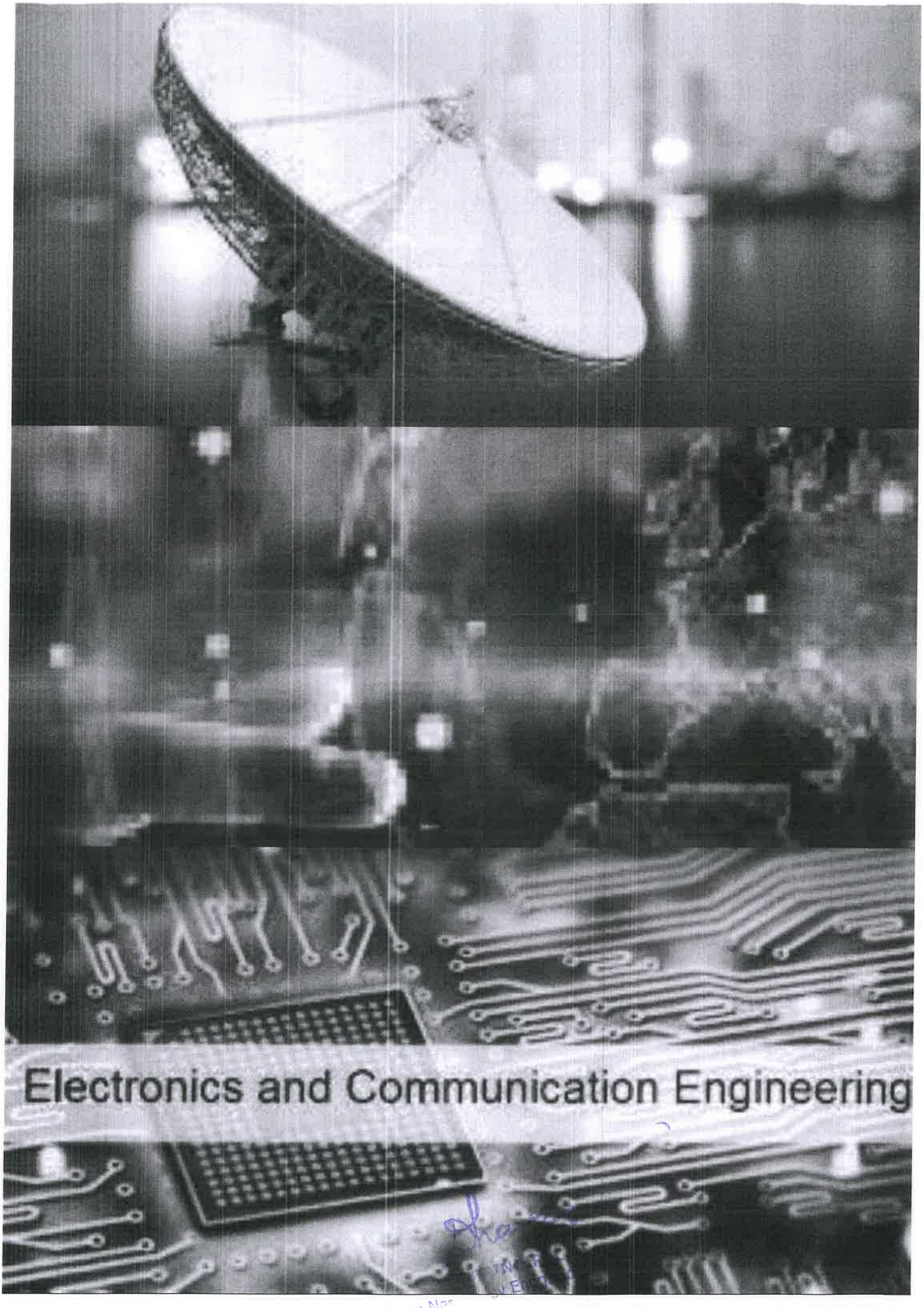
WORKING WITH THE PYTHON GUI:
Learning Tkinter for GUI design- Your first Python GUI program- Widgets- Storing and plotting Arduino data - Working with files in Python- Getting started with matplotlib-Plotting real-time Arduino data.

UNIT-V

INTRODUCTION TO ARDUINO NETWORKING:
Arduino and the computer networking- Developing web applications using Python- RESTful web applications with Arduino and Python- MQTT – A lightweight messaging protocol

WEB REFERENCES:

1. http://www.forefront.io/a/beginners-guide-to-arduino
2. http://www.robotshop.com/blog/en/arduino-5-minute-tutorials-lesson-2-basic-code-blink-led-2-3639
3. https://www.arduino.cc/en/Tutorial/Sketch



Electronics and Communication Engineering

MATLAB
Programming

Total Duration: 36 Hrs.

Pre-requisites of course: C Programming. Basics of Engineering Mathematics, 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 to 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.

Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Understand the basics of Matlab	K3
CO2	Break a complex task up into smaller, simpler tasks	K4
CO3	Case Study (Any two Modules)	K4
CO4	Tabulate results and Analyse	K4
CO5	Bridge the skill gaps and will be ready for industry.	K4

KL-Bloom's Knowledge Level (K1, K2, K3, K4, K5.K6)
K_1-Remember K_2- Understand K_3-Apply K_4.- Analyze K_5.- Evaluate K_6.- Create

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Detailed Syllabus:

UNIT-I

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

UNIT-II

Programming with simple examples:

UNIT -III

Discussion of Toolboxes with Applications:

Signal Processing Image Acquisition toolbox Image Processing, Neural Network, Fuzzy Logic Toolbox

UNIT-IV

Simulink and Hardware Interfacing (Using Kils: Lego. Raspberry Pl. Mind storms etc.)

UNIT V

Introduction to Simulink

Introduction. Getting Simulink. Creating and Simulating a Simulink Model. Simulink Solution of Differential Equation Solvers, Keystrokes or Mouse Action for Handling Blocks and lines. Assigning Variables. Observing Variables during Simulation, Storing/Saving Data, Linking Script File/M-file with Model Fie. Data Import. Export Creating and Masking Subsysterms. Solution Using Laplace transform Approach. Simulation of Non Linear System Equivalent circuit

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 Front the software sector includes:

- Adobe Photoshop

All the banking companies which involve c- unches of calculations such as Citi-Bank, HDFC do implement concepts indirectly.

References Book

1. MATLAB Manuals and Handbooks.
2. Duane Hanselman, Bruce Lake Field "**Mastering MATAB-7**", Pearson Education India.

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ADD-ON COURSES

SYLLABUS

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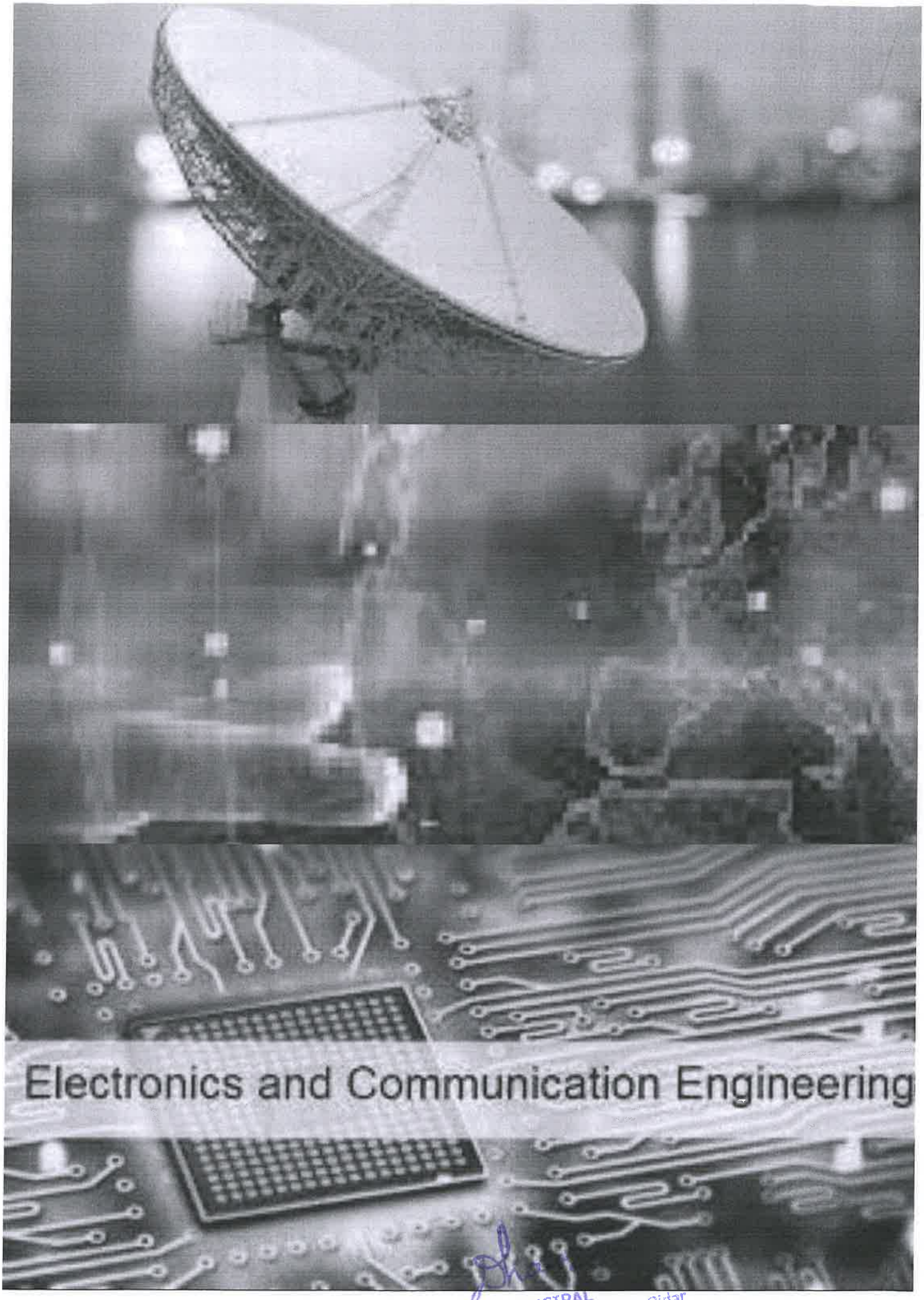

MOBILE AD-HOC NETWORK
(GNEC718)

Total Duration: 31 Hrs. Total Duration: 40hrs

Objectives:

1 . To understand basics of Wireless 4G cnd 5G LTE (Long Term Evolution), OFDM Transmission.

2. To Study physical layer for downlink.

3. To Understand Wireless Ad Hoc Networks, Wireless mesh Networks, Broadband Wireless Access and Wireless Body Area Networks.

4. To Understand VANET, Architecture, Security ISSUeS in VANETs etc.

Course Outcomes:

On completion of this course the student w Il be able to:

I . Explain basics of Wireless 4G and 5G -TE El-ong Term Evolution), OFDM Transmission.

2. Design the physical layer for downlink. (a,b)

3. Describe Wireless Ad Hoc Networks, Wirebess mesh Networks, Presen- salient features of Broadband Wireless Access and Wireless Body Area Networks.

4. Describe the VANET, Architecture, Security Issues, Challenges in VANETs

Module 1

3G review, The context for the long term evolution, Recuirements and targets for the long term evolution, 4G Technologies, and 5G Technolocies Network architecture protocols: Introduction, overall architecture overview, protocol architecture.

Module 2

Wireless Ad Hoc Networks, Mobile Ad Hoc Networks, Wireless Sensor Networks, Wireless Mesh Networks, Wireless body area networks (WBAN). Network Architecture, Network components, design issues, Network protocols, WBAN technologies. WEAN applications.

Module 3

BROAD BAND WIRELESS ACCESS: Introduction to broad band wireless access, WIMAX Genesis and framework, Protocol layers and topologies.

Module 4

VANET (Vehicular Ad-Hoc Network), architecture of VANET, Communication Architecture, applications o: VANET, layer architecture of vehiculcr network, characteristics of VANET, attacks in VANET, Routing Architecture, Security Issues in VANETs, Clustering Algor thm in VANET for Data Security.

Reference Books-

I . Stefania Sesia, Issam Toufik and Matthew Baker,"LTE-The UMTS Long Term Evolution"frcm theory to practice, John Wiley & sons ltd,

2. Dr.Sunilkumar S Manvi and Mahabaleshwar S Kakkasageri, "Wireless and Mobile Networks Concepts and Protocols", Wiley Irdia, 2010.

3. Loutfinuaymi, "WIMAX Technology for wireless Broadband Wireless Access", Wiley,2007.

4. Xin Wang, "Mobile AdHoc Networks Applications", inteo, 201 1 .

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ADD-ON COURSES

SYLLABUS

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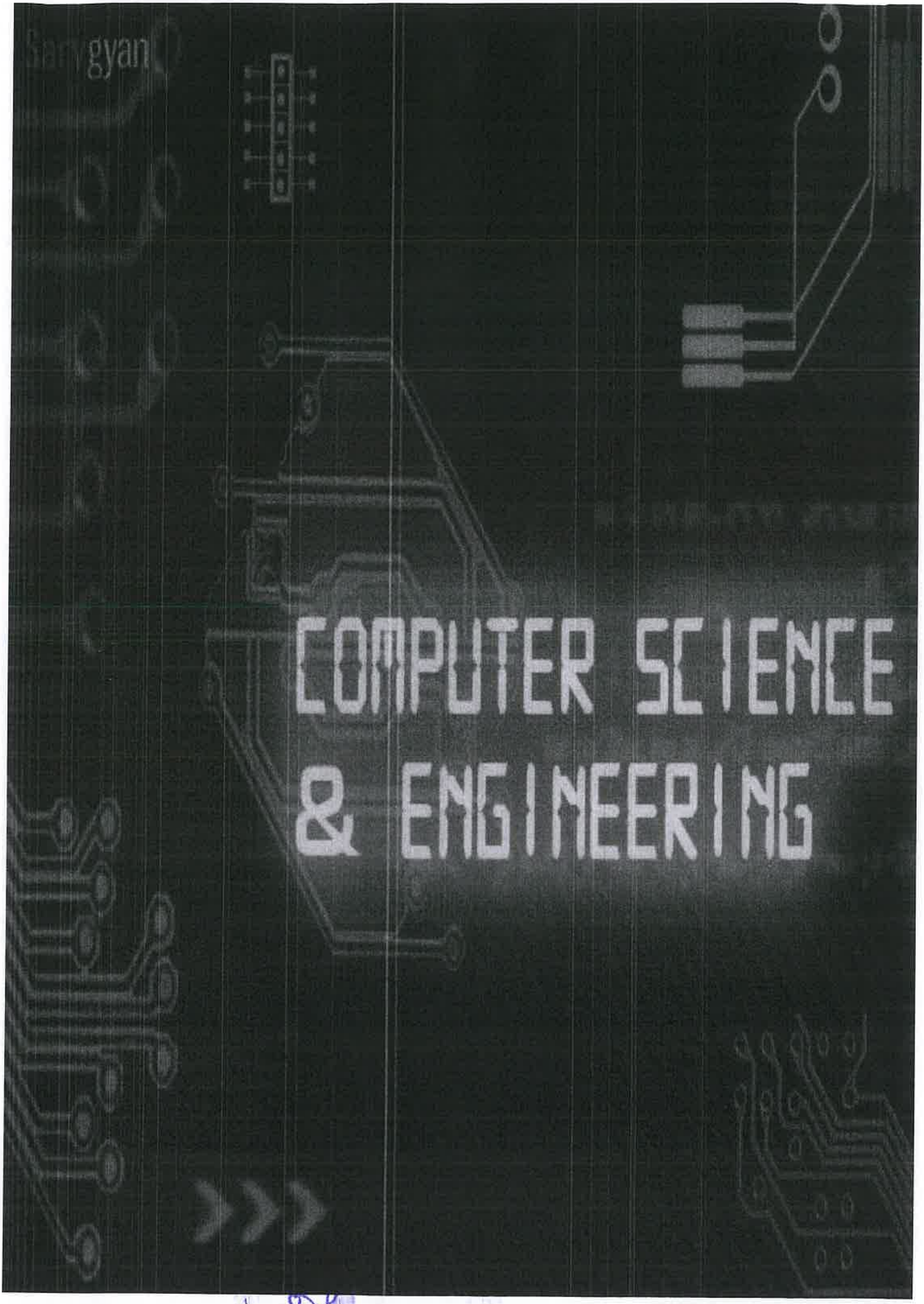

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Network Simulator

SubCode:GNCSNSP317 **Total Duration: 30Hrs.**

Pre-requisites of course: C Programming, Data communication ,computer network

Course Objectives:

- To understand how to write Tcl scripts
- To Simulate simple network topologies and traffic patterns
- To learn about trace file and nam
- To learn how to analyze the trace files,.
- To learn how to evaluate the performance of networking protocols

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Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Understand the basics of NS2	K2
CO2	To learn how to write TCL Script	K3
CO3	Analyze the trace files	K3
CO4	Evaluate the performance of networking protocols	K4

KL-Bloom's Knowledge Level (K1, K2, K3, K4, K5.K6)
K_1-Remember K_2- Understand K_3-Apply K_4.- Analyze K_5.- Evaluate K_6.- Create

Outline of the Course:

Sr. No	Title of the Unit	Minimum Hours
1	What is network simulator	5
2	Features of NS2 Basic Architecture	5
3	Why two language?(TCL and C++)	5
4	Installing NS2 on windows 7	5
5	Example on NS2:	5
6	Types of network simulator	5

Total hours : 30

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Detailed Syllabus:

UNIT-I

What is Network Simulator: , popular simulator among networking researchers, Discrete event, Packet level simulator, Network protocol stack written in C++, Tcl (Tool Command Language) used for specifying scenarios and events. , Simulates both wired and wireless networks.

UNIT-II

Features of NS2 and Basic Architecture: Ns the simulator itself ,Nam, the network animator, Pre-processing: Traffic and topology generators Post-processing: Simple trace analysis, often in Awk, Perl, or Tcl, data" / control separation variables functions and expressions control flow procedures:,, Arrays:

UNIT –III

Why two language?(TCL and C++) The C++ and the OTcl are linked together using TclCL, C++: Detailed protocol simulations require systems programming language NS2 uses OTcl to create and configure a network, C++ to run simulation, write a Tcl simulation script and feed it as an input argument to NS2

UNIT-IV

Installing NS2 on windows 7 System Requirements, Install NS2 in Windows 7,Download Cyygwin package and installation steps, Root directory ,Cygwin setup with NS2 installation ,Cygwin Command window ,Execute the command Ns allinone – 2.35 ,Execute the NAM Console,

UNIT V

Example on NS2: Simple two node wired network, Adding traffic to the linkRecord Simulation Trace,, Simulate a simple topology – UDP Traffic, Trace Analysis Basic usage of Grep ,Complex topology and link failure ,Inserting Errors

UNIT VI

Types of Network Simulator: Network Simulator Version 2,NS3,NetKit,Marionment.JSIM,OPNET,INET

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Assessment:

After completion of one-week session comprising 30 hours, an MCQ based certification test of 2 hours will be conducted, students satisfying in the test will be provided a certificate signed by Head of the department and course in charge

Text Books:

1.Introduction to Network Simulator NS2
By Teerawat Issariyakul • Ekram Hossain, (Chapters 1 to 12)

2.Networking Essential by Jeffrey S B (chapters 6 to 18)

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VALUE ADDED COURSES

SYLLABUS

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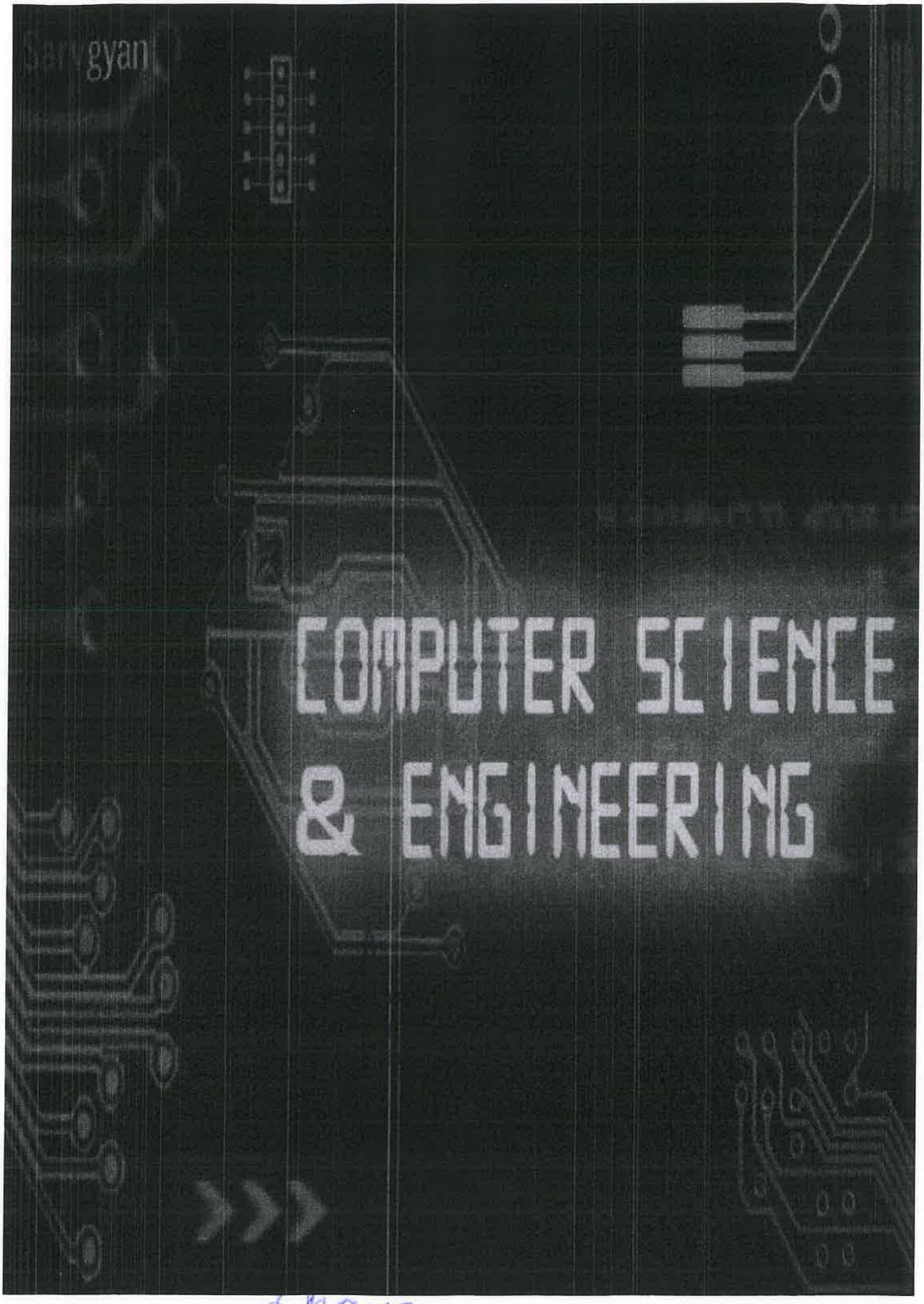

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CLOUD COMPUTING

SubCode: GNCSCC518 **Total Duration: 30Hrs.**

- Pre-requisites of course: Programming Skills, Familiarity with Databases, Basics of Security and Privacy, Knowledge of Agile Development, Basics of Networking is expected.

Course Objectives:

- Understand the concepts of cloud computing, virtualization and classify services of cloud computing
- Illustrate architecture and programming in cloud
- Define the platforms for development of cloud applications and list the application of cloud.
- Illustrate the use of generics and collections in cloud computing.

About Cloud Computing:

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

In short, the cloud is the Internet, and cloud computing is techspeak that describes software and services that run through the Internet (or an intranet) rather than on private servers and hard drives.

Characteristics of cloud computing

- On-demand self-service
- Broad network access
- Resource pooling
- Rapid elasticity
- Measured service

Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Identify the architecture, infrastructure and delivery models of cloud computing	K2
CO2	Apply suitable virtualization concept.	K3
CO3	Design Cloud Services	K3
CO4	Analyze a private cloud	K4

KL-Bloom's Knowledge Level (K1, K2, K3, K4, K5.K6)
K_1-Remember K_2- Understand K_3-Apply K_4.- Analyze K_5.- Evaluate K_6.- Create

Outline of the Course:

Sr. No	Title of the Unit	Minimum Hours
1	**Introducing to Cloud Computing**	6
2	**Cloud Computing and Application Paradigms**	6
3	**Cloud Resource and Virtualization**	6
4	**Cloud Resource Management and Scheduling**	6
5	**Cloud Security and Cloud Application Development**	6

Total hours : 30

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Detailed Syllabus:

UNIT-I
Cloud computing, Cloud computing delivery models and services, Ethical issues, Cloud vulnerabilities, Cloud computing at Amazon, Cloud computing the Google perspective, Microsoft Windows Azure and online services.

UNIT-II
Challenges of cloud computing, Architectural styles of cloud computing, Workflows: Coordination of multiple activities, Coordination based on a state machine model.

UNIT –III
Virtualization, Layering and virtualization, Virtual machine monitors, Virtual Machines, Performance and Security.

UNIT-IV
Policies and mechanisms for resource management, Application of control theory to task scheduling on a cloud, Stability of a two-level resource allocation architecture, Feedback control based on dynamic thresholds.

UNIT V
Cloud security risks, Security: The top concern for cloud users, Privacy and privacy impact assessment, Trust, Operating system security, Virtual machine Security, Security of virtualization, Security risks posed by shared images.

Assessment:
1. Every student has to give 'test consisting of Cloud Computing tasks and Objective Questions.

Companies Using DOTNET

Companies ranging from automotive, banking, and software implement the Cloud software. The lists ofcompanies using the Cloud Software are:

- Dropbox.
- Intel.
- RingCentral.
- Cisco Meraki.
- NetApp.
- Oracle.
- Salesforce.
- Workday.

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Text Books:

1. Rajkumar Buyya, Christian Vecchiola, and Thamarai Selvi Mastering Cloud. Computing McGraw Hill Education

Reference Books:

1.Dan C. Marinescu, Cloud Computing Theory and Practice, Morgan Kaufmann, Elsevier 2013.

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ADD-ON COURSES

SYLLABUS

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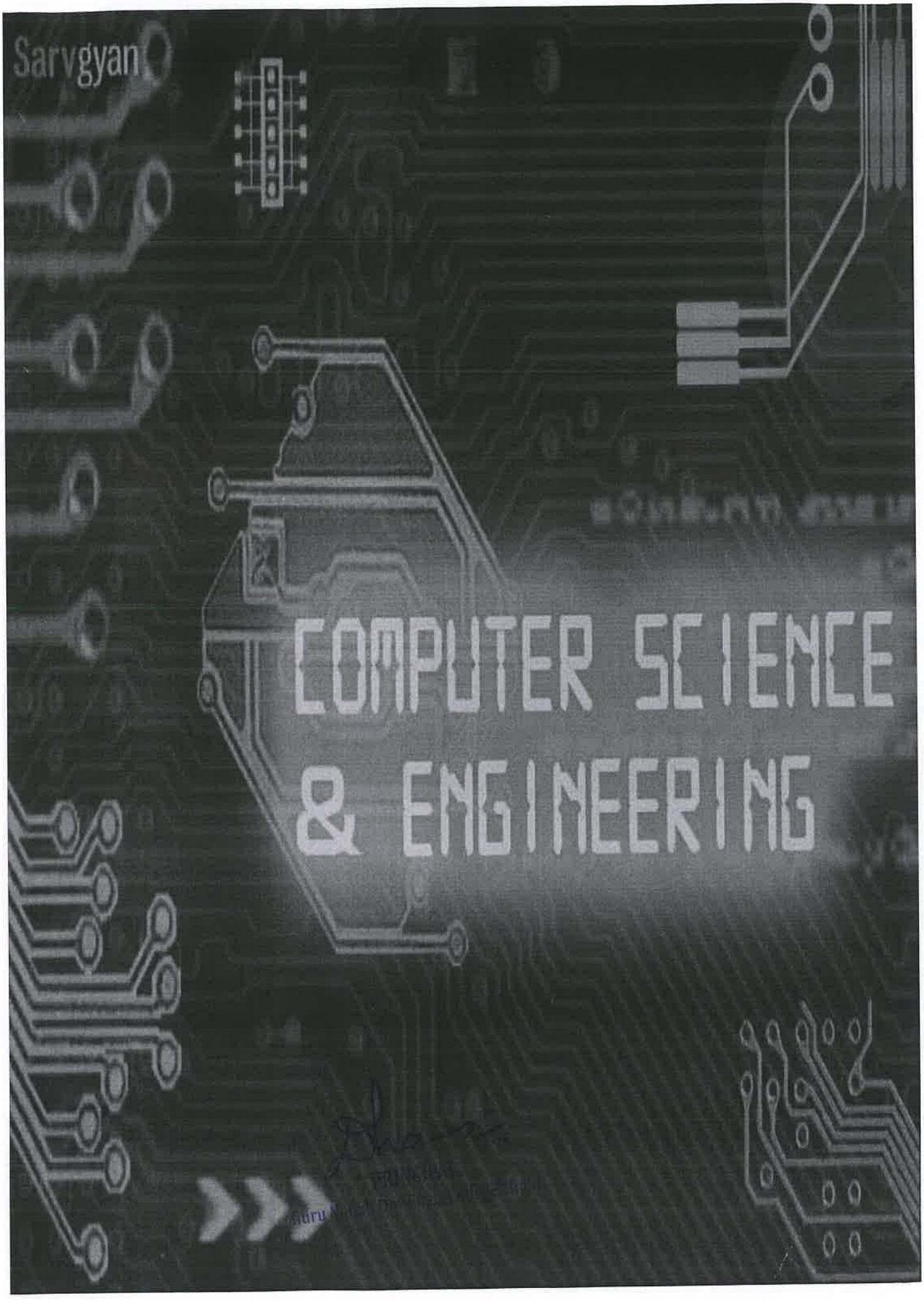
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COMPUTER SCIENCE
& ENGINEERING

AI and ML

SubCode: AI and ML [GNCSAI718] **Total Duration: 30Hrs.**

Pre-requisites of course: C Programming, Basics of Engineering Mathematics, basic knowledge of Python & data science is required. Basic computer literacy is expected.

Course Objectives:

- Outline basic introduction of Artificial intelligence and Machine Learning.
- Contrast on the Fundamentals of AI and ML
- Examine the algorithms used for AI and ML.
- Classify the different application used in AI AND ML.

About AI & ML

- Artificial Intelligence or AI, is a branch of computer science that deals with building smart machines that are capable of performing complex tasks that normally require human interference and intelligence. It combines Data Science with real-life data to leverage machines and computers to imitate the decision-making and problem-solving capabilities that the human mind has.

- Machine learning is a growing technology which enables computers to learn automatically from past data. Machine learning uses various algorithms for building mathematical models and making predictions using historical data or information. Currently, it is being used for various tasks such as image recognition, speech recognition, email filtering, Facebook auto-tagging, recommender system, and many more.This machine learning tutorial gives you an introduction to machine learning along with the wide range of machine learning techniques such as Supervised, Unsupervised, and Reinforcement learning. You will learn about regression and classification models, clustering methods, hidden Markov models, and various sequential models.

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Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Outline basic introduction of Artificial intelligence and Machine Learning.	K2
CO2	Contrast on the Fundamentals of AI and ML.	K2
CO3	Examine algorithms used for AI and ML.	K4
CO4	Classify the different application used in AI AND ML.	K4

KL-Bloom's Knowledge Level (K1, K2, K3, K4, K5.K6)
K_1-Remember K_2- Understand K_3-Apply K_4.- Analyze K_5.- Evaluate K_6.- Create

Outline of the Course:

Sr. No	Title of the Unit	Minimum Hours
1	Introduction artificial intelligence & Machine Learning	6
2	Intelligent Agent	6
3	Decision Tree Learning:	6
4	Instance-Base Learning	6
5	Bayesian Learning	6

Total hours: 30

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Detailed Syllabus:

UNIT-I

What is artificial intelligence? Types of Artificial Intelligence Problems solving , problem spaces and search, Heuristic search Techniques

UNIT-II

Knowledge representation issues, Predicate logic, Representaiton knowledge using rules. Concept Learning: Concept learning task, Concept learning as search, Find-S algorithm, Candidate Elimination Algorithm, Inductive bias of Candidate Elimination Algorithm.

UNIT –III

Decision Tree Learning: Introduction, Decision tree representation, appropriate problems, ID3 algorith.Aritificil Nueral Network: Introduction, NN representation, appropriate problems, Perceptrons, Back propagation algorithm.

UNIT-IV

Bayesian Learning: Introduction, Bayes theorem, Bayes theorem and concept learning, ML and LS error hypothesis, ML for predicting, MDL principle, Bates optimal classifier, Gibbs algorithm, Navie Bayes classifier, BBN, EM Algorithm

UNIT V

Instance-Base Learning: Introduction, k-Nearest Neighbour Learning, Locally weighted regression, Radial basis function, Case-Based reasoning.Reinforcement Learning: Introduction, the learning task, Q-Learning.

Assessment:

After completion of one-week session comprising 30 hours, an MCQ based certification test of 2 hours will be conducted, students satisfying in the test will be provided a certificate signed by Head of the department and course in charge

Companies Using AI AND ML

The lists of companies in working AI & ML

- Google Cloud
- Neurala
- AWS
- Insitro
- IcarbonX
- Deep 6
- Tech mahindra

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Text Books:

1. Tom M Mitchell,**"Machine Lerning"**,1st Edition, McGraw Hill Education, 2017.

2. Elaine Rich, Kevin K and S B Nair, **"Artificial Inteligence",** 3rd Edition, McGraw Hill Education, 2017.

Reference Books:

1.Saroj Kaushik, Artificial Intelligence, Cengage learning

2. Stuart Rusell, Peter Norving , Artificial Intelligence: A Modern Approach, Pearson Education 2nd Edition

3. AurÈlienGÈron,"Hands-On Machine Learning with Scikit-Learn and Tensor Flow: Concepts, Tools, and Techniques to Build Intelligent Systems", 1st Edition, Shroff/O'Reilly Media, 2017.

4. Trevor Hastie, Robert Tibshirani, Jerome Friedman, h The Elements of Statistical Learning, 2ndedition, springer series in statistics.

5. Ethem Alpaydın, Introduction to machine learning, second edition, MIT press.

6. Srinvivasa K G and Shreedhar, " Artificial Intelligence and Machine Learning", Cengage.

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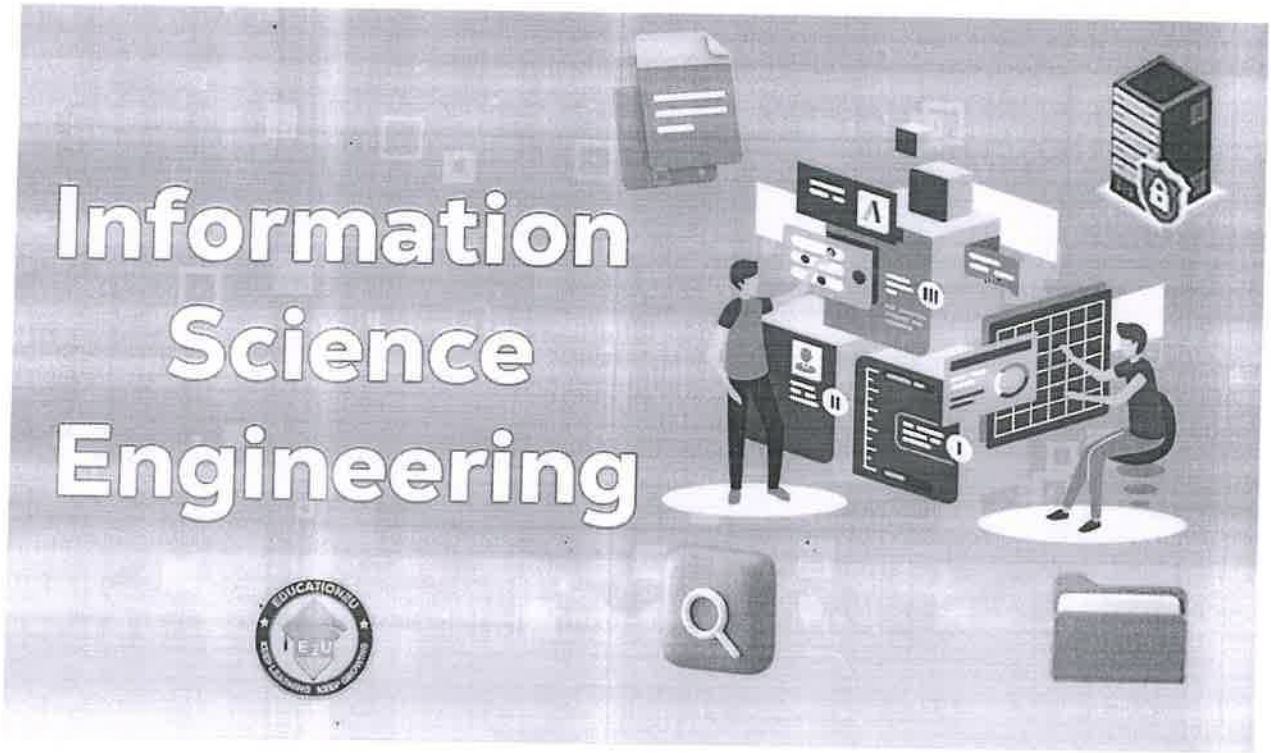
ADD-ON COURSES

SYLLABUS

Session 2018-19



VISUAL BASIC 6.0 (GNECVB21)

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VISUAL BASIC

Module 1:

Introduction: Need of visual languages, integrated development environment (IDE), advantage of Visual Basic, characteristics and features of Visual Basic – IDE, Projects, user interface, objects oriented, visual development and event-driven programming, forms/graphic controls, data processing, sharing with windows and internet applications. 6 Hrs

Module 2:

Visual Basic programming and tools: An introduction to Visual Basic programming, simple program construction, statements, input/outputs, comments, editor, subroutines, controls flow statements, objects and variants. 6Hrs

Module 3:

Designing user interface – elements of user interface, understanding forms, menus and toolbars, designing menus and toolbars, building dynamic forms, drag and drop operations, working with menus, customizing the toolbars. 6 Hrs

Module 4:

Controls – textbox, combo box, scroll bar and slider control operations, generating timed events, drawing with Visual Basic using graphics controls, coordinate systems and graphic methods, manipulating colors and pixels with Visual Basic, working with ActiveX controls. 6 Hrs

Module 5:

Menus: Creating a menu system, Creating and accessing pop-up menu, Modifying menus at runtime, adding menu items at run-time, data access methods, creating, reading and writing text files, data controls, creating queries. Report generation. 6 Hrs

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Reference Books:

1. David Schneider, Introduction to Programming using Visual Basic, PHI.
2. Mohammed Azam, Programming with Visual Basic 6.0, Vikas Publications.
3. Dietel & Dietel, Visual Basic Programming, Pearson Education.
4. David I. Schneider, An Introduction To Programming Using Visual Basic .Net®, PHI.
5. C Muthu , Visual Basic.Net, Tata Mc Graw Hill Year of Publication.

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COURSE OBJECTIVES:

- Understand the basics of Programming.
- Understand functional hierarchical code generation.
- Understand the usage of characters, string, integers and special symbols in programming.
- Understand loops and decision-making statements in order to solve problems.
- Understand arrays and implementation of various operations on arrays.
- Understand the use of functions and pointer in programming.
- Understand the use of structure & union.
- Understand file operations and implement file operation in C programming for a set of problems.

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Identify the need and use of programming in real world environment.
CO2	Improve the understanding of using data types, variables and arithmetic operations in programming.
CO3	Understand the concept of functions and pointer. In addition, resolve real world problems using functions and pointers.
CO4	Understand Array and String concepts and implement array and string using functions and pointers.
CO5	Exercise user defined data types including structure and union.

CO-PO MAPPING:

PO	PO											
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1				1		1				
CO2		2	1	1	1							
CO3	1	3	2	2		2	1	2				
CO4	1	2	2	1	1		1					
CO5		2	2	1	1	3	1	1				

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ADD-ON COURSES

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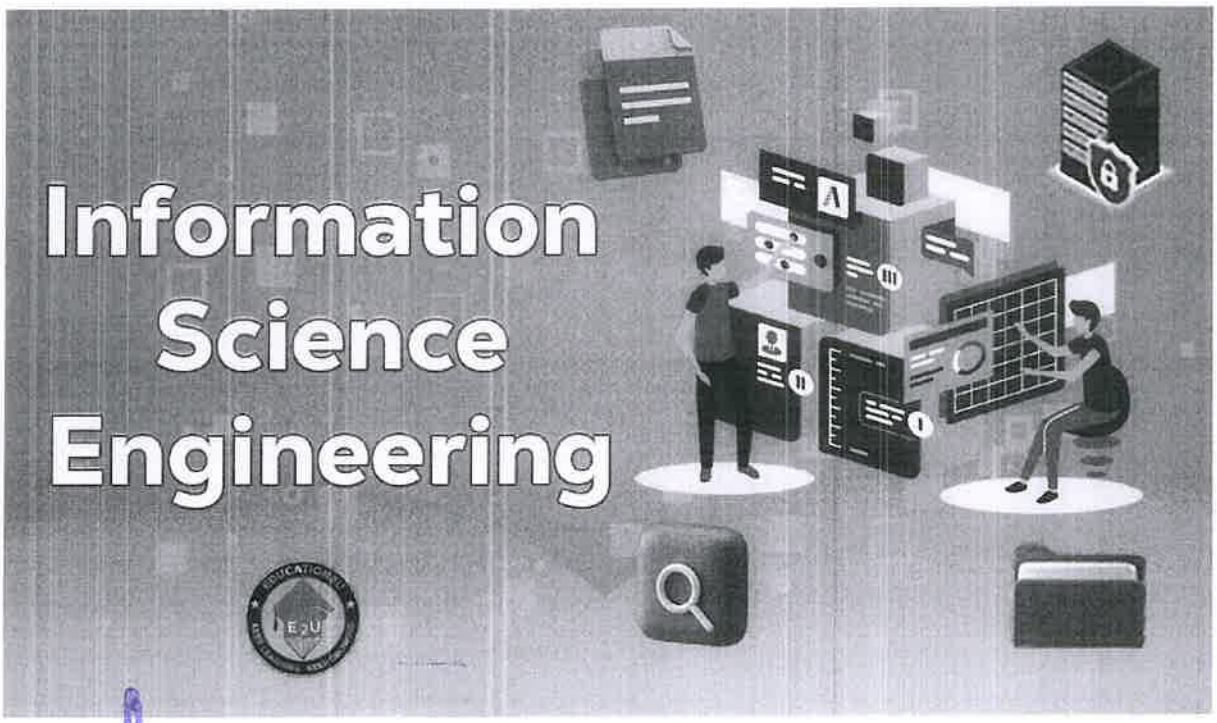

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INTRODUCTION TO DOT NET FRAMEWORK FOR APPLICATION DEVELOPMENT Total Duration: 30hrs
Module-1
Introducing Microsoft Visual C# and Microsoft Visual Studio 2015: Welcome to C#,

INTRODUCTION TO DOT NET FRAMEWORK FOR APPLICATION DEVELOPMENT (GNEC521)

Working with variables, operators and expressions, Writing methods and applying scope, Using decision statements, Using compound assignment and iteration statements, Managing errors and exceptions
Module-2
Understanding the C# object model: Creating and Managing classes and objects, Understanding values and references, Creating value types with enumerations and structures, Using arrays.
Module-3 Understanding parameter arrays, Working with inheritance, Creating interfaces and defining abstract classes, Using garbage collection and resource management
Module-4
Defining Extensible Types with C#: Implementing properties to access fields, Using indexers, Introducing generics, Using collections
Module-5
Enumerating Collections, Decoupling application logic and handling events, Querying inmemory data by using query expressions, Operator overloading
Text Books: 1. John Sharp, Microsoft Visual C# Step by Step, 8th Edition, PHI Learning Pvt. Ltd. 2016
Reference books: 1. Christian Nagel, "C# 6 and .NET Core 1.0", 1st Edition, Wiley India Pvt Ltd, 2016. Andrew Stellman and Jennifer Greene, "Head First C#", 3rd Edition, O"Reilly Publications, 2013. 2. Mark Michaelis, "Essential C# 6.0", 5th Edition, Pearson Education India, 2016. 3. Andrew Troelsen, "Prof C# 5.0 and the .NET 4.5 Framework", 6th Edition, Apress and Dreamtech Press, 2012

Course Objectives:

- Inspect Visual Studio programming environment and toolset designed to build applications for

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- Microsoft Windows Understand Object Oriented Programming concepts in C# programming
  language.
- Interpret Interfaces and define custom interfaces for application.
- Build custom collections and generics in C#
- Construct events and query data using query expressions

Course Outcomes:

- Understand the Microsoft .NET Framework and ASP.NET page structure .Design web application with variety of controls
- Access the data using inbuilt data access tools.
- Use Microsoft ADO.NET to access data in web Application
- Configure and deploy Web Application.Develop secured web application

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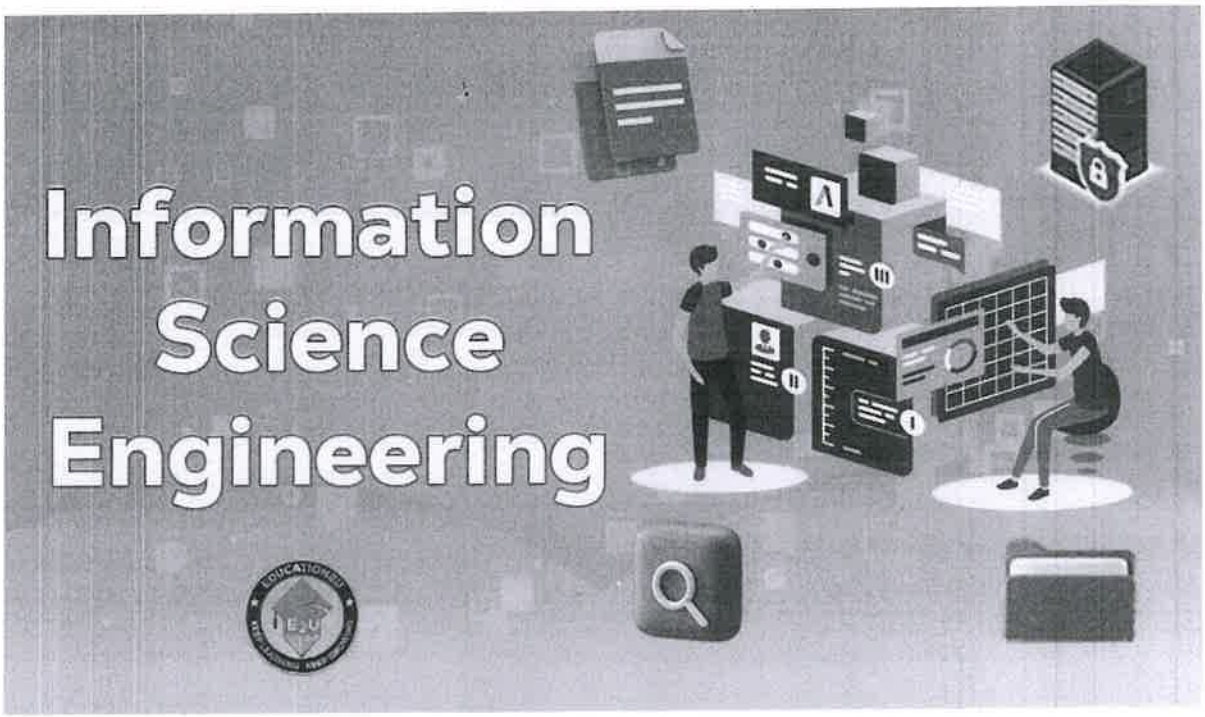
ADD-ON COURSES

SYLLABUS

Session 2018-2019



SYSTEMS APPLICATIONS & PRODUCTS (SAP)

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SYSTEMS APPLICATIONS & PRODUCTS (SAP) Total Duration: 30hrs
Module-1
SAP Overview: Introduction to ERP And SAP, History of SAP, Organization, Technology, Implementation Tools (Asap and Solution Manager),System Landscape, Roles And Responsibilities of a Consultant, Types of Projects, Change Transport System
Module-2
FINANCIAL ACCOUNTING: Overview of Organizational Elements in Accounting, Organizational Units,Define and Assign Organizational Units for Finance: Ex: – Country, Regions,,Company, Company Codes, Business Areas, Functional Areas, etc., Variant Principle,Fiscal Year and Posting Periods,Field Status Variants,Document types and NumberRanges,Posting Keys,Define Tolerance for GL Accounts and Employees,Global Parameters
Module-3 **General Ledger:** Master Data Overview, Chart of Accounts, Types of Chart of Accounts, Define and Assign Chart of Accounts, Define Account Groups and Screen Layout for GL Accounts, Define Retained Earnings Account, Creations of GL Accounts Master Records, Postings, Display GL Account Balances and Document.
Module-4
Currencies: Maintain Exchange Rates Maintain Table, Define Translation Ratios for Currency, Define Accounts for Exchange Rate Differences, Posting with Foreign Currency Define Methods for Foreign Currency Valuation, Prepare Automatic Posting for foreign currency valuation, Revaluation of foreign currency balances **Taxes:** Tax on Sales & Purchases, With Holding Tax (TDS), Country India Version (CIN)
Module-5
Currencies: Parking Document, Holding Document, Reference Document, Recurring Document, Sample Document, Account Assignment Model, Fast Data Entry **Bank Accounting:** Define House Banks with Bank Accounts, Creation of check number ranges for check lot Define void reason codes, Issue of a check, Manual payment, Cancellation of issue check with reason codes, Check register
Reference books: 1.SAP ERP Financial Accounting And Controlling Configuration and Use Management 1st Edition, Kindle Edition by Andrew Okungbowa 2. Materials Management with SAP ERP: Functionality and Technical Configuration, SAP Press; Fourth edition by Martin Murray & Jawad Akhtar,

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Course Objectives:

- The aim of the course is to strengthen the capabilities of individuals and institutions involved in the SAP process.
- The SAP course will provide the necessary skills, information and approaches required to develop a SAP.
- Creates a centralized system for businesses that enables every department to access and share common data to create a better work environment for every employee in the company.
- SAPs are created with the stated goal of reducing the borrowing country's fiscal imbalances in the short and medium term or in order to adjust the economy to long-term growth.

Course Outcomes:

- The program enables individuals to stay up-to-date and relevant by becoming skilled in the latest SAP technologies and solutions.
- Certification provides personal and company recognition, and supports career progression from proficiency to mastery.
- Provides one to handle software presented by SAP towards better work process and data management in organizations.

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ADD-ON COURSES

SYLLABUS

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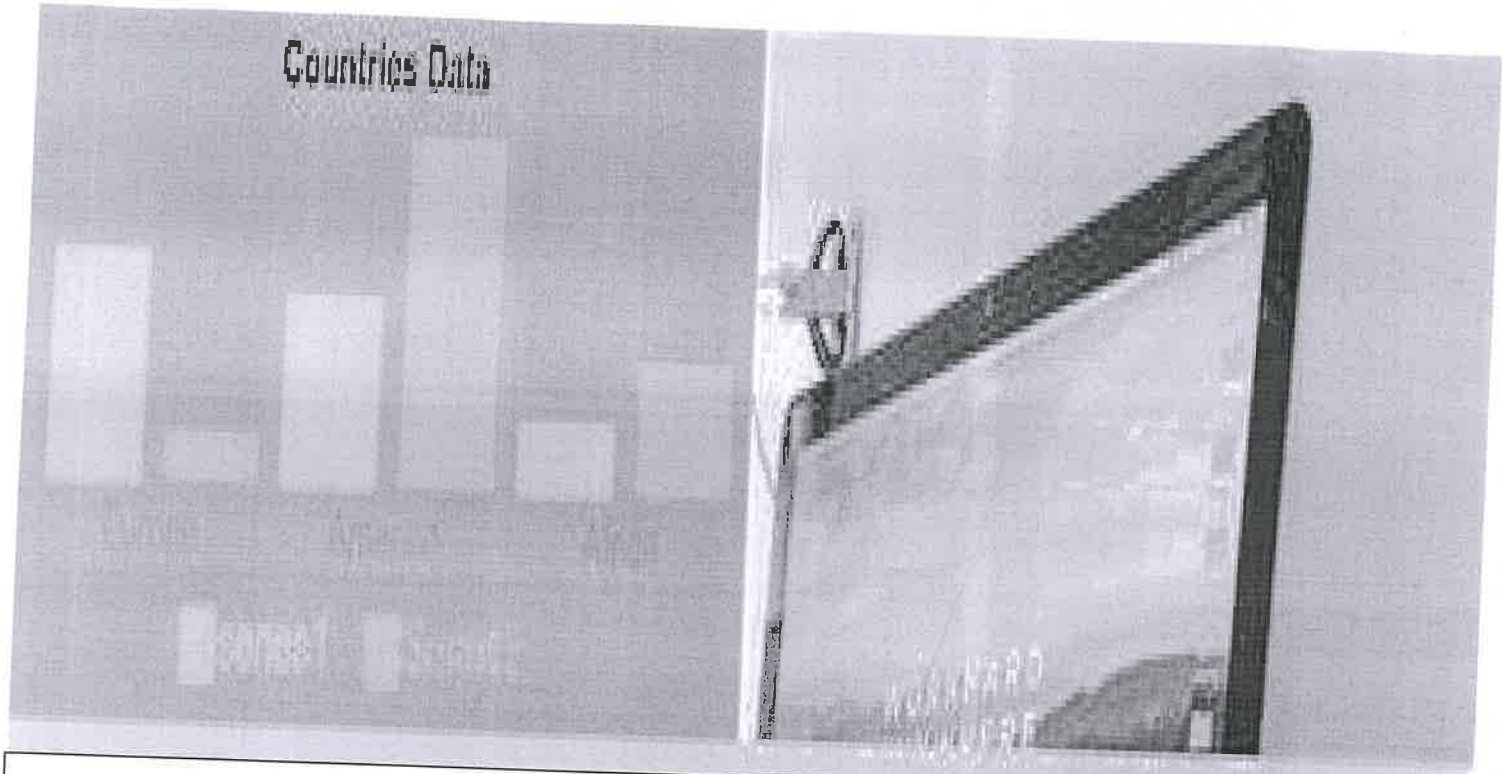

Department of Applied Sciences & Humanities

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PYTHON Programming

TotalDuration:36Hrs.

Engineering Mathematics, No prior knowledge of Python is required. Basic computer literacy is expected.

Course Objectives:

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

About Python:Python 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& software Works. It is used for integrating computation, visualization, and programming so that the programming environment becomes easy to use. The applications of Python 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.

Course Outcomes:		**Knowledge Level, KL**
Upon the completion of the course, the student will be able to:		
CO1	Understand the basics of Python	K3
CO2	Break a complex task up into smaller, simpler tasks	K4
CO3	Case Study (Any two Modules)	K4
CO4	Tabulate results and Analyse	K4
CO5	Bridge the skill gaps and will be ready for industry.	K4

KL-Bloom's Knowledge Level (K1, K2, K3, K4, K5.K6)

K_1-Remember K_2- Understand K_3-Apply K_4.- Analyze K_5.- Evaluate K_6.- Create

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Detailed Syllabus:

UNIT-I

Basics of Python and Python Compiler: Fundamentals of python, declaration of strings, arrays, sets. Data types, Input statements, output statements, operators in python: Assignments, Logical, Arithmetical.

UNIT-II

Control statements: if statements, loop statements, break & continue statements

Programming with simple examples:

UNIT -III

Discussion of Toolboxes with Applications:

Data visualization: scatter plot, line plot, bar plot, Histogram. ***Programming with simple examples.***

UNIT-IV

2D-plots of Cartesian & polar curves, Scattered plot, Line plot. Python programs to plot Sine & Cosine curves, plotting of circle: $x^2+y^2=5$ using implicit function, Strophoid: $y^2(a-x)=x^2(a+x),a>0$.Cissoid: $y^2(a-x)=x^3,a>0$.Lemniscate:$a^2y^2=x^2(a^2-x^2)$.

UNIT V

Program to find Eigen value & Eigen vector, to find GCD, Consistancy of given equations.

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 Python software. The lists ofcompanies in automotive sector using the Python Software are:

- VOLVO
- Jaguar
- Mercedes
- BMW

A company Front the software sector includes:

- Adobe Photoshop

All the banking companies which involve c-unches of calculations such as Citi-Bank,HDFC doimplement concepts indirectly.

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References Book:

Book Title	Author Name	Latest Edition	Publisher
Python Crash course	Eric Matthes	2nd edition	No Starch Pres
Let Us Python	Yeshavant Kanetkar & Aditya Kanetkar	2nd edition	BPB

https://onlinecourses.nptel.ac.in/noc22_cs122/preview
https://www.youtube.com/watch?v=9MmC_uGjBsM
https://www.youtube.com/watch?v=Bc__4fV94lE&list=PLyqSpQzTE6M_Fu6l8irVwXkUyC9Gwqr6_&index=2

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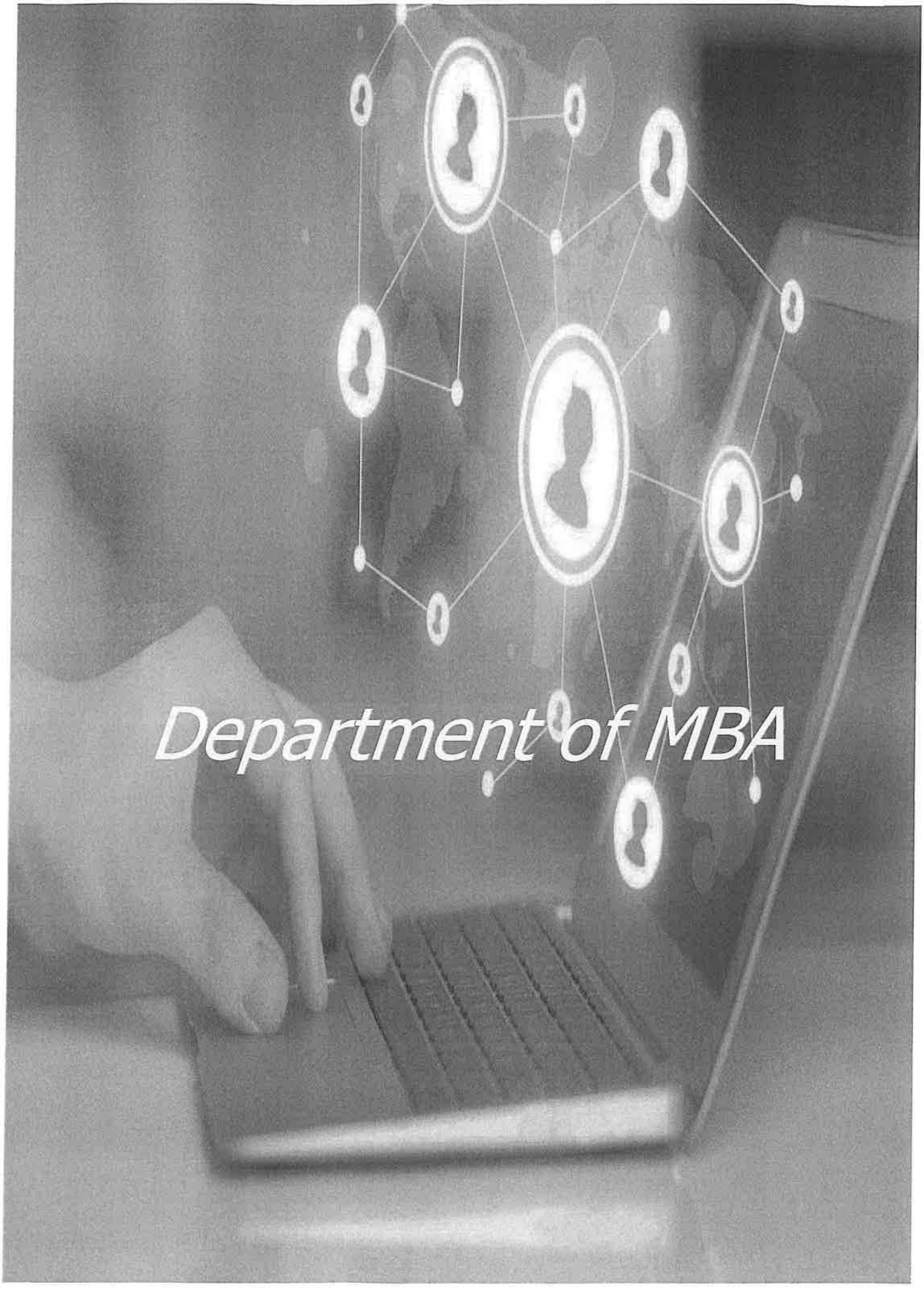
VALUE ADDED COURSES

SYLLABUS

Session 2018-2019


Department of MBA

COMPUTER PROFICIENCY
(GNMBA117)

Total Duration: 30 Hrs

Objective of the Course:

1. **The course is designed to aim at imparting a basic level appreciation programme for the common man. After completing the course the incumbent is able to use the computer for basic purposes of preparing his personnel/business letters, viewing information on internet (the web), sending mails etc.**
2. **This allows a common man or housewife to be also a part of computer users list.**
3. **This would also aid the PC penetration program.**
4. **This helps the small business communities, housewives to maintain their small account using the computers and enjoy in the world of Information Technology.**

Course Outcomes:		**Knowledge Level, KL**
Upon the completion of the course, the student will be able to:		
CO1	understanding of computer hardware and software	K3
CO2	Demonstrate problem-solving skills	K4
CO3	Apply logical skills to programming in a variety of languages	K4
CO4	Utilize web technologies	K4
CO5	Demonstrate basic understanding of network principles	K4
Course Outcomes:		**Knowledge Level, KL**
Upon the completion of the course, the student will be able to:		
CO1	Understand the basics of Matlab	K3
CO2	Break a complex task up into smaller, simpler tasks	K4
CO3	Case Study (Any two Modules)	K4
CO4	Tabulate results and Analyse	K4
CO5	Bridge the skill gaps and will be ready for industry.	K4

KL-Bloom's Knowledge Level (K1, K2, K3, K4, K5.K6)

K_1-Remember K_2 - Understand K_3-Apply K_4.- Analyze K_5.- Evaluate K_6.- Create

Assessment:

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

Detailed Syllabus:

Detail syllabus

UNIT-I

Knowing computer: Introduction, Concept of hardware and software, Components of computer system, Bringing computer to life, Concept of computing, data and information.

UNIT-II

MS-Office: MS-Word (Word Processing Software), MS-Excel (Spreadsheet Software), MS-PowerPoint (PresentationSoftware), MS-Access (Database Management Software), MS-Outlook (E-mail Client)

UNIT –III

Understanding word processing: Introduction, Word processing basics, Opening and closing documents, Table manipulation, Formatting the text, Text creation and manipulation.
Using spread sheet: Introduction, Elements of electronic spared sheet, Formulas and function, Manipulation of cells.

UNIT-IV

Communication using the internet: Introduction, Internet, Basics of computer networks
WWW and Web browser: Introduction, Understanding URL, World Wide Web (WWW), Surfing the web, Web browsing soft wares, Search engines,

UNIT V

Communication and collaboration: Basic of e-mail, Document collaboration, Using e-mails
Antivirus technique: Introduction, Virus, Program/File infector virus or parasitic virus, Antivirus software, Data Backup and Recovery Tools Recovery tools, Hacker and Cracker.

References Book

1. **Computer Fundamentals 1St Edition 2017 by RS Salaria, Khanna Publishing House**

2. Computer Awareness Kindle Edition by Arihant Experts, arihant publication

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ADD-ON COURSES

SYLLABUS

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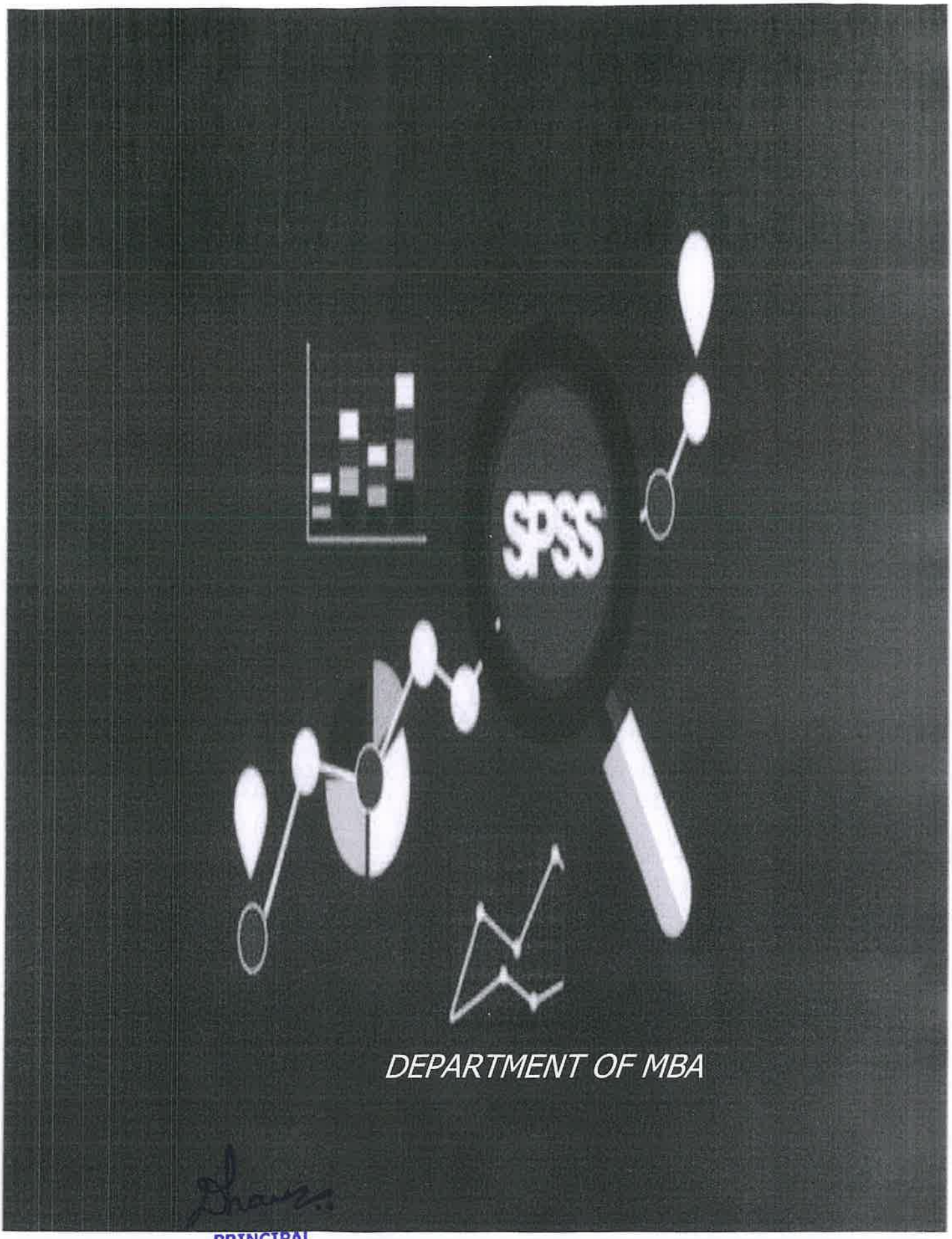

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INTRODUCTION OF SPSS FOR DATA ANALYSIS

Total Duration: 30 Hrs.

Pre requisites of course : Basic computer literacy is expected, MS word and Excel and prior knowledge of basic statistics is required

Course objectives

1)To impart the knowledge to the students with SPSS version 25 software
2)To provide a working introduction to the SPSS Software
3)To introduce students to the use of various statistical tools like graphs,charts, descriptive statistics, ANOVA, Chi square test, Correlation, regression etc.(applying statistical tools for analyzing data from management point of view).

About SPSS

SPSS is a Windows based program that can be used to perform data entry and analysis and to create tables and graphs. SPSS is capable of handling large amounts of data and can perform all of the analyses covered in the text and much more. SPSS is commonly used in the Social Sciences and in the business world .IBM SPSS Statistics is a fast and powerful solution that propose research analysis in numerous industries. SPSS Statistics is used in education, market, research, healthcare, government and retail throughout the entire analytics process from planning and data collection to analysis, and deployment.

In market research ,there is growing pressure to deliver actionable insights to client who want to make informed business decision quickly and expect detailed strategic report within aggressive timelines .SPSS software helps in exploring relationships in data to predict outcomes.

Course outcomes

After the completion of the course the students will be able to

1) Understand the basics of IBM SPSS Software
2) Understand data files and reading excel data and text file
3) To demonstrate the data by applying descriptive statistics, chart, graphs
4) Demonstrate the data by applying, correlation, regression, chi-square test & Anova
5) To demonstrate the ability to evaluate and interpret the data analysis results.

Detailed Syllabus:

About SPSS software : SPSS is a Windows based program that can be used to perform data entry and analysis and to create tables and graphs. SPSS is capable of handling large amounts of data and can perform all of the analyses covered in the text and much more. SPSS is commonly used in the Social Sciences and in the business world

Module 1: Introduction **05 hrs**

Learn about SPSS install and open SPSS, review layout of SPSS become familiar with Menus and Icons , exit SPSS

Module 2: Reading Data **05 hrs**

Basic structure of IBM SPSS statistics data files , reading data file, reading excel data, reading data from database and text file..

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Module 3: Descriptive statistics **10 hrs**

Descriptive statistics: Mean, sum, standard deviation, variance, range, Anova(Analysis of Variance) correlation, tables and charts, Regression, Running Analysis.

Module 4: Creating and editing charts. **06 hrs**

Creating and editing charts, charts builder gallery, defining variables and statistics and adding text .

Module 5: Working with output **04hrs**

Pasting results in word,excel and PowerPoint, exporting result to PDF.

References Book

1) *Darren George and Paul Mallery's* SPSS for Windows Step by Step – A Simple Guide and Reference 18.0 UPDATE – Eleventh Edition, *published by Pearson Education,*
2) arthur griffith-SPSS For Dummies –A Refernce for the Rest of Us