GURU NANAK DEV ENGINEERING COLLEGE, BIDAR, KARNATAKA

VALUE ADDED COURSES

SYLLABUS

Session 2020-2021

PRINCIPAL
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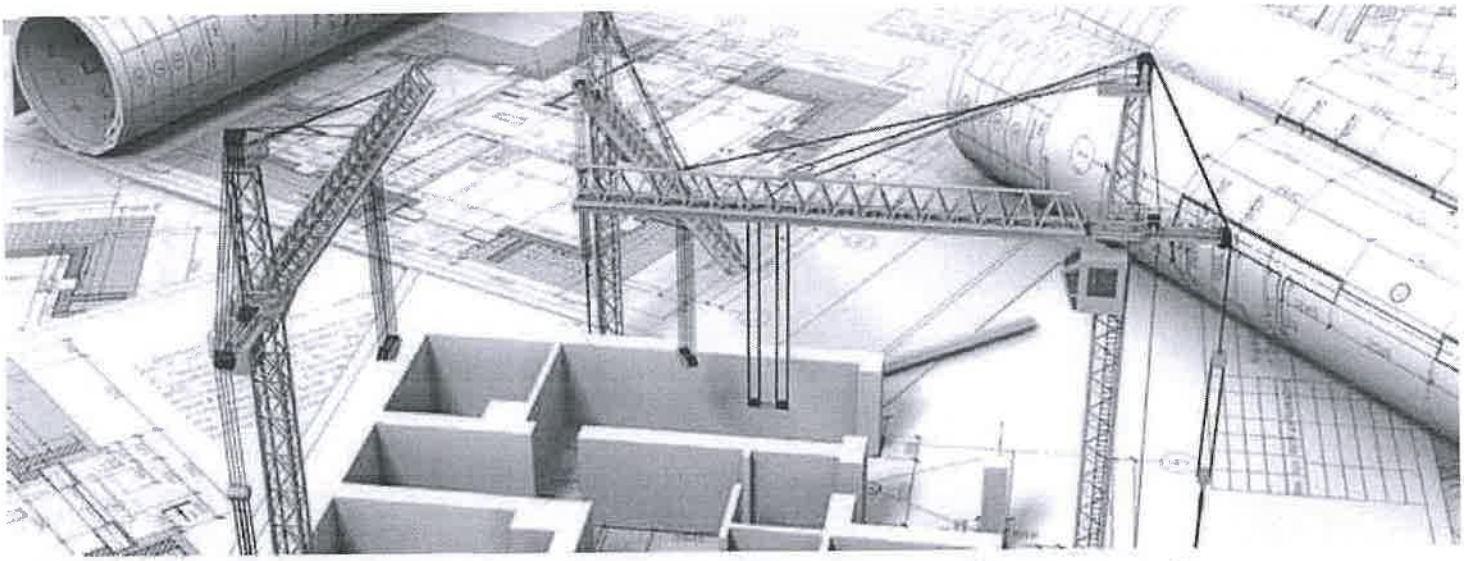

Civil Engineering Department

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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,

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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.

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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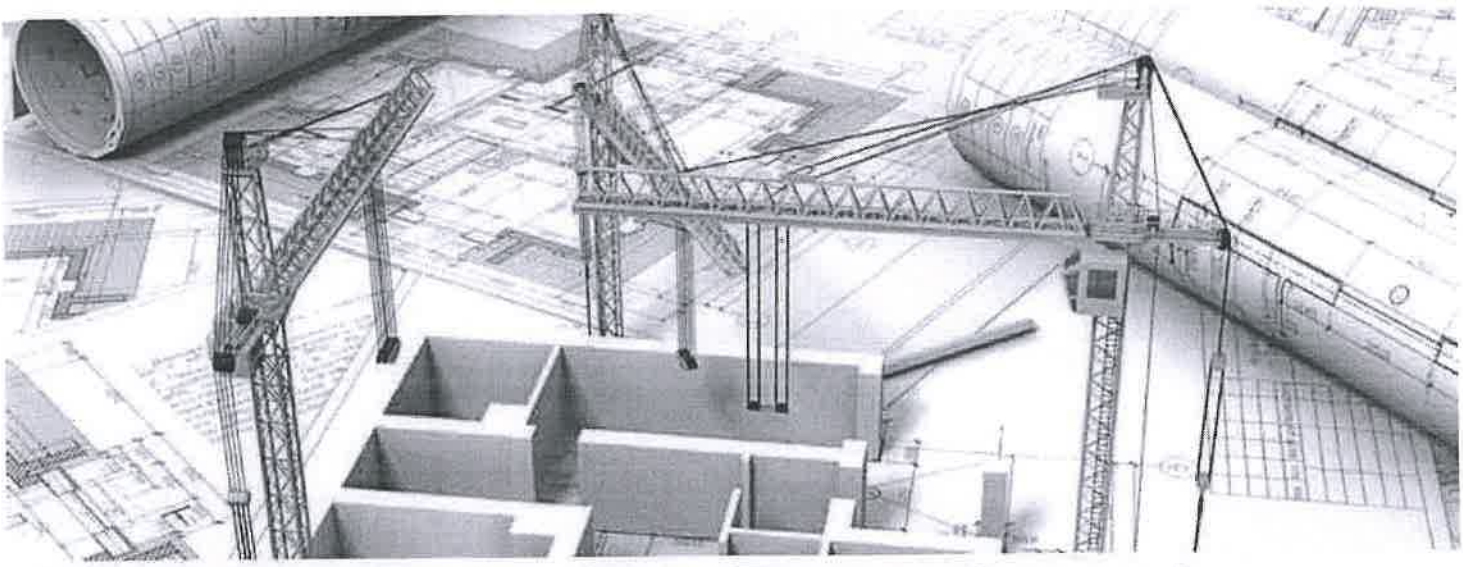

Civil Engineering Department

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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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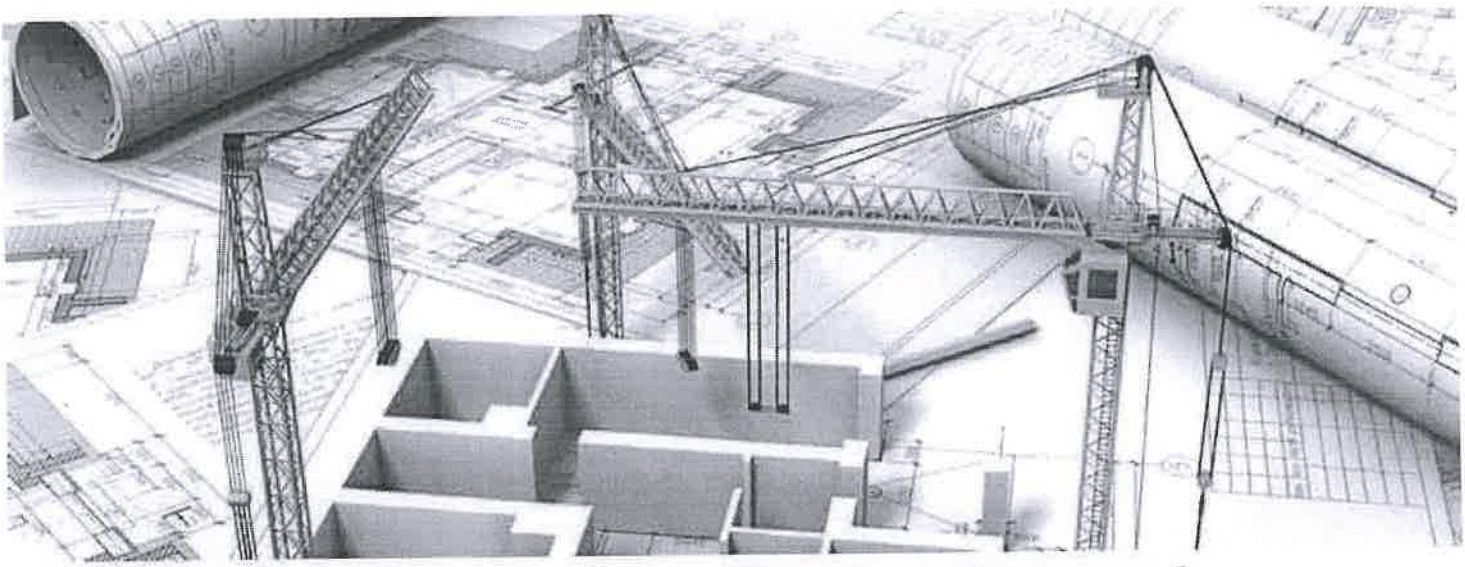

Civil Engineering Department

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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

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

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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ADD ON COURSES

SYLLABUS

Session 2020-2021

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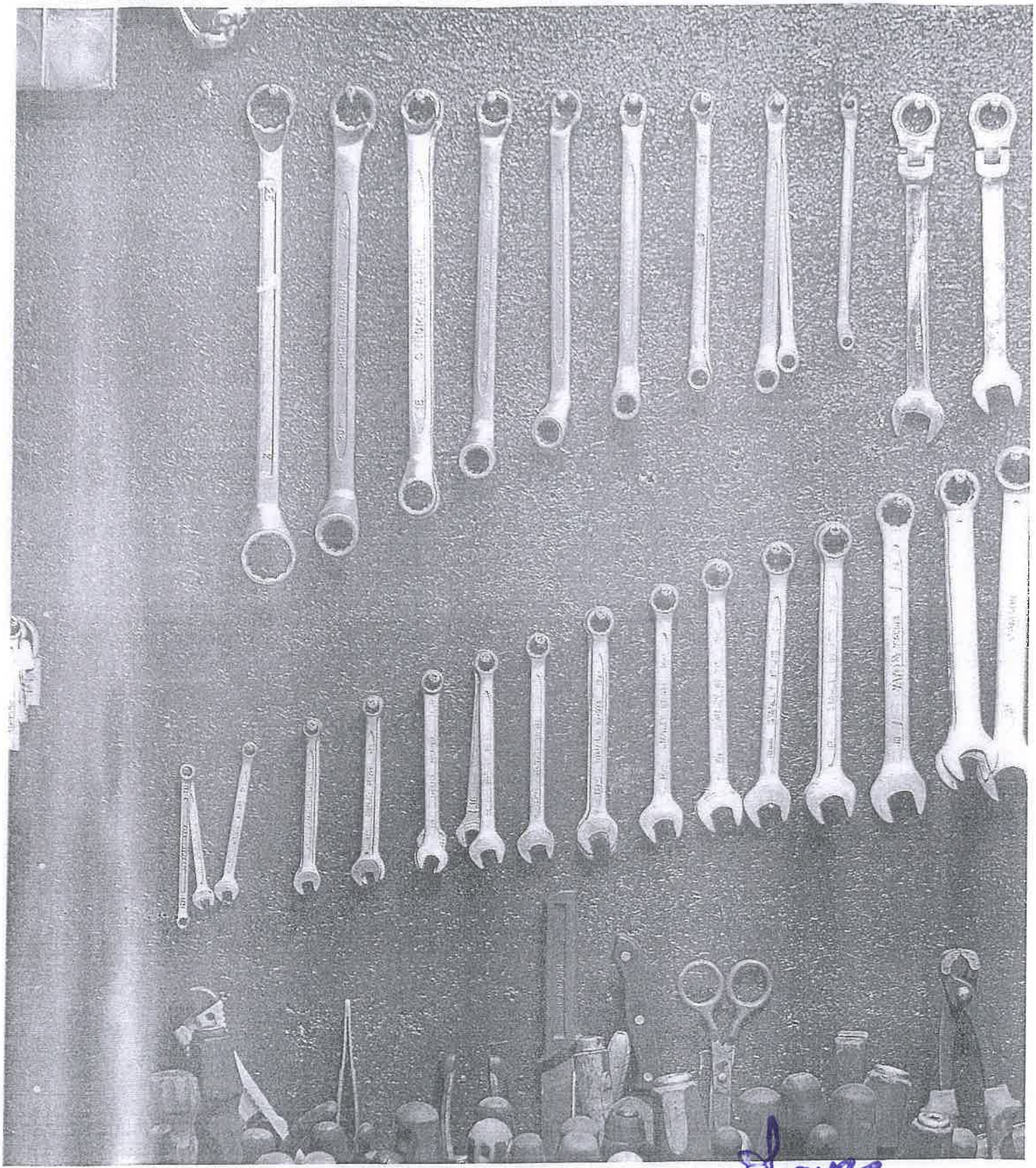
DEPARTMENT OF MECHANICAL ENGINEERING



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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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ADD ON COURSES

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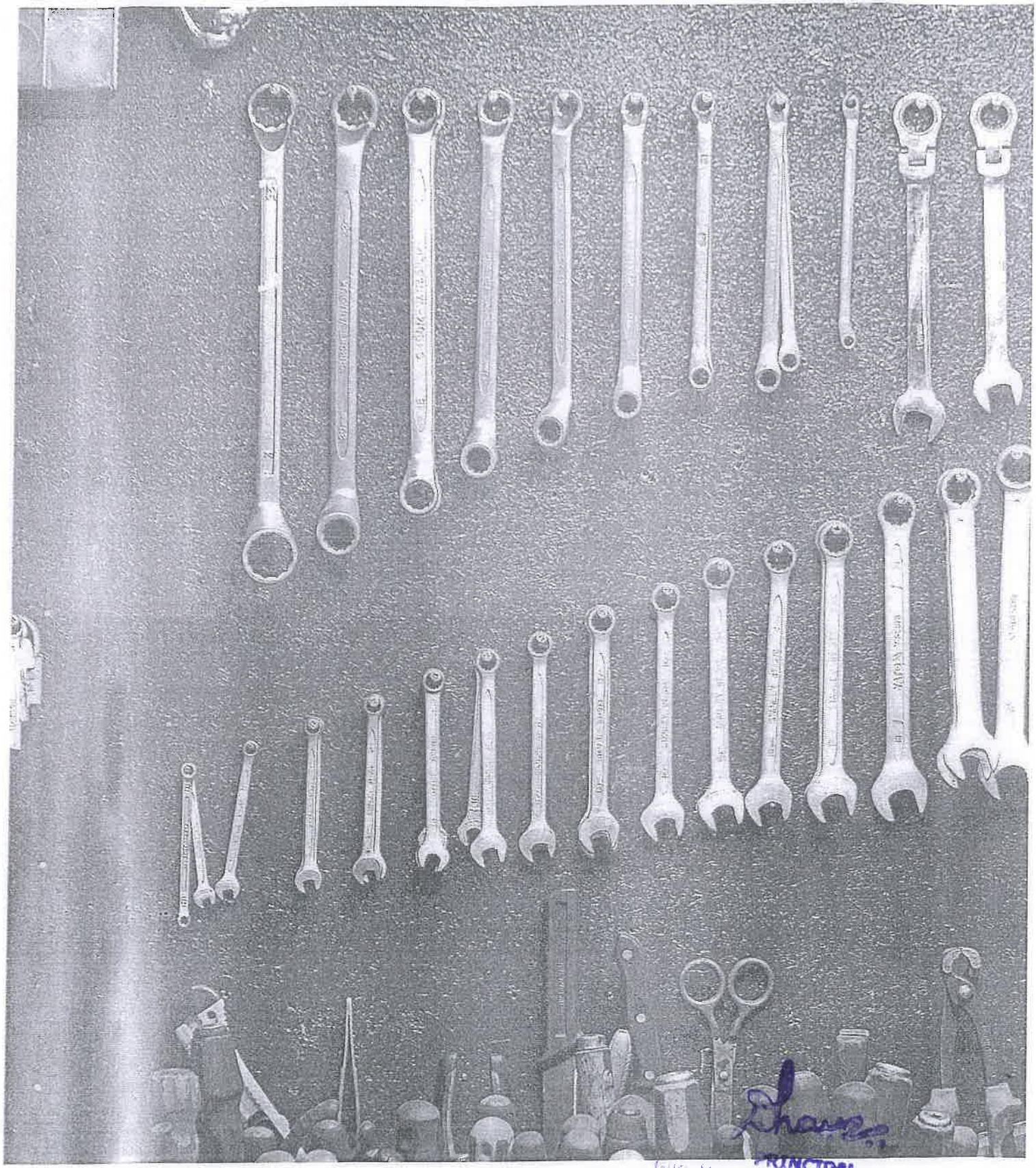
DEPARTMENT OF MECHANICAL ENGINEERING



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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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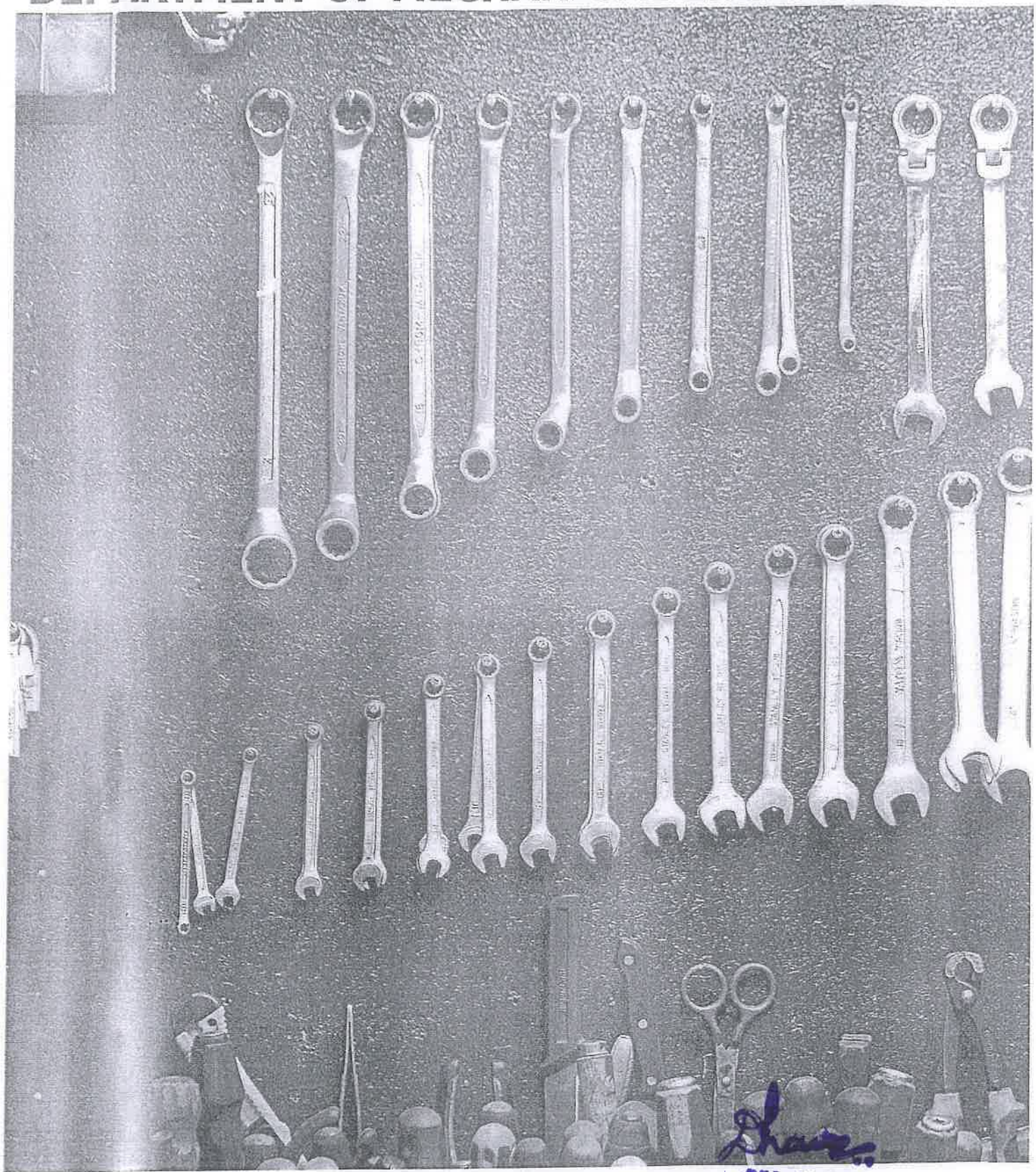
DEPARTMENT OF MECHANICAL ENGINEERING



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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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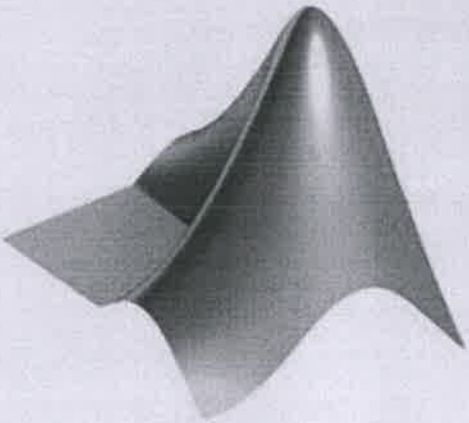
ADD-ON COURSES

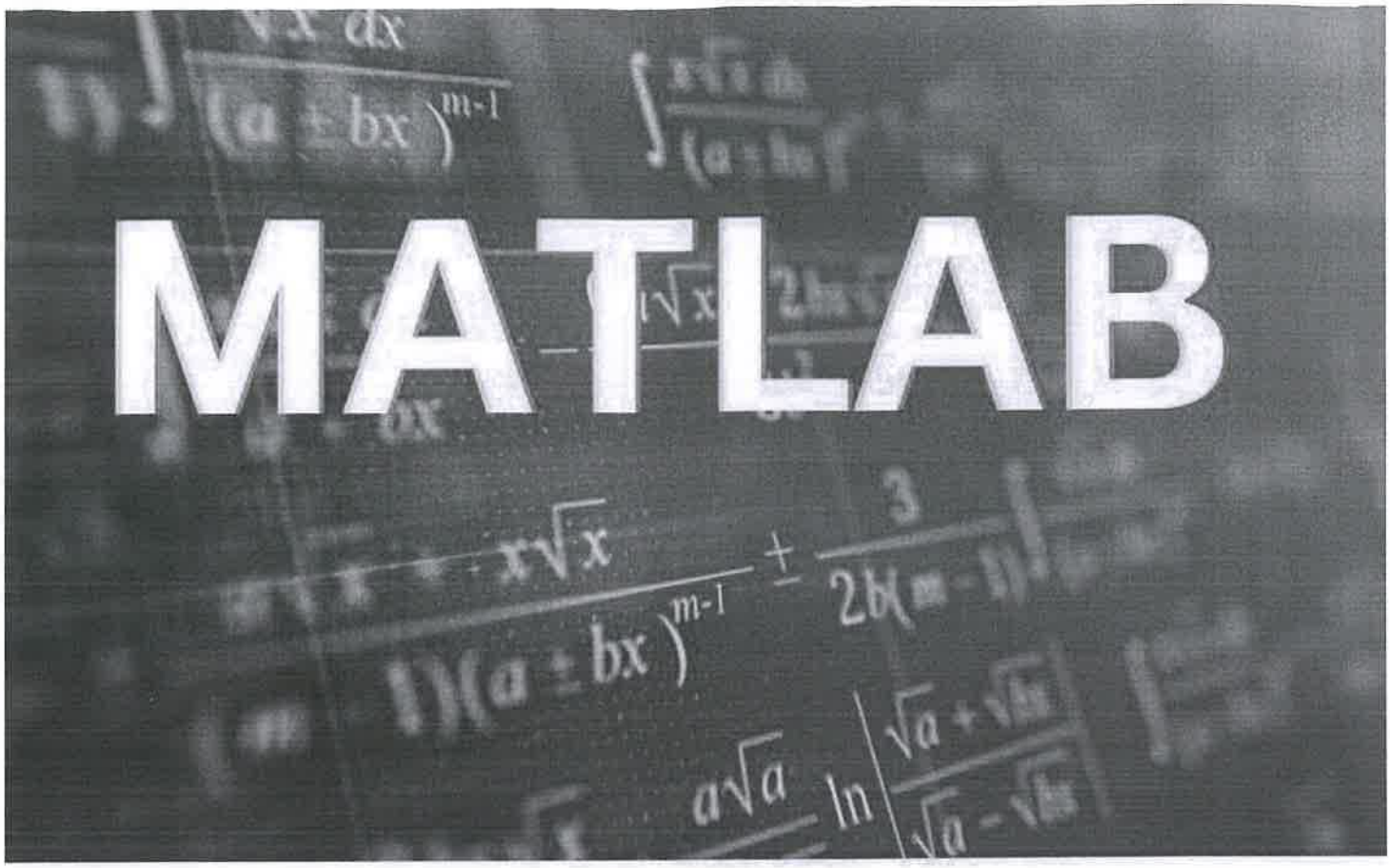
SESSION 2020-21

SYLLABUS



MATLAB

PRINCIPAL
Bidar



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 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 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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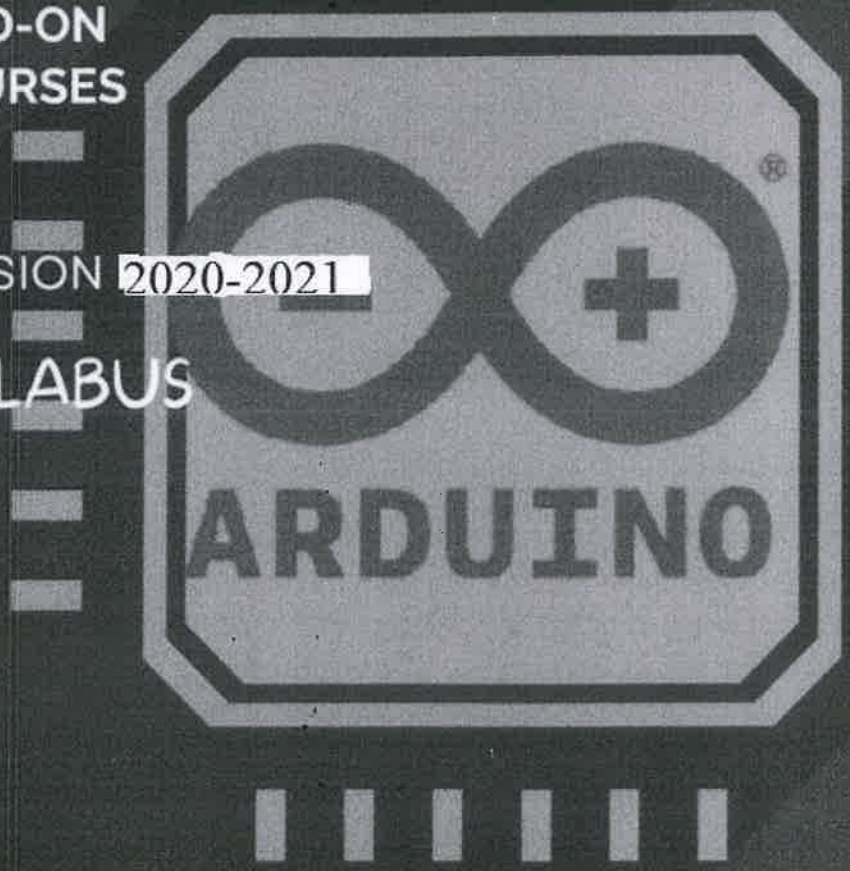
ADD-ON COURSES

SESSION 2020-2021

SYLLABUS



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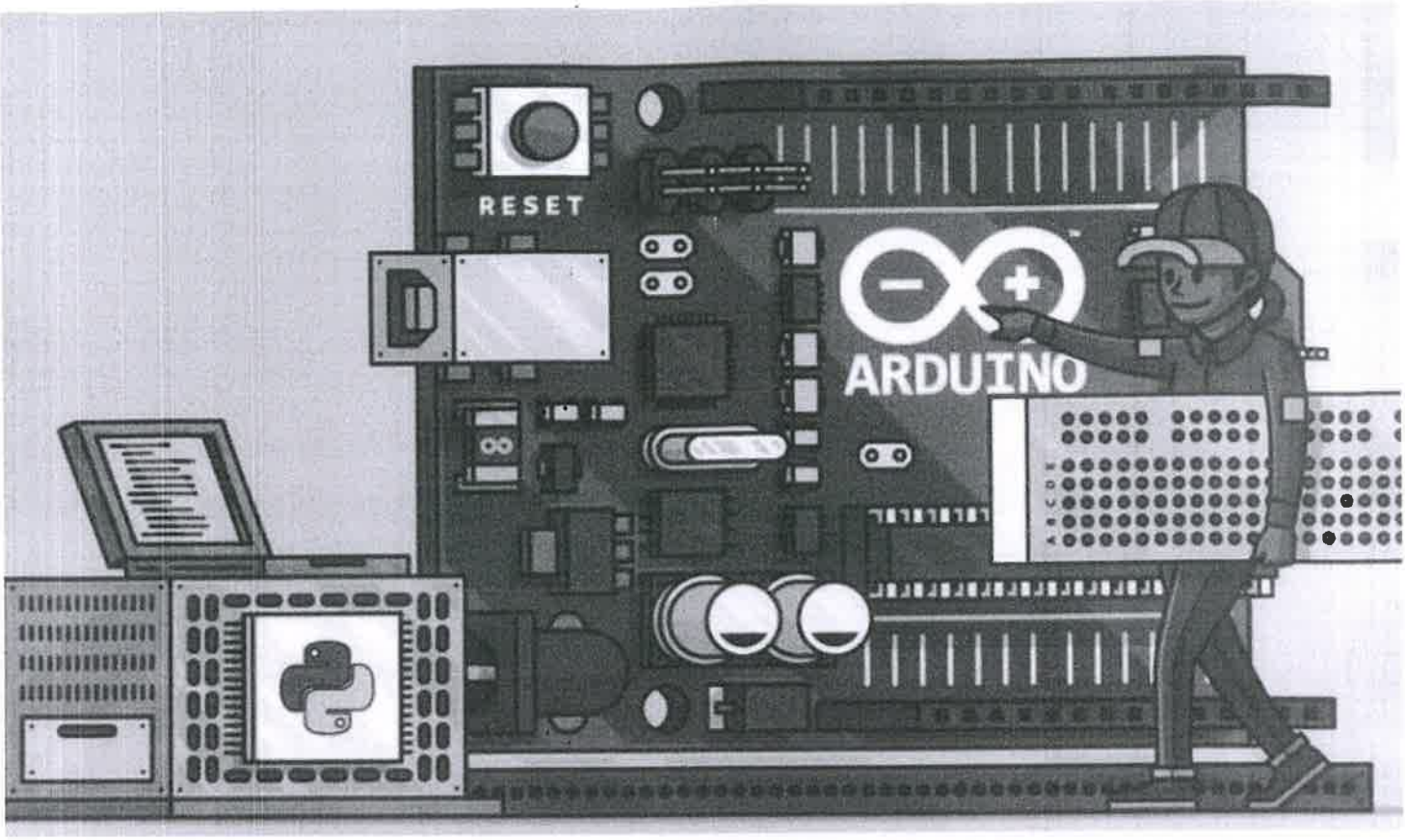
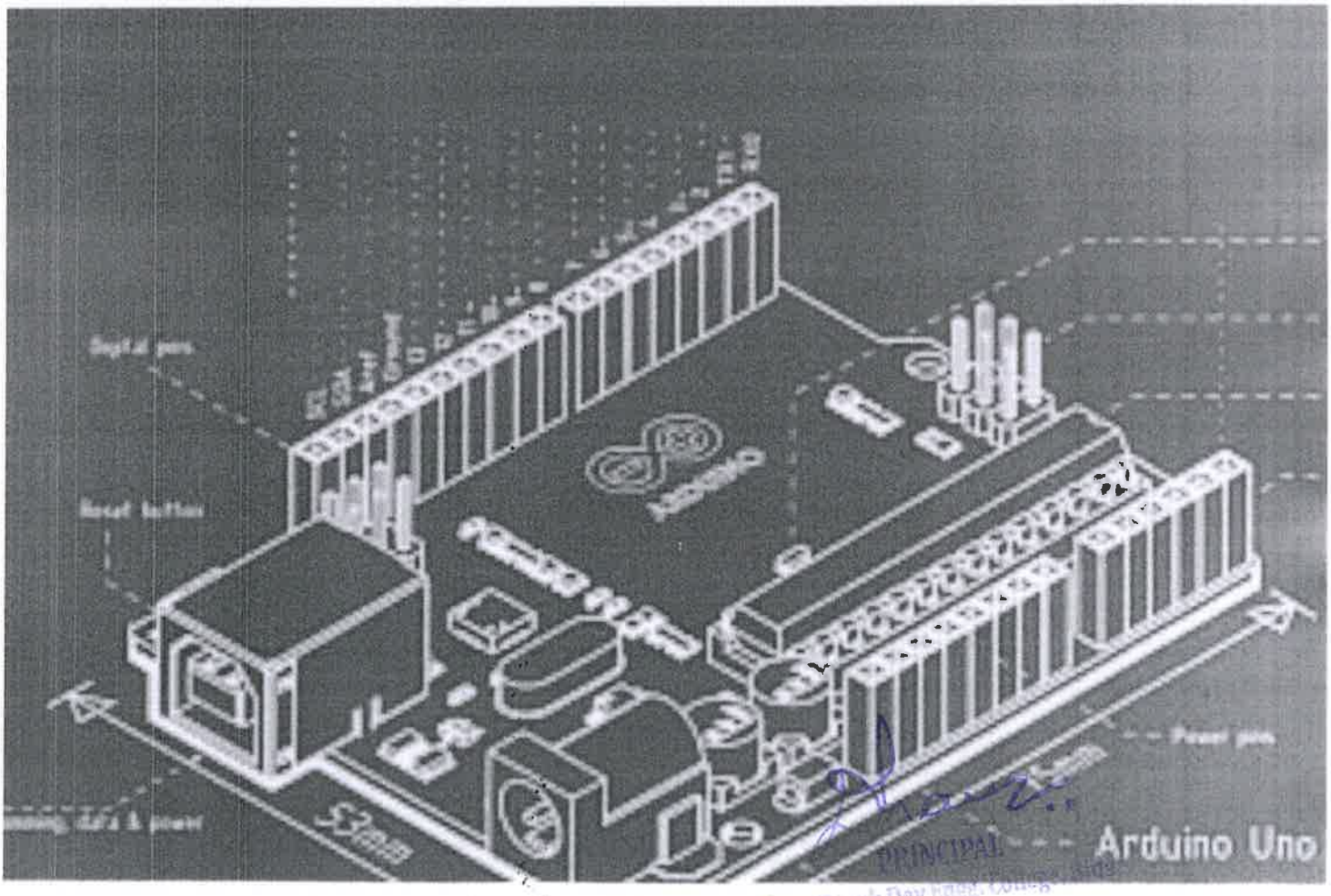


ELECTRICAL AND ELECTRONICS ENGINEERING



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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ADD-ON COURSES

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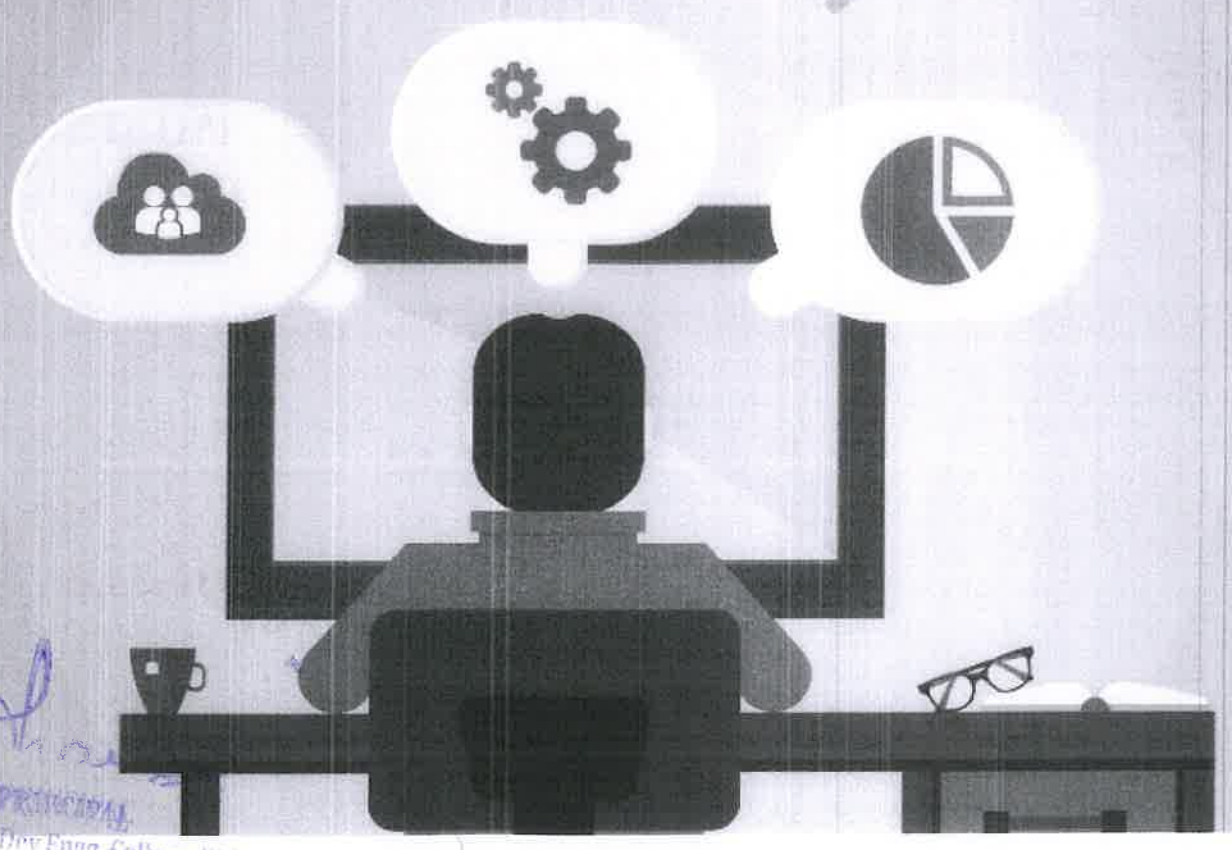

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JAVA Programming

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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Session 2020-2021

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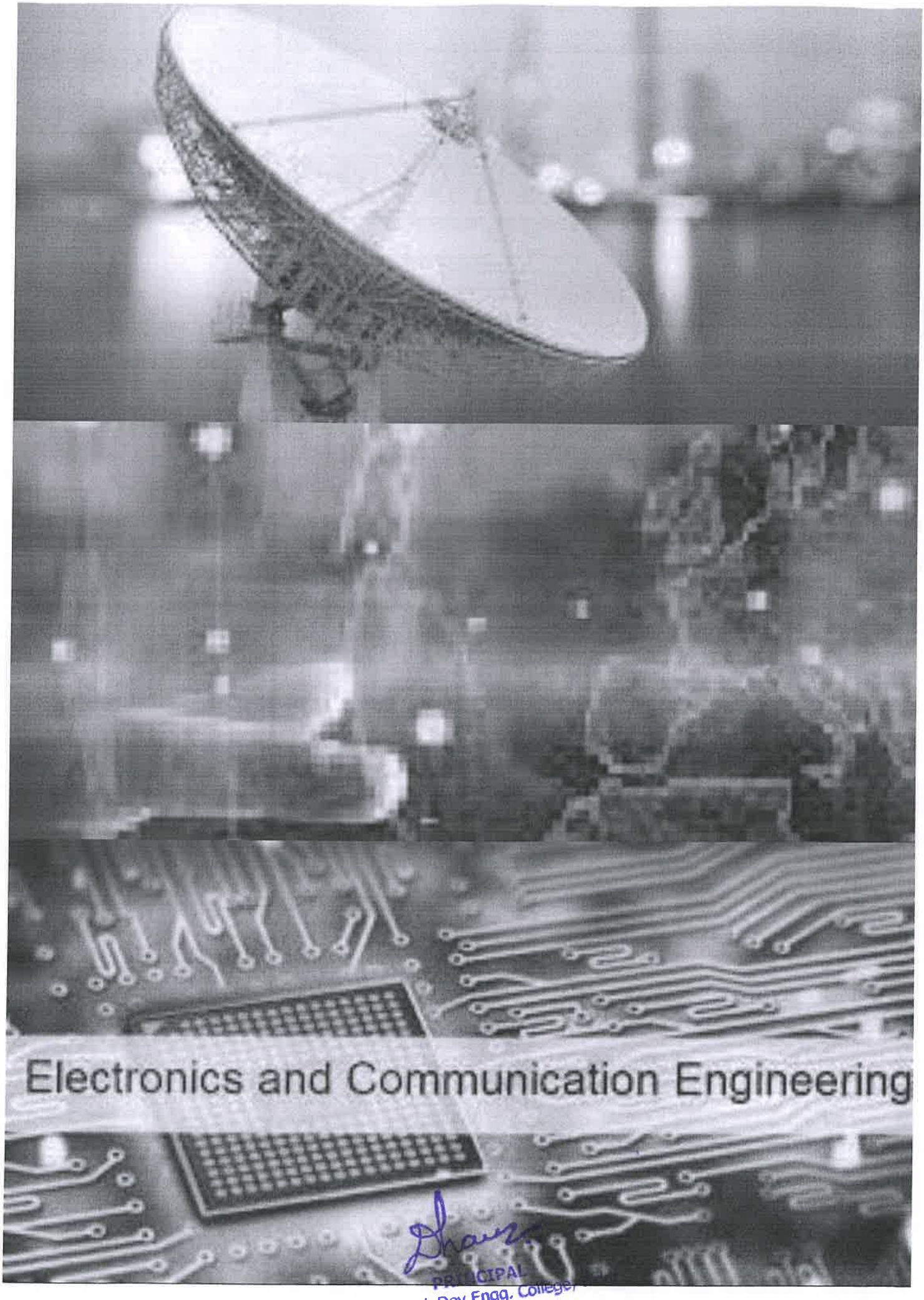

Electronics and Communication Engineering

MACHINE LEARNING WITH PYTHON (GNEC320)

Course Objectives: **Total Duration: 40hrs**

1. To introduce students to the basic concepts and techniques of Machine Learning

2. To develop skills of using recent machine learning software for solving practical problems

3. To gain experience of doing independent study and research

4. To acquire programming skits in core Python

5. To acquire Object Oriented Skills in Python

6. To develop the pill of designing Graphical user interfaces in Python

Course Outcomes:

1. At the end of the course, the student will be able to 1. Understand machine learning concept and range of problems that can be handed by machine learning

2. Compare and parameterize different learning algorithms

3. Apply the machine learning concepts in real life problems

4 Explain basic principles of Python programming language

5 Implement object oriented concepts

6. Implement database and Gut applications

Module-1 **(4 hrs)**

Introduction-

Basics of Machine learning Need for Machine Learning, Machine Learning Model Challenges in Machine Learning Applications of Machine Learning

Module-2 **[6 hrs]**

Python Ecosystem-

Introduction to Python Installing Python, Components of Python Machine Learning Ecosystem. Jupyter Note book. Types of cells in Jupyter notebook. Using Pandas Series Data structure, Data frame ,Data Structure.

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Module-3 **[8hrs]**

Different types of methods, Tasks suits for Machine Learning Pandas- Binary Operation in Data Frame Advance Operations on Date Frame, Handling

Module-4 **[8 hrs]**

Data Loading for MACHINE LEARNING Project-

Consideration while loading CSV data, Methods to load CSV Data File

Module-5 **(8 hrs)**

Understanding data with Statistics-

Introduction looking at raw data checking dimensions of data, statistics summary of data, reviewing class distribution.

Module-6 **[6 hrs]**

Understanding data with visualization

Introduction, Univariate plots, Density plots, Box and Whisker plots, Multivariate plot, Correleation Matrix plot , Scatter Matrix plot

Text books-

Python Machine Learning Book by Sebastian Raschka

Python for Data Analysis: Data wrangling with Pandas, Numpy and ifython Book by Wes McKihney

Reference Books

Building Machine Learning System with Python-Will Richert, Luis Pedro Coelho

Statistics and Machine Learning in Python" by Edouard Duchesnay and Tommy Lofstedk.

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VALUE ADDED COURSES

SYLLABUS

Session 2020-2021

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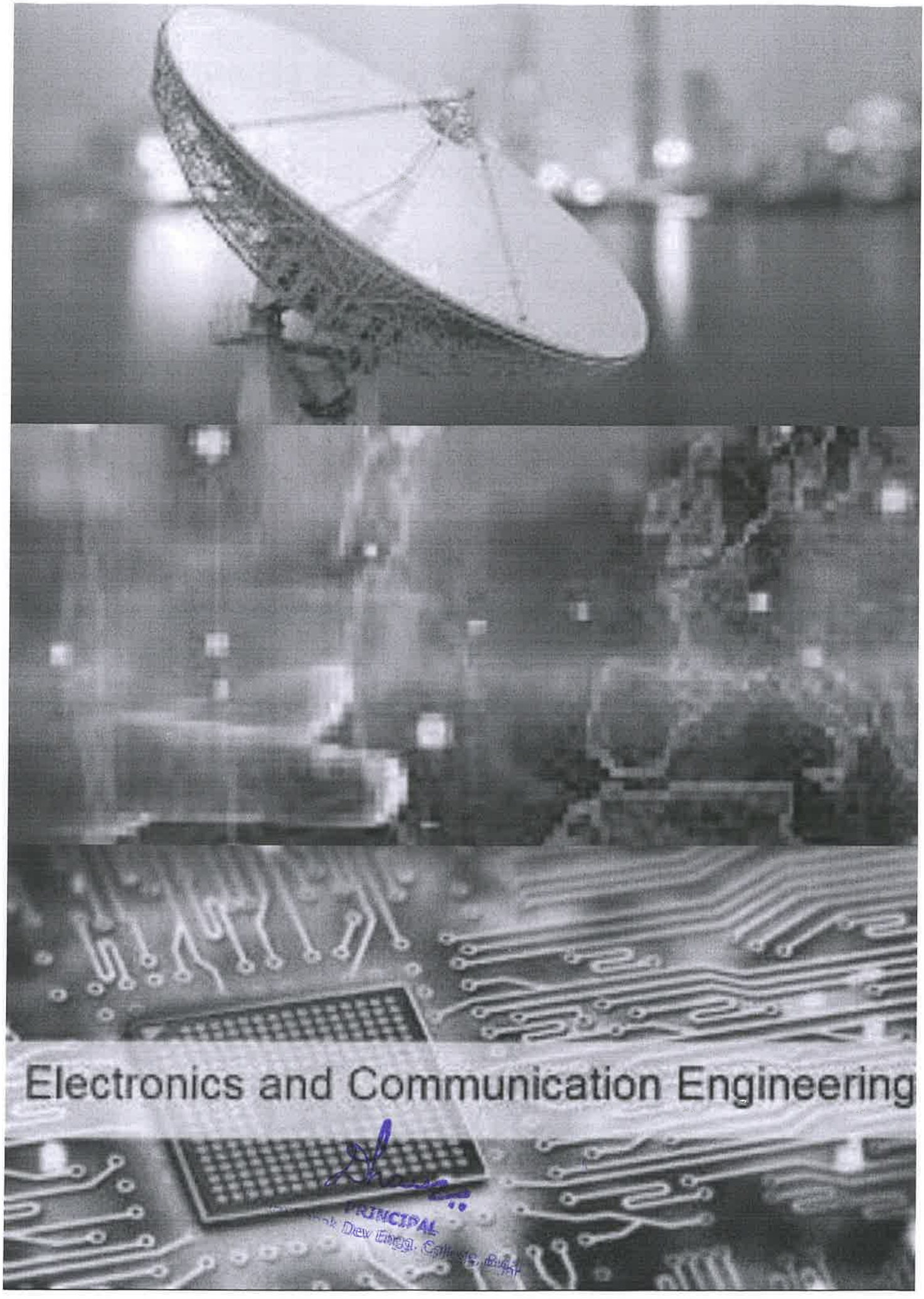

Electronics and Communication Engineering

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CYBER SECURITY

Total Duration: 30 Hrs.

Course Objectives:

1 .To secure the information stored and conveyed which is an invalucble resource of any organization

2. To update the knowledge of students in network security issues

Course Outcome:

The students gain the most comprehensive knowledge and skills in the Network Security providing an opportunity to equip the Network System Administrators & Information Security Officers to understand the security concerns, vulnerabilities, attacks and to plan and implement the desired e-Security solutions.

Module 1

Networking Concepts Overview: Basics of Communication Systems, transmission Media, lSO/OSl and TCP/IP Protocol Stacks, Local Area Networks, Wide Area Networks, lnternetworking, Packet Formats, Wireless Networks, the Internet.

Module 2

Information Security Concepts: Information Security Overview, Information Security Services, Types of Attacks, Goals for Security, E-commerce Security, Computer Forensics, Steganography, Security Engineering.

Module 3

Security Threats and vulnerabilities: Overview of Security threats, Hacking Techniques, Password Cracking, Insecure Network connections,

Malicious Code, Programming Bugs, Cyber crime and Cyber terrorism, Information Warfare and Surveillance,

Module 4

Cryptography: Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication and Hash functions, Digital Signatures, Public Key infrœtructure, Diffe- Hellman key exchange protocol, Applications of Cryptography

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Module 5

Security Management Practices:

Overview of Security Management, Information Classification Process Security Policy, Risk Management, Security Procedures and Guidelines, Business Contnuity and Disaster Recovery

Reference Books:

- Future Crimes: Inside the Digital Underground and the Battle for our Connected World by Marc Goodman.
- Spam Nation: The Inside Story of Organized Cybercrime- from Globd Epidemic to Your Front Door by Brian Krebs.
- Data and Goliath: The Hidden Battles to Collect Your Data and Con-rol Your World by Bruce Schneier.

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ADD-ON COURSES

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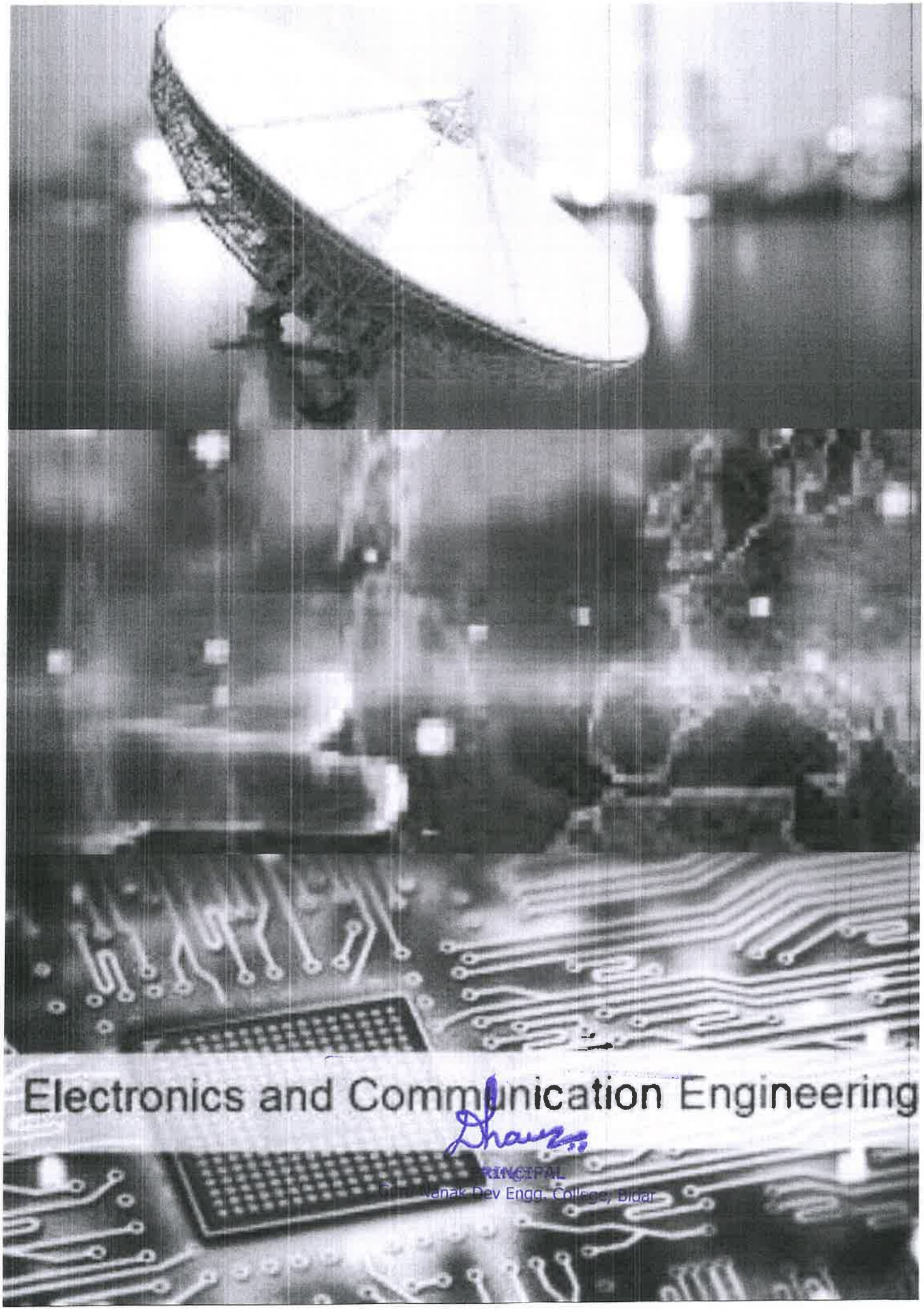

Electronics and Communication Engineering

VEHICULAR AD-HOC NETWORK

Total Duration: 30 Hrs.

Pre-requisites of course: Introduction to networking course. Wireless Communications, Network Security: Concepts, Protocols and Programming.

Course 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.

About VANET:

This course will introduce vehicular ad-hoc networks (VANETs) and facilitate a discussion of wireless 4G and 5G-LTE, wireless Ad-Hoc networks,issues involved in building VANETs. These issues include physical communications limitations, special characteristics of vehicular networks, possible applications (collision avoidance, incident notification, etc.), security, user privacy, and driver distraction. Student responsibilities in the course will include reading papers,participating in class discussion, and keeping a log of course activities.

Course Outcomes:	
CO1	Explain basics of Wireless 4G and 5G –LTE(Long Term Evolution), OFDM Transmission
CO2	Design the physical layer for downlink
CO3	Describe Wireless Ad Hoc Networks, Wirebess mesh Networks, Presen- salient features of Broadband Wireless Access and Wireless Body Area Networks
CO4	Describe the VANET, Architecture, Security Issues, Challenges in VANETs

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Detailed Syllabus:

Module 1

3G review, The context for the long term evolution, Requirements and targets for the long term evolution, 4G Technologies, and 5G Technologies Network architecture and 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. WBAN 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 of VANET, layer architecture of vehicular network, characteristics of VANET, attacks in VANET, Routing Architecture, Security Issues in VANETs, Clustering Algorithm in VANET for Data Security.

REFERENCE BOOKS:

1. Stefania Sesia, Issam Toufik and Matthew Baker,"LTE-The UMTS Long Term Evolution"from theory to practice, John Wiley & sons ltd,2009.
2. Dr.Sunilkumar S Manvi and Mahabaleshwar S Kakkasageri, "Wireless and Mobile Networks Concepts and Protocols", Wiley India, 2010.
3. Loutfinuaymi, "WIMAX Technology for wireless Broadband Wireless Access", Wiley,2007.
4. Xin Wang, "Mobile AdHoc Networks Applications", inteo, 2011 .

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VALUE ADDED COURSES

SYLLABUS

Session2020-2021

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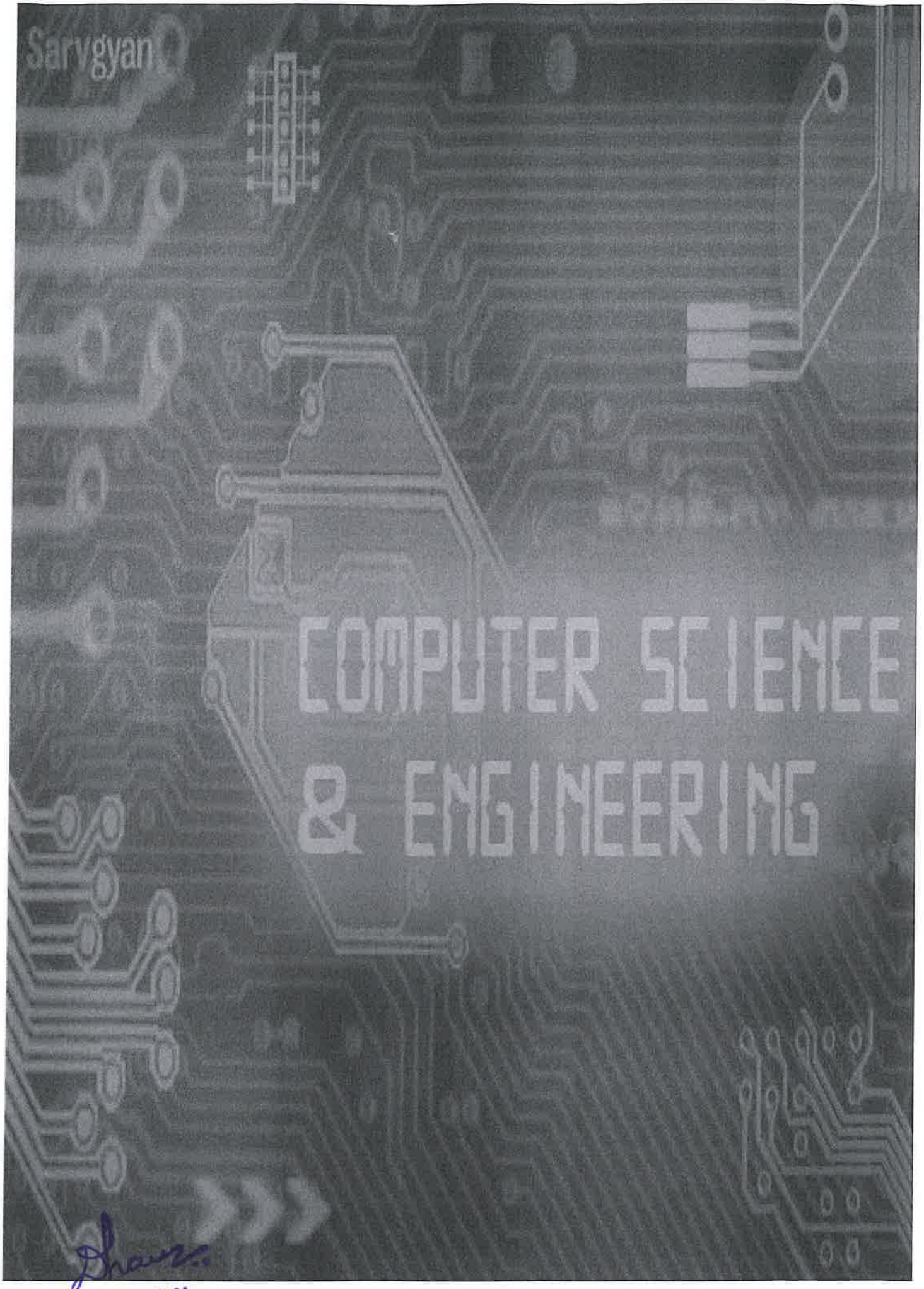

Python Programming

SubCode:GNCSPYP320 **Total Duration: 30Hrs.**

Pre-requisites of course: C Programming, Basics of Engineering Mathematics, No prior knowledge of Python is required. Basic computer literacy is expected.

Course Objectives:

- To understand why Python is a useful scripting language for developers.
- To learn how to design and program Python applications.
- To learn how to use lists, tuples, and dictionaries in Python programs.
- To learn how to learn and use python libraries for developing application.

About Python:.

- Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed.
- Often, programmers fall in love with Python because of the increased productivity it provides. Since there is no compilation step, the edit-test-debug cycle is incredibly fast. Debugging Python programs is easy: a bug or bad input will never cause a segmentation fault. Instead, when the interpreter discovers an error, it raises an exception. When the program doesn't catch the exception, the interpreter prints a stack trace. A source level debugger allows inspection of local and global variables, evaluation of arbitrary expressions, setting breakpoints, stepping through the code a line at a time, and so on. The debugger is written in Python itself, testifying to Python's introspective power. On the other hand, often the quickest way to debug a program is to add a few print statements to the source: the fast edit-test-debug cycle makes this simple approach very effective.
- See also some comparisons between Python and other languages.

Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Understand the basics of Python	K2
CO2	To learn how to write loops and decision statements in Python.	K3
CO3	Identify the methods to create and manipulate lists	K3
CO4	To learn how to design and program Python applications using libraries	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	Python Basics	5
2	Flow Control	5
3	Functions	5
4	List	5
5	Dictionaries and Structuring Data:	5
6	Introduction to Python Libraries	5

Total hours : 30

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Detailed Syllabus:

UNIT-I

Python Basics: Entering Expressions into the Interactive Shell, The Integer, Floating-Point, and String Data Types, String Concatenation and Replication, Storing Values in Variables, Your First Program, Dissecting Your Program,

UNIT-II

Flow control: Boolean Values, Comparison Operators, Boolean Operators, Mixing Boolean and Comparison Operators, Elements of Flow Control, Program Execution, Flow Control Statements, Importing Modules, Ending a Program Early with sys.exit()

UNIT –III

Functions: def Statements with Parameters, Return Values and return Statements,The None Value, Keyword Arguments and print(), Local and Global Scope, The global Statement, Exception Handling, A Short Program: Guess the Number

UNIT-IV

Lists: The List Data Type, Working with Lists, Augmented Assignment Operators, Methods, Example Program: Magic 8 Ball with a List, List-like Types: Strings and Tuples, References,

UNIT V

Dictionaries and Structuring Data: The Dictionary Data Type, Pretty Printing, Using Data Structures to Model Real-World Things,

UNIT VI

Introduction to Python Libraries: Numpy, Pandas, Matplotlib, Seaborne

Assessment:

1. Every student has to give 'test consisting of Programming tasks and Objective Questions.

Companies Using Python

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

- Industrial Light and Magic
- Google
- Facebook
- Instagram
- Spotify
- Quora
- Netflix
- Dropbox
- Reddit

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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.

Text Books:

1. Al Sweigart,"Automate the Boring Stuff with Python",1 stEdition, No Starch Press, 2015. (Available under CC-BY-NC-SA license at https://automatetheboringstuff.com/) (Chapters 1 to 18)

2. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd Edition, Green Tea Press, 2015. (Available under CC-BY-NC license at http://greenteapress.com/thinkpython2/thinkpython2.pdf) (Chapters 13, 15, 16, 17, 18) (Download pdf/html files from the above links)

Reference Books:

1. Gowrishankar S, Veena A, "Introduction to Python Programming", 1st Edition, CRC Press/Taylor & Francis, 2018. ISBN-13: 978-0815394372

2. Jake VanderPlas, "Python Data Science Handbook: Essential Tools for Working with Data", 1 st Edition, O'Reilly Media, 2016. ISBN-13: 978-1491912058

3. Charles Dierbach, "Introduction to Computer Science Using Python", 1 st Edition, Wiley India Pvt Ltd, 2015. ISBN-13: 978-8126556014

4. Wesley J Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education India, 2015. ISBN-13: 978-9332555365

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ADD-ON COURSES

SYLLABUS

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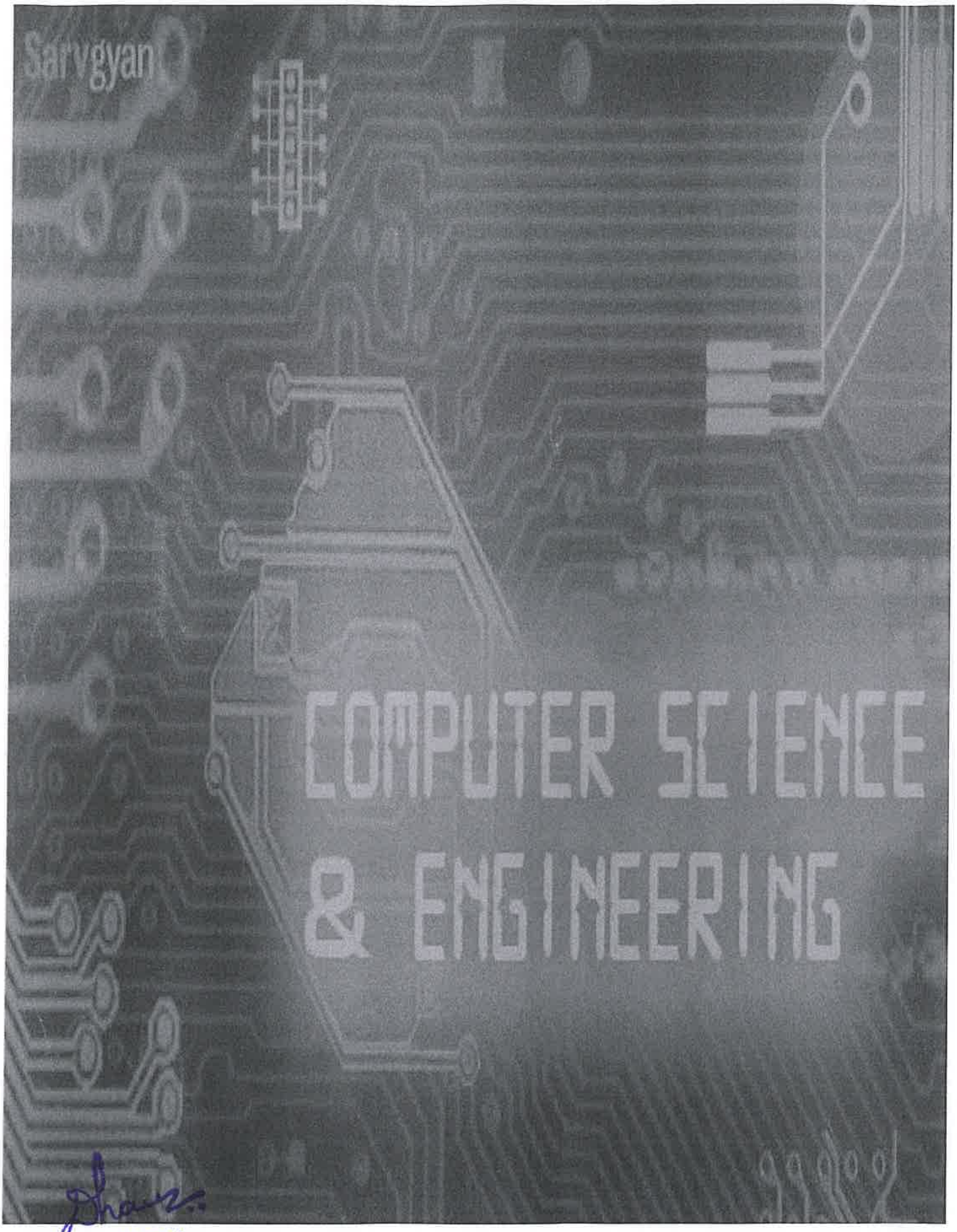

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Internet Of Things (IoT)

Total Duration: 36 hrs

Pre-requisites of course:

Basic knowledge of computer programming, basic knowledge of electronics, understanding of networking protocols, knowledge of data structures and algorithms, familiarity with cloud computing, mathematics and statistics.

Course Objectives:

1. To impart knowledge to students on IoT (Internet of Things) technology. This will help to enhance their understanding of the field, which is becoming increasingly important in research and development.

2. To provide students with a working introduction to the IoT technical environment. This includes themes of sensor technology, data communication protocols, cloud computing, and data analytics. Students will be able to design and develop IoT networks and understand how to collect and analyze data from IoT devices.

3. To introduce students to the use of a high-level programming language in the context of IoT. Students will learn how to write software to control IoT devices and interpret the data they produce. This will enable them to solve scientific problems with applications and examples from engineering, and to apply this knowledge in real-world scenarios.

About IOT

IoT (Internet of Things) is a multidisciplinary field that involves hardware and software engineering, networking, data analytics, and other related areas. IoT (Internet of Things) is a rapidly growing field that encompasses a wide range of technologies and devices. Three popular platforms for building IoT applications are Arduino, NodeMCU, and Raspberry Pi. Each of these platforms has its own unique characteristics and strengths that make it well-suited for different IoT applications.

Arduino is a popular open-source platform that is used to build electronic projects. It is a microcontroller-based platform that is designed to be easy to use, with a large community of developers who share their projects and code online. It is particularly well-suited for projects that require low power consumption, such as sensor networks or remote control systems.

NodeMCU is another open-source platform that is based on the ESP8266 microcontroller. It includes integrated Wi-Fi functionality, which makes it ideal for IoT applications that require wireless connectivity. It is particularly well-suited for cloud-based IoT applications, as it can easily connect to cloud platforms like AWS IoT or Google Cloud IoT.

Raspberry Pi is a single-board computer that is widely used in IoT applications. It is a versatile platform that can run a full-fledged operating system like Linux, which makes it ideal for applications that require more processing power than microcontroller-based platforms like Arduino or NodeMCU. It is particularly well-suited for applications that require complex data processing, such as image recognition or machine learning.

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While Arduino is best suited for low power consumption projects, NodeMCU excels in wireless connectivity, and Raspberry Pi is well-suited for complex data processing applications. Understanding the strengths and limitations of each platform is crucial when selecting the right platform for a given IoT project.

Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Understanding: Students should be able to explain how IoT works, including the architecture, components, and communication protocols involved. They should also be able to identify the advantages and limitations of IoT and its impact on society and the economy.	K2
CO2	Applying: Students should be able to design and implement an IoT system using various hardware components, such as sensors, actuators, and microcontrollers. They should also be able to program these components using appropriate programming languages and tools.	K3
CO3	Analyzing: Students should be able to analyze the data generated by an IoT system using various data analytics techniques, such as data visualization, machine learning, and statistical analysis. They should also be able to identify the patterns and trends in the data and draw insights from them.	K4
CO4	Evaluating: Students should be able to evaluate the performance and effectiveness of an IoT system based on various criteria, such as reliability, scalability, security, and energy efficiency. They should also be able to identify the potential risks and challenges associated with IoT and propose solutions to mitigate them.	K5
CO5	Creating: Students should be able to design and develop innovative IoT applications that solve real-world problems and meet specific user needs. They should also be able to collaborate with other team members and stakeholders to develop a comprehensive IoT solution from concept to deployment.	K6

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

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Detailed Syllabus

Module 1: Introduction to IoT and Microcontrollers

Topics:

- Overview of IoT and its applications
- Introduction to microcontrollers and their use in IoT
- Overview of Arduino, NodeMCU, and Raspberry Pi platforms
- Basics of programming with C/C++

Module 2: Sensors and Actuators

Topics:

- Overview of sensors and their use in IoT
- Introduction to common sensor types (e.g. temperature, humidity, motion)
- Introduction to actuators (e.g. motors, servos, relays)
- Programming sensors and actuators with Arduino, NodeMCU, and Raspberry Pi

Module 3: Wireless Communication

Topics:

- Overview of wireless communication protocols used in IoT (e.g. Wi-Fi, Bluetooth, Zigbee)
- Setting up Wi-Fi and Bluetooth on Arduino, NodeMCU, and Raspberry Pi
- Programming wireless communication with Arduino, NodeMCU, and Raspberry Pi
- Overview of cloud-based IoT platforms

Module 4: Data Analytics and Visualization

Topics:

- Overview of data analytics and visualization in IoT
- Introduction to data analytics techniques and algorithms
- Overview of data visualization tools and libraries (e.g. Matplotlib, Bokeh)
- Collecting and analyzing sensor data with Arduino, NodeMCU, and Raspberry Pi

Module 5: IoT Security and Ethics

Topics:

- Overview of IoT security threats and vulnerabilities
- Best practices for securing IoT systems
- Overview of ethical considerations in IoT design and implementation
- Case studies of ethical issues in IoT

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Reference Books:

1. "Getting Started with Arduino" by Massimo Banzi
2. "NodeMCU ESP8266: Getting Started with MicroPython" by Agus Kurniawan
3. "Raspberry Pi Cookbook: Software and Hardware Problems and Solutions" by Simon Monk
4. "Practical Internet of Things Security" by Brian Russell
5. "Internet of Things: A Hands-On Approach" by Arshdeep Bahga and Vijay Madisetti
6. "The Ethics of Invention: Technology and the Human Future" by Sheila Jasanoff

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.

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VALUE ADDED COURSES

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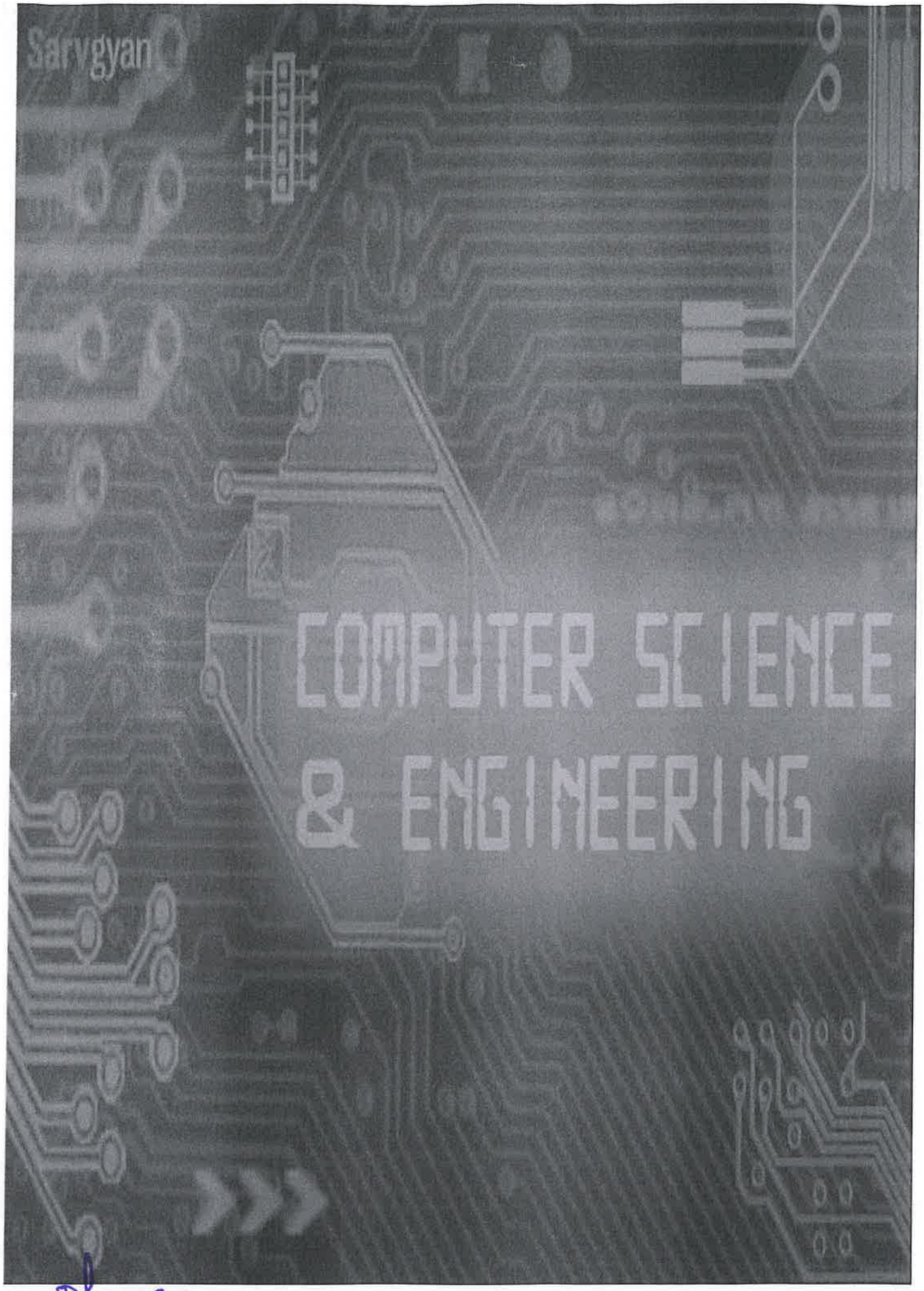

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DOTNET

SubCode:GNCSDNET720 **Total Duration: 30Hrs.**

Pre-requisites of course: C Programming, Basics of Engineering Mathematics. CSS,HTML Basic computer literacy is expected.

Course Objectives:

- Build applications on Visual Studio .NET platform by understanding the syntax and semantics of C#
- Demonstrate Object Oriented Programming concepts in C# programming language
- Design custom interfaces for applications and leverage the available built-in interfaces in building complex applications.
- Illustrate the use of generics and collections in C# • Compose queries to query in-memory data and define own operator behaviour

About DotNet:.

- .NET is an open-source platform for building desktop, web, and mobile applications that can run natively on any operating system. The .NET system includes tools, libraries, and languages that support modern, scalable, and high-performance software development. An active developer community maintains and supports the .NET platform.

In simple terms, the .NET platform is a software that can do these tasks:

- Translate .NET programming language code into instructions that a computing device can process.
- Provide utilities for efficient software development. For example, it can find the current time or print text on the screen.
- Define a set of data types to store information like text, numbers, and dates on the computer

Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Demonstrate OOPS Concepts in C#	K2
CO2	Build Simple Applications on VS.NET Platform by understanding the syntax and semantics of C#.	K3
CO3	Design Custom interfaces for applications.	K3
CO4	Illustrate the use of generics and collections in C#.	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 Microsoft Visual C#**	6
2	**Understanding the C# object model:**	6
3	**Understanding parameter arrays**	6
4	**Defining Extensible Types with C#**	6
5	**Enumerating Collections**	6

Total hours : 30

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Detailed Syllabus:

UNIT-I
Welcome to C#, Working with variables, operators and expressions, Writing methods and applying scope, Using decision statements, Using compound assignment and iteration statements, Managing errors and exceptions

UNIT-II
Creating and Managing classes and objects, Understanding values and references, Creating value types with enumerations and structures, Using arrays

UNIT –III
Understanding parameter arrays, Working with inheritance, Creating interfacesand defining abstract classes, Using garbage collection and resource management

UNIT-IV
Implementing properties to access fields, Using indexers, Introducing generics, Using collections

UNIT V
Enumerating Collections, Decoupling application logic and handling events, Querying in-memory data by using query expressions, Operator overloading

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

Companies Using DOTNET

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

- Industrial Light and Magic
- Google
- Facebook
- Instagram
- Spotify
- Quora
- Netflix
- Dropbox
- Reddit

Text Books:

1. John Sharp, Microsoft Visual C# Step by Step, 8th Edition, PHI Learning Pvt. Ltd. 2016

Reference Books:

1. . Andrew Troelsen, "Prof C# 5.0 and the .NET 4.5 Framework", 6th Edition, Apress and Dreamtech Press, 2012.

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ADD-ON COURSES

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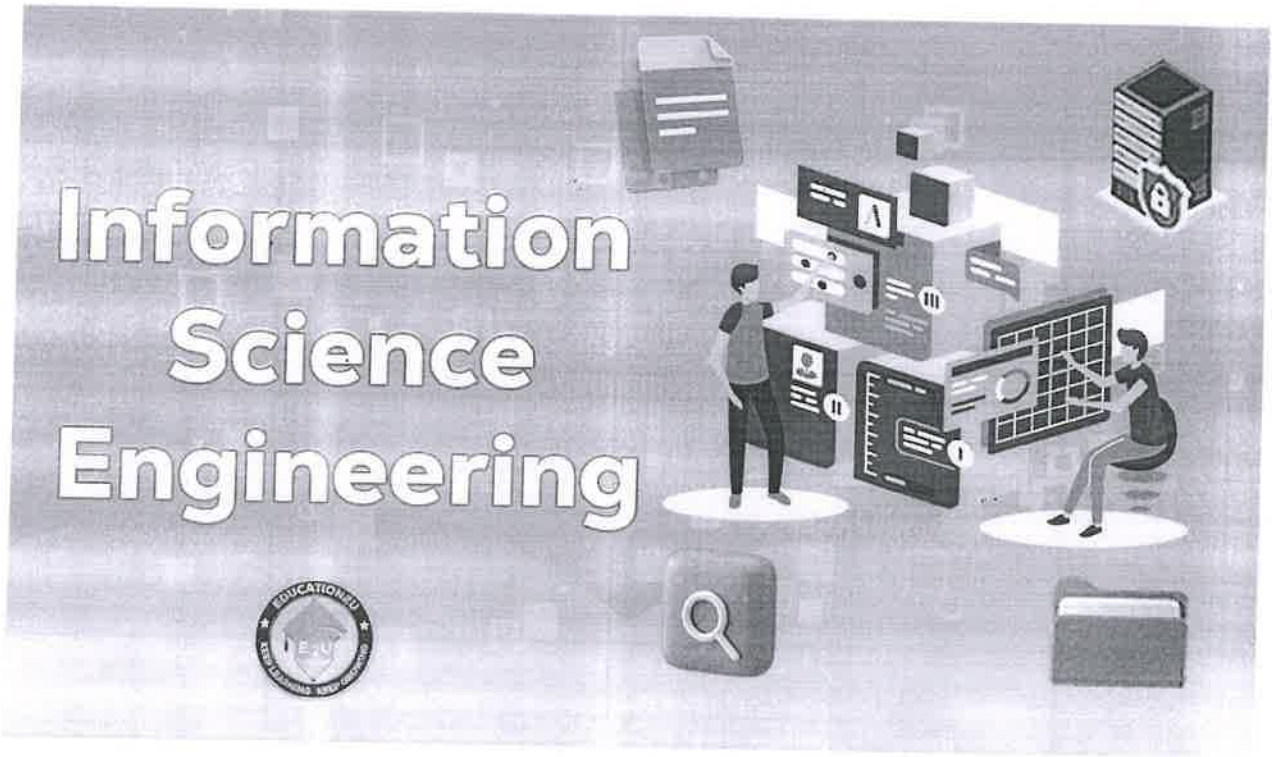

VISUAL BASIC 6.0 (GNECVB21)

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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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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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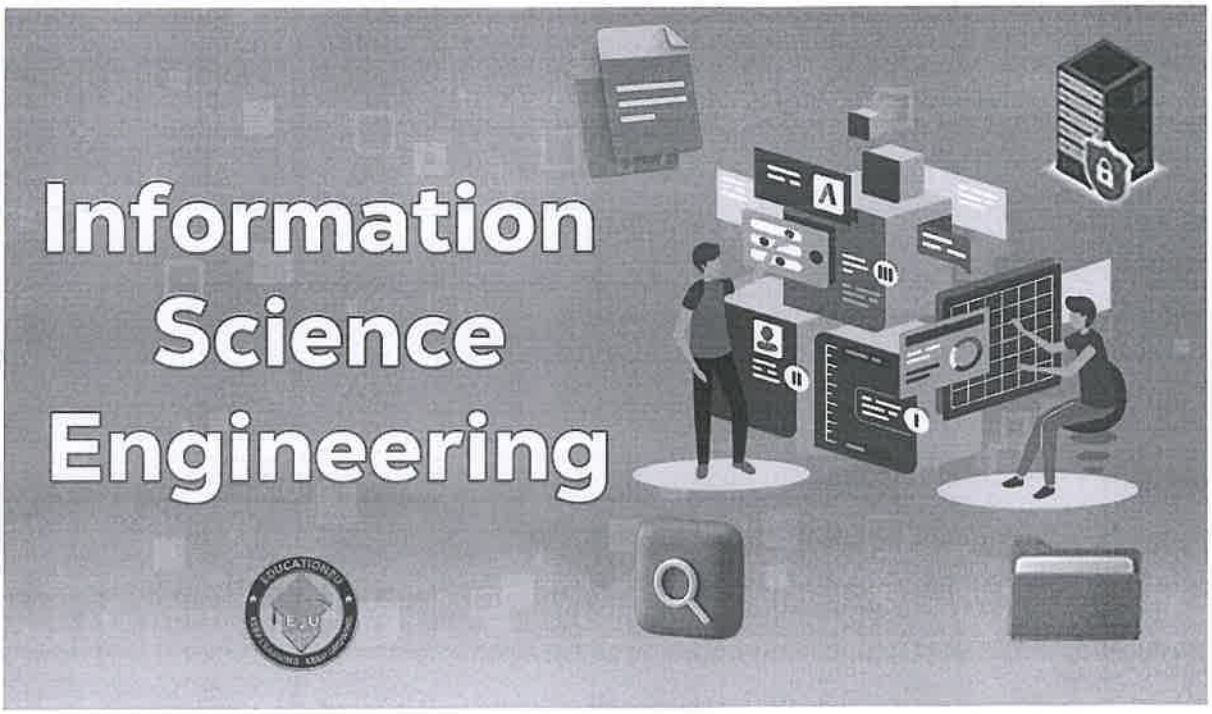
ADD-ON COURSES

SYLLABUS

Session 2020-21



INTRODUCTION TO DOT NET FRAMEWORK FOR APPLICATION DEVELOPMENT (GNEC521)

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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#, 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

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Course Objectives:

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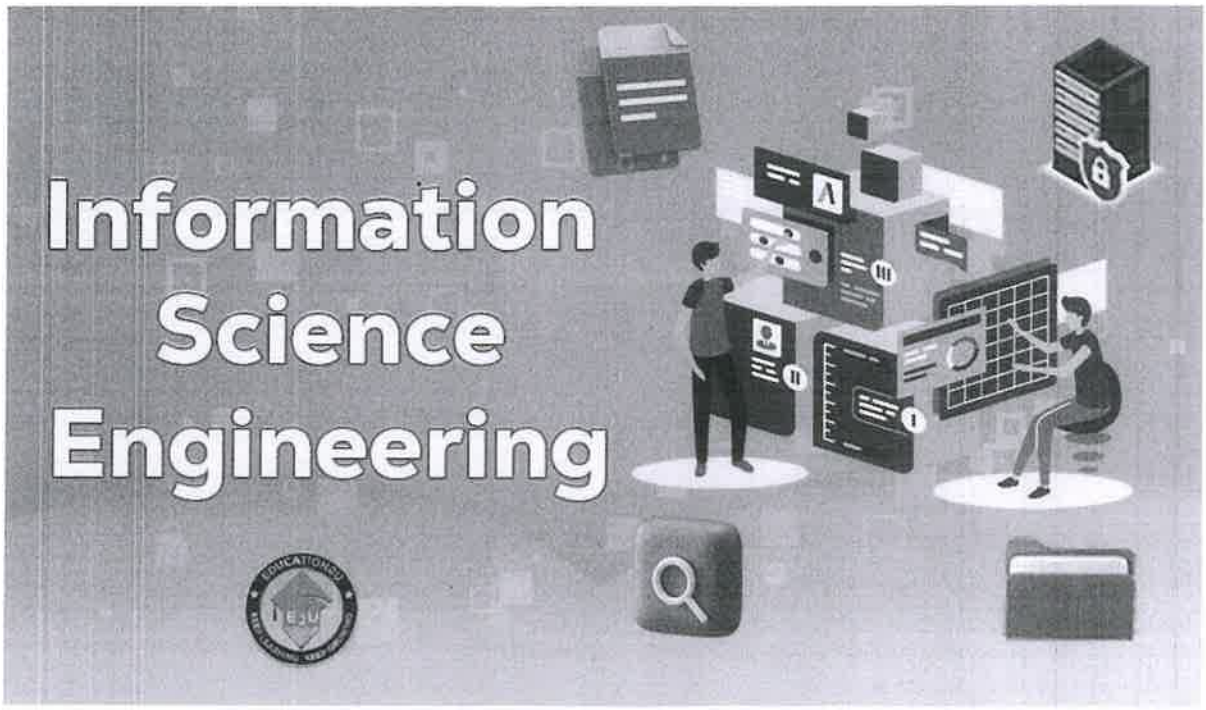
ADD-ON COURSES

SYLLABUS

Session 2020-2021



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

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Session 2020-2021

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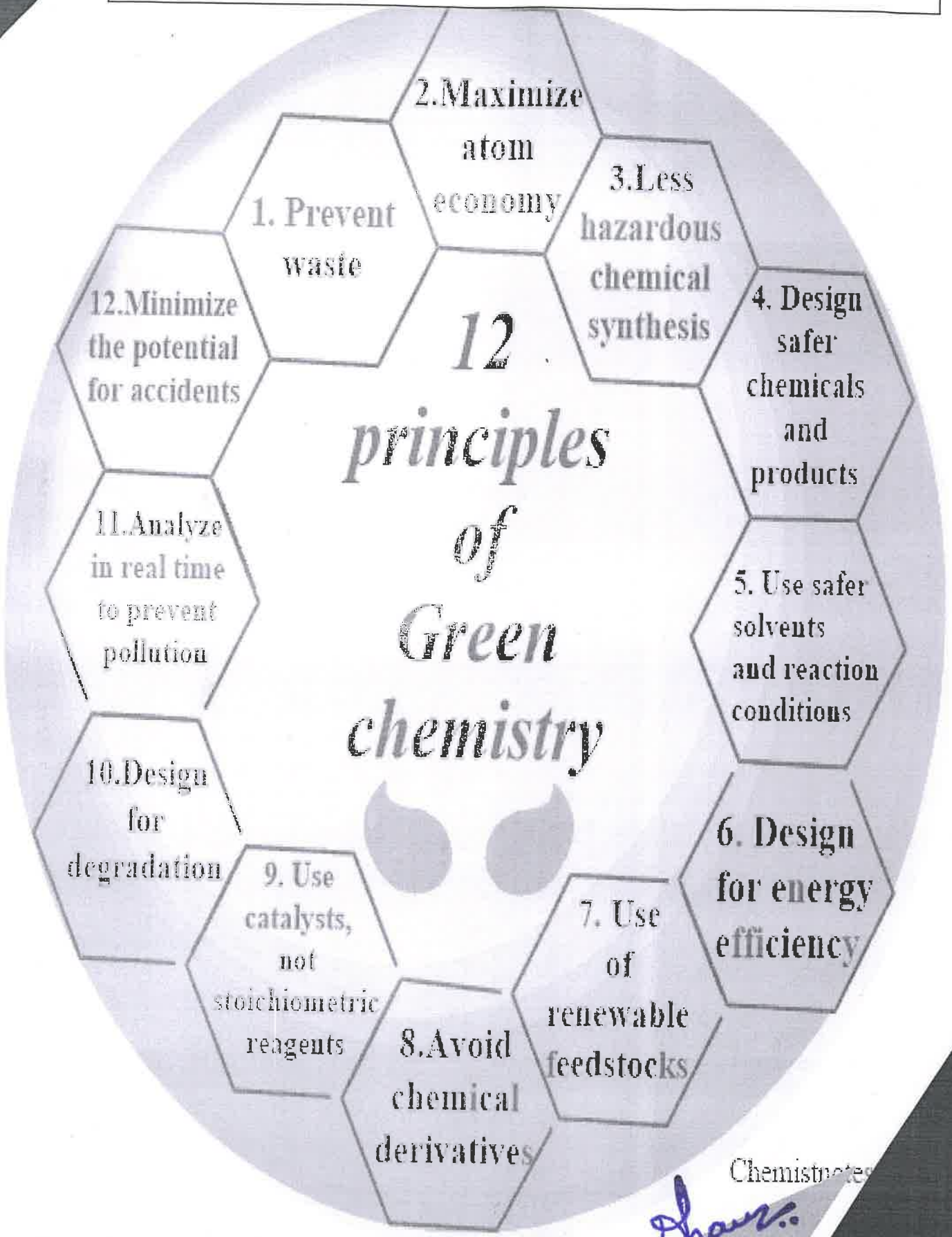
Department of Applied Sciences & Humanities



Chemistnotes

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ENVIRONMENTAL PROTECTION BY GREEN SYNTHESIS

Total Duration: 30Hrs.

Pre-requisites of course: Basics of Engineering Chemistry

Course Objectives:

To protect our environment from the hazardous substance with the concept of green chemistry and important techniques used in practicing green chemistry. It also aims for the maximum use of renewable resources for synthesizing biodegradable products to protect mankind from health hazards

About Environmental Protection by Green Synthesis:

This course covers principles of Green Chemistry, Techniques used in green synthesis, Green synthesis of various chemical products, Real world cases for green chemistry in action,application of green synthesis in protecting the environment.

Course Outcomes:		Knowledge Level, KL
Upon the completion of the course, the student will be able to:		
CO1	Understand the basics of green chemistry.	K2
CO2	Real world case study for green chemistry in action.	K2
CO3	Apply important techniques used in practicing green chemistry	K3
CO4	To understand the green synthesis of various chemicals	K2
CO5	Apply the knowledge for protecting environment with green synthesis	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 1- **Introduction to green chemistry concept**
Introduction, principles of green chemistry, concept of atom economy in chemical synthesis, use of safer chemical and reagents.

Unit 2- **Techniques used in green synthesis**
Important techniques used in practicing green chemistry, microwave irradiation, use of ultrasound in chemical synthesis, use of greener catalyst, super critical fluids in greener solvents.

Unit 3- **Real world cases for green chemistry in action**
Synthesis of PLA from renewable resources, activation of H_2O_2 to act as environmentally benign bleaching agent in paper industry, greener synthesis of paracetamol.

Unit 4- **Green synthesis of various chemical products**

- Synthesis of adipic acid, catechol, 3-hydroxyshikmic acid (a potential alternative to conventional antioxidant BHT used in food).

Unit 5- **Application of green synthesis protecting environment**

- Greener synthesis of methyl methacrylate, urethane, use of safe marine anti foulant to replace the hazardous Tri butylene (TBT) compound.

Assessment:

At the end of the Course each student will give a presentation on a topic covered in the course.

References Book

1) Green chemistry (theory and practice) by P.T. Anastas and J.C. Warner Oxford university press New York 1998.
2) Environmental chemistry with green chemistry by Asim.K.Das Vishwa Bharati Shanti Niketan 2010.

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VALUE ADDED COURSES

SYLLABUS

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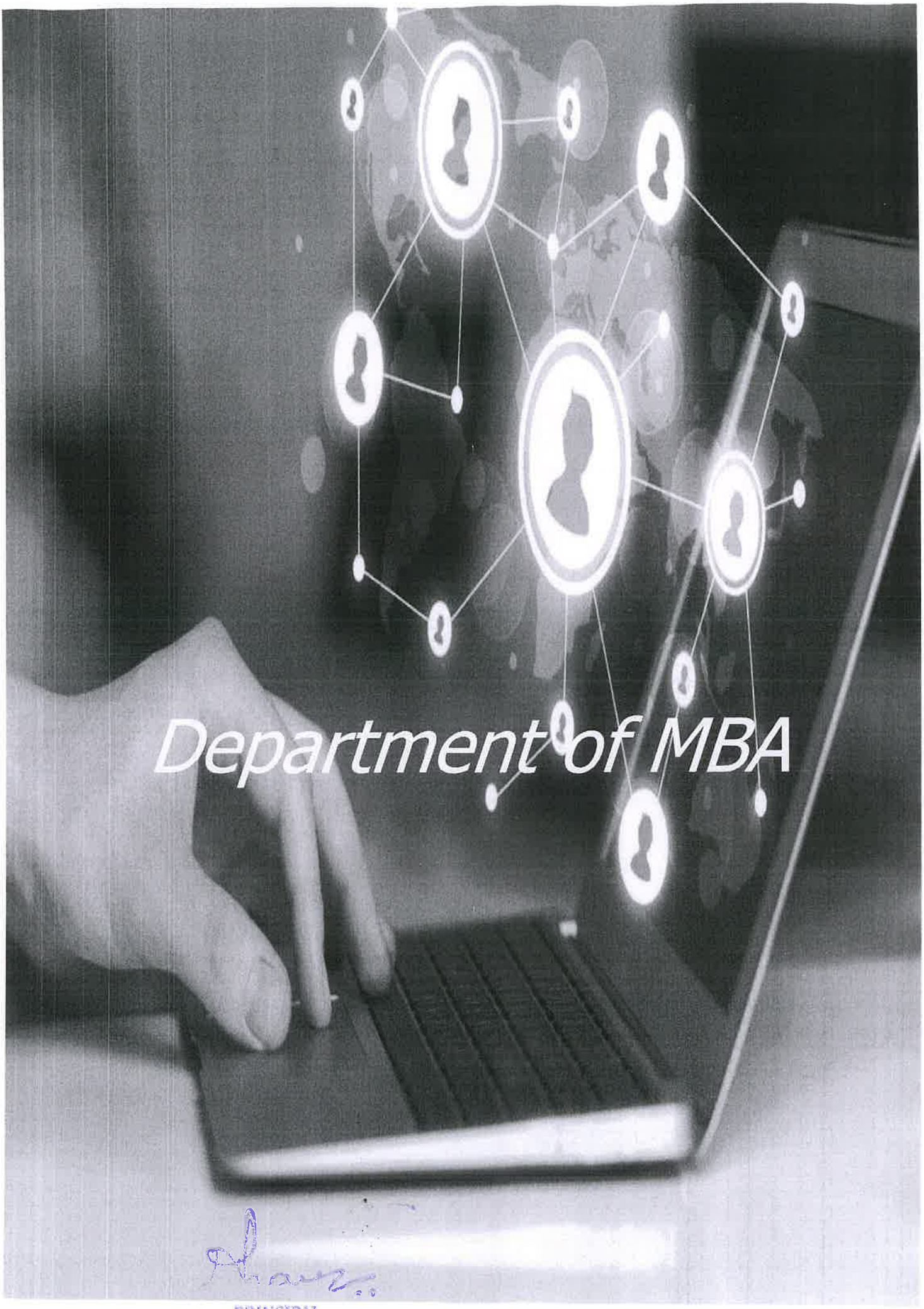

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COMPUTER PROFICIENCY
(GNMBA117)

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.

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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

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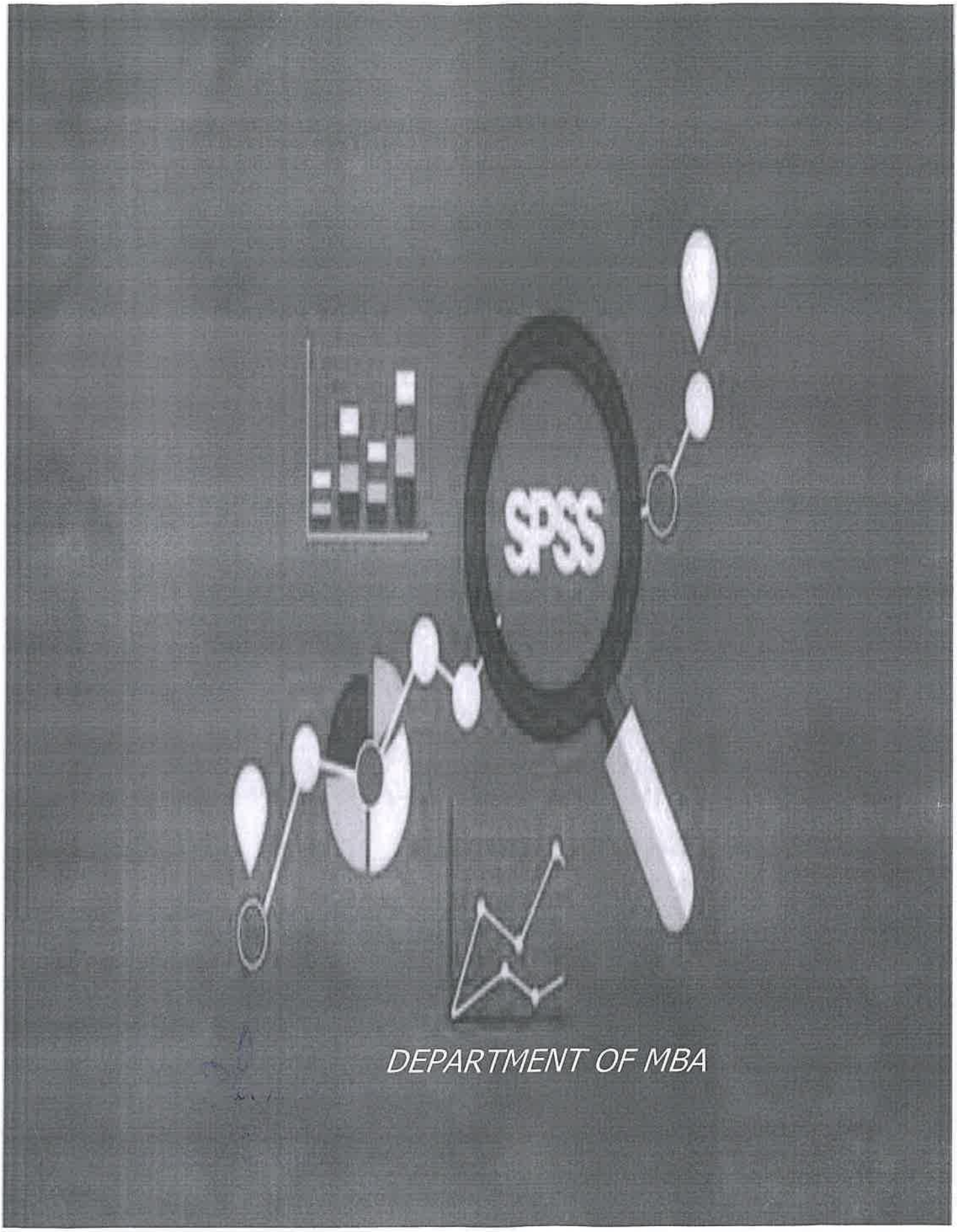

DEPARTMENT OF MBA

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

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