

Sree Narayana Guru College of Engineering & Technology



CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

## **1.2 Academic Flexibility**

**1.2.1.** Number of Certificate/Value added courses offered and online courses of MOOCs, SWAYAM, NPTEL etc. (where the students of the institution have enrolled and successfully completed during the last five years)

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CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

## LIST OF CERTIFICATE/VALUE ADDED COURSES

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Sree Narayana Guru College of Engineering & Technology



## CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

## DEPARTMENT OF CIVIL ENGINEERING

#### CERTIFICATE / VALUE ADDED COURSES

Sl. No.	DATE	NAME OF THE PROGRAMME	ACADEMIC
	Bar (	14 C	YEAR
1	15/04/2019 to	ADVANCED DESIGN	2018-19
	19/04/2019	TECHNIQUES	
2	11/05/2020 to	FUNDAMENTALS OF WATER	2019-20
	16/05/2020	DISTRIBUTION SYSTEM &	
		DESIGN	
3	06/12/2021 to	WATER SYSTEM DESIGN	2020-21
	10/12/2021		
4	04/04/2022 to	COST ESTIMATION &	2021-22
	08/04/2022	VALUATION TECHNOLOGIES	
5	02/05/2023 to	ADVANCED QUANTITY	2022-23
	06/05/2023	SURVEYING	

B. MARY SONIA GEORGE ASSOCIATE PROFESSOR & HOD DEPARTMENT OF CIVIL ENGINEERING SNGCET, PAYYANNUR

GURU COLLEGE OF CHNOLOGY, PATYANUR SREE NARAYANA G ENGINEERING & TECH NNUR



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#### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SI No.	Name of the Program	Starting Date	End Date	Academic Year
1	Web Development Technologies	18/02/2019	22/02/2019	2018-19
2	Trending Perspectives of AI in Robotics	07/04/2020	11/04/2020	2019-20
3	Python	01/03/2021	05/03/2021	2020-21
4	Learn Latex	16/05/2022	20/05/2022	2021-22
5	OS Installation	13/03/2023	17/03/2023	2022-23

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Dr. LEENA A. SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR







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#### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### ADD ON COURSE DETAILS

Sl. No.	Academic Year	Date	Name of Program
1	2022-23	30/03/23 to 03/04/23	Hands on Training on PCB Design and Fabrication
2	2021-22	08/10/2021 to 12/10/2021	LED Bulb Manufacturing & Soldering Practice Training Program
3	2020-21	10/08/2020 to 14/08/2020	Mastering Hybrid Vehicle Technology
4	2019-2020	27/12/2019 to 31/12/2019	Workshop on Industrial Automation and Introduction to IoT
5	2018-19	26/12/18 to 30/12/18	Crafting With CAD

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#### Sree Narayana Guru College of Engineering & Technology CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



#### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

List of Add On Courses

#### SI No. **Academic Year** Name of the Program Starting **End Date** Date Hands On Training On Embedded C,C++ 25-7-2018 29-07-2018 2018-19 1 2 Workshop On Digital Image Processing Using 08-11-2019 2019-20 04-11-2019 Python 3 Workshop on Internet of Things Using Arduino 24-05-2021 28-05-2021 2020-21 ,RasberryPi & MQTT 4 Workshop on Arduino Basics with Hands on 06-06-2022 10-06-2022 2021-22 Training 5 Robotics Workshop 02-08-2022 06-08-2022 2022-23

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## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

## DEPARTMENT OF MECHANICAL ENGINNERING

## **CERTIFICATE/ VALUE ADDED COURSES**

S.NO	LIST OF WORKSHOPS	SCHEDULED DATES	ACADEMIC YEAR
1	MASTER-CAM: CNC programming	18 <sup>th</sup> to 22 <sup>nd</sup> February 2019	2018-2019
2	Latest trends in Automobile Engineering	18 <sup>th</sup> to 22 <sup>nd</sup> November 2019	2019-2020
3	Renewable Energy: Pathways and Technologies	15 <sup>th</sup> to 19 February 2021	2020-2021
4	Additive Manufacturing	18 <sup>th</sup> to 22 <sup>nd</sup> October 2021	2021-2022
5	3D Printing	13 <sup>th</sup> to 17 <sup>th</sup> March 2023	2022-23

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## BROCHURES

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## 5 DAYS HANDS ON TRAINING ADVANCED QUANTITY SURVEYING

FACULTY COCORDINATORS MS. POOJA K P MS REVATHI P

## STUDENT COORDINATORS

ANANJANA C SREEHARI KK

AT CE SEMINAR HALL

02-05-23 TO 06-05-23





## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY **DEPARTMENT OF CIVIL ENGINEERING**

#### WORKSHOP ON ADVANCED QUANTITY SURVEYING

#### (02/05/2023 to 06/05/2023)

#### SCHEDULE

Day 1 -	FN- 9.00am to 12.00 pm	Inauguration
02/05/2022		&
02/05/2023	AN = 1.00 pm to $4.00 pm$	Talk By
		Ms Pooia K P
		Assistant Professor SNCCET
		Assistant I Tolesson SITUEE1
		TOPIC : Introduction to Quantity surveying &
		Fundamentals of QSV
Dav2 -	FN- 9.00am to 12.00 pm	Expert talk by
02 /05/2022	AN 1 00mm to 1 00mm	Mr. Sudhi
03-/03/2023	AN – 1.00pm to 4.00pm	Senior Faculty of IOSS
	1	
		TOPIC : Introduction to Advanced Quantity
		Surveying & importance
Day 3 -	FN- 9.00am to 12.00 pm	Expert talk by
04/05/2022		Mr. Sudhi
04/05/2023	AN – 1.00pm to 4.00pm	Senior Faculty of IOSS
		Senior Facally of 1205
		TOPIC : Estimation of Water tank
Day 4 -	FN-9.00am to 12.00 pm	Expert talk by
Day 4	1 N- 9.00am to 12.00 pm	Mr Sudbi
05/05/2023	AN – 1.00pm to 4.00pm	Senior Faculty of IOSS
		Senior Faculty of 1Q55
		TOPIC - Estimation of Pataining Wall
Day 5	ENL 0.00am to 12.00 am	Expert tells by
Day -5 -	FN- 9.00am to 12.00 pm	Expert tark by
06/05/2023	AN – 1.00pm to 4.00pm	MIF. Sudni
54 J		Senior Faculty of 1Q55
		TOPIC : Voluction Techniques
		i OPIC : valuation recontiques
		& Charles C
		Closing Ceremony

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Coordinator

HOD

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR



## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

Korom, Chalakkode P.O., Payyanur, Kannur - 570307 Managed by Sree Bhakthi Samvardhini Yogam, Talap, Kannur Affiliated to APJ Abdul Kalam Technological University and Approved by AICTE

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

# **OS INSTALLATION**

WORKSHOP ON FAMILIARIZATION, ASSEMBLING, INSTALLATION UNDER THE BANNER OF CSE DEPARTMENT ASSOCIATION TECHKRITI

## RESOURCE PERSONS Mr.ROHITH M & Ms. ANUSHA M

## **EVENT COORDINATORS**



Ms.NIMISHA M K Mrs.THULASIBAI A

VENUE SEMINAR HALL & NETWORKING LAB

13/03/2023- 17/03/2023 9.30 AM - 4.00 PM



## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

#### FIVE DAY WORKSHOP ON OS INSTALLATION

#### SCHEDULE

SL.NO:	DATE	TOPICS	
1	13/03/2023 9:30 AM - 4:00 PM	INTRODUCTION TO FUNDAMENTALS OF COMPUTER ARCHITECTURE	
2	14/03/2023 9:30 AM - 4:00 PM	HANDS ON SESSION ON HARDWARE COMPONENTS	
3	15/03/2023 9:30 AM - 4:00 PM	OS INSTALLATION	
4	16/03/2023 9:30 AM - 4:00 PM	HANDS ON SESSION ON OS INSTALLATION	
5	17/03/2023 9:30 AM - 4:00 PM	HANDS ON SESSION ON OS INSTALLATION	

en F. Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR



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# **ROBOTICS WORKSHOP**



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02/08/2022



TIME: 9 AM TO 4:30 PM

VENUE: SEMINAR HALL



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Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

For Contact: 9746044628

## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY PAYYANUR

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR) CHALAKODE P.O., PAYYANUR, KANNUR-670307, KERALA

#### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

#### **ROBOTICS WORKSHOP**

#### SCHEDULE

SI.N	Date	Topic
1	27-06-2023 Time: 9:00am to 12:30pm & 1:30pm to 4:30pm	Introduction to Robotics and Arduino
2	28-06-2023 Time: 9:00am to 12:30pm & 1:30pm to 4:30pm	Arduino Programming Fundamentals
3	29-06-2023 Time: 9:00am to 12:30pm & 1:30pm to 4:30pm	Sensor Integration with Arduino
4	30-06-2023 Time: 9:00am to 12:30pm & 1:30pm to 4:30pm	Actuator Control with Arduino
5	1-07-2023 Time: 9:00am to 12:30pm & 1:30pm to 4:30pm	Robotics Project and Advanced Concepts



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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

Promoted by Sree Bhakthi Samvardhini Yogam, Kannur Affiliated to KTU & Recognised by AICTE, New Delhi Payyanur, Kannur, Kerala, Pin-670307 Office-04985-201989, 7812911912 Email-info@sngcet.org





## ONE DAY HANDS-ON TRAINING ON PCB DESIGN AND FABRICATION

## **For all EEE Students**

## Organized by Department of Electrical & Electronics Engineering

- from 30-03-2023 to 03-04-2023
- 9.00am to 4.30pm Venue: LED Manufacturing unit

## **Staff co ordinators**

Ms. Archana C P Assistant Professor Department of EEE Mr. Sreeraj T K Lab Instructor Department of EEE

## **Student co ordinators**

Mr. Vaishnav T V S8 EEE Ms. Aswathi P P Dr. LEENA A. V. PRINCIPAL S6 EEE SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

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### SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

#### 5 Days Workshop on PCB DESIGN AND FABRICATION PROGRAM:

30<sup>th</sup> March to 03<sup>rd</sup> April, 2023

DAY 1		
Date	Time	
	09:30 AM-09.45 AM	Introduction by Coordinator Ms. Archana CP AP EEE, SNGCET
	09:45AM -10:00AM	Departmental address by Mr. Abhilash Krishnan T K HoD EEE, SNGCET
30-03-2023	10.00 AM-12:00 PM	Introduction to PCB Ms. Archana C AP EEE, SNGCET
	01:00PM-3:30PM	Design Concepts of PCB Mr. Sreeraj. T K Lab Instructor EEE, SNGCET

		DAY 2
	09:30 AM-12:00 PM	PCB layer Explanation
		Ms. Archana C P
	6.	Assistant Professor EEE, SNGCET
31-03-2023	01:00 PM-3:30 PM	Manufacturing Design
		Mr. Sreeraj. T.K.
		Lab Instructor EEE, SNGCET
_		DAY 3
		Hands on training and PCB design
12	09:30 AM-12:00 PM	Ms. Archana C P
		Assistant ProfessorEEE, SNGCET
	01-00 DM 2-20 DM	Hands on training and Explanation of design rules
States -	01:00 PIVI-5:50 PIVI	Mr. Sreeraj. T.K
		Lab Instructor EEE, SNGCET

	er en	DAY 4
02-04-2023	09:30 AM-12:00 PM	PCB fabrication process Mr. Sreeraj.T K Lab Instructor EEE, SNGCET
		Hands on training.
	01:00 PM-3:30 PM	Mr. Sreeraj.T K Lab Instructor Dept. of EEE, SNGCET
		DAY 5
03-04-2023	09:30 AM-12:00 PM	Hands on practice Ms. Archana C P Assistant Professor Dept. of EEE, SNGCET
	01:00 PM-3:00 PM	Hands on practice Ms. Archana C P Assistant Professor Dept. of EEE, SNGCET
	3.00 PM -4.00 PM	Feedback session From students Certificate distribution ceremony Mr. Abhilash Krishnan T K HoD
		Dept. of EEE, SNGCET

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## Sree Narayana Guru College of Engineering & Technology

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## Department of Mechanical Engineering Organising

# 5 DAYS WORKSHOP ON 3D PRINTING

## Key Highlights

- Self Development Design
- 3D Printing Trends
- Challenges in 3D Printing
- Post Processing Operations



**Exclusively For Final Year Students** 



DEPARTMENT OF MECHANICAL ENGINEERING

## 5 Day Workshop on 3D Printing, March 13-17, 2023

	DAY 1		
Date	Time		
1	9:00 AM-9:10 AM	Introduction	
		Coordinator Dr. Sudhin Chandran, Dept. of ME, SNGCET	
	9:10 AM-9:15 AM	Departmental address by Mr. Jacob Thomas	
		HoD, Dept. of ME, SNGCET	
13-03-2023 (Monday)	9:15 AM-12:00 PM	<b>Expert talk by</b> Dr. Abdul Nazar K P, Associate Professor Dept of Mechanical Engineering, GEC Kannur	
		Title: State of the art of 3D printing application.	
	01:00 PM-5:00 PM	Expert talk by Mr. Jacob Thomas Asst. Professor Dept of Mechanical Engineering, SNGCET Title: 3D Printing technology steps, 3D Printing application fields, 3D Printing equipment, 3D Printing approach to build parts and assemblies.	
		Jeene	

DAY 2			
14-03-2023 (Tuesday)	9:00 AM-12:30 PM	Expert talk by Dr. Abdul Nazar K P, Associate Professor Dept of Mechanical Engineering, GEC Kannur Title: 3D Printing process steps for 3D printing an object, post-	
		processing operations for 3D printed objects.	
	01:30PM-5:00PM	Expert talk by Mr. Jacob Thomas Asst. Professor Dept of Mechanical Engineering, SNGCET	
		Title: 3D Printing approach to build parts and assemblies, post-processing operations for 3D printed objects.	
		DAY 3	
	9:00 AM-12:30 PM	<b>Expert talk by</b> Mr. Pradeepkumar V. Instructor ME, GCE Kannur.	
15-03-2023 (Wednesday)		Title: 3D Printed Energy Storage Devices for Flexible and Wearable Electronics	
	01:30PM-5:00PM	Expert talk by Dr. Solamon Joseph, Lecturer ME, GPC Periye, Kasargod. Title: Challenges and advantages of 3D printing.	
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Day 4			
	09:00 AM-12:00 PM,	<b>Expert talk by</b> Govardhan Kayarthaya B, Lecturer ME, GPC Periye, Kasargod.	
16-03-2023 (Thursday)		Title: Technology Drivers for 3D printing, Knowledge on 3D printer software	
	01:00 PM-5:00 PM	Expert talk by Dr. Solamon Joseph, Lecturer ME, GPC Periye, Kasargod. Title: 3D Printing technology, 3D Printing process steps for 3D printing an object.	
		DAY 5	
17-03-2023 (Friday)	9:00 AM-12:30 PM	Expert talk by Govardhan Kayarthaya B, Lecturer ME, GPC Periye, Kasargod. Title: post-processing operations for 3D printed objects.	
	01:30 PM-5:00 PM	Expert talk by Mr. Jacob Thomas Asst. Professor Dept of Mechanical Engineering, SNGCET Title: Opportunity to design and print self-developed design.	
17 <b>-03-2023</b> (Friday)	9:00 AM-12:30 PM 01:30 PM-5:00 PM	Govardhan Kayarthaya B, Lecturer ME, GPC Periye, Kasargod. Title: post-processing operations for 3D printed objects. Expert talk by Mr. Jacob Thomas Asst. Professor Dept of Mechanical Engineering, SNGCET Title: Opportunity to design and print self-developed design.	

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## DEPARTMENT OF CIVIL ENGINEEERING

Presents

5 day Workshop on

# **COST ESTIMATION &**

## VALUATION TECHNOLOGIES

Mr. Amal P R Ms. Dilsha

Faculty coordinators Ms. Swathi P Mr.Preamanand C

DF. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KAUNUF

**VENUE : CE SEMINAR HALL** 

## 04-04-2022 to 08-04-2022



## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY DEPARTMENT OF CIVIL ENGINEERING

#### WORKSHOP

#### SCHEDULE

Day 1 –	FN- 9.00am to 12.00 pm	Inauguration
04-04-	AN – 1.00pm to 4.00pm	&
2022		Talk By
2022		Mr. Preamanand C
		Assistant Professor SNGCET
		TOPIC : Introduction to Quantity surveying &
		Fundamentals of QSV
Day2 –	FN- 9.00am to 12.00 pm	Expert talk by
05-04-	AN - 1.00pm to $4.00pm$	Mr. Sudhi
2022	······	Senior Faculty of IQSS
2022		
		TOPIC : Advanced Measurement Techniques
Day 3 –	FN- 9.00am to 12.00 pm	Expert talk by
06-04-2022	AN - 1.00pm to 4.00pm	Mr. Sudhi
	1 1	Senior Faculty of IQSS
		TOPIC : Cost Estimation and Analysis
Day 4 –	FN- 9.00am to 12.00 pm	Expert talk by
07-04-2022	AN = 1.00 pm to 4.00 pm	Mr. Sudhi
0, 0, 2022	1111 1.00pm to 1.00pm	Senior Faculty of IQSS
		TOPIC : Software Applications in Quantity
		Surveying & Case Studies and Project
		Presentations
Day -5 -	FN- 9.00am to 12.00 pm	Expert talk by
08-04-	AN = 1.00 pm to $4.00$ pm	Mr. Sudhi
2022	in, noopinto noopin	Senior Faculty of IQSS
2022		
		<b>TOPIC</b> : Valuation Techniques
		&
		Closing Ceremony
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Coordinator





## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

Korom, Chalakkode P.O., Payyanur, Kannur - 670307 Managed by Sree Bhakthi Samvardhini Yogam, Talap, Kannur Affiliated to APJ Abdul Kalam Technological University and Approved by AICTE

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

# Learn LaTex

RESOURCE PERSON Ms. NEHA M V AP CSE, SNGCET

## **EVENT COORDINATOR**



**Ms.VIJINA VIJAYAN** 

VENUE NETWORKING LAB

16/05/2022- 20/05/2022 9.30 AM - 4.00 PM

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY



#### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

## FIVE DAY WORKSHOP ON LEARN LATEX

#### SCHEDULE

SL. No	DATE	TOPIC	
1.	16-05-2022 9:30 AM -4:00 PM	Introduction to LaTeX	
2.	17-05-2022 9:30 AM -4:00 PM	Document Formatting	
3.	18-05-2022 9:30 AM -4:00 PM	Mathematical Typesetting	
4.	19-05-2022 9:30 AM -4:00 PM	Referencing and Citations	
5.	20-05-2022 9:30 AM -4:00 PM	Advanced LaTeX Features	



## Sree Narayana Guru College of Engineering & Technology

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Department of Electronics and Communication Engineering

# 5 DAYS WORKSHOP ON ARDUIND BASICS WITH HANDS ON TRAINING

TIME: 9 AM TO 4:30 PM VENUE: SEMINAR HALL, SNGCE

Instituition Code: SNC

0/06/2022

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## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

DATE	TIME	TOPICS
06/06/2022	9.00 am to	Introduction to Arduino
	12.30 pm	Basic Electronics Components
	1.30pm to 4.30 pm	Introduction to Breadboards
07/06/2022	9.00 am to	Hands-on Arduino Basics
	12.30 pm	Hands-on Activity: Blinking an LED Serial Communication
3996 - T	1.00 pm to	Introduction to Sensors
	4.30 pm	Reading Analog Sensor Data
08/06/2022	9.00 am to	Introduction to Actuators
	12.30 pm	Hands-on Activity:Controlling a DC Motor
	1.30pm to	Introduction to Pulse Width
	4.30 pm	Modulation (PWM)
09/06/2022	9.00 am to	Serial Communication
	12.30 pm	Functions and Libraries
	1.30pm to 4.30 pm	Troubleshooting and Debugging
10/06/2022	9.00 am to	Project Planning and Implementation
-12-	12.30 pm	5 6 1
	1.30pm to	Project Presentation
	4.30 pm	Neen

## SCHEDULE





# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY



Payyanur, Kannur, Kerala, Pin-670307 Promoted by Sree Bhakthi Samvardhini Yogam, Kannur Affiliated to APJ Abdul Kalam Technological University & Approved by AICTE, New Delhi

www.sngcet.ac.in

Email-info@sngcet.ac. in

# DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Presents

**Five days Training Program** 

on

LED BULB MANUFACTURING & SOLDERING PRACTICE TRAINING PROGRAM

Participants: Students of EEE

- : 08-10-2021 to 12-10-2021
- : 09.00 am to 4.30 pm
  - : LED Bulb Manufacturing unit

Staff Coordinator Mr. Manu C Assistant Professor

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR Student Coordinator Ms. Anusha Jyothi S5 - EEE

### DEPARTMENTOFELECTRICAL AND ELECTRONICS ENGINEERING

#### **5 DAYS WORKSHOP ON**

### LED BULB MANUFACTURING & SOLDERING PRACTICE TRAINING PROGRAM: 8<sup>TH</sup> OCTOBER TO 12<sup>TH</sup> OCTOBER, 2021

	DA	Y 1
DATE	TIME	
	9.00 AM -9.15 AM	Introduction by Coordinator Mr. Manu C, AP, EFE, SNGCET
		Departmental address by
	9.15 AM - 9.30AM	Mr. Abhilash Krishnan T K
		HoD EEE, SNGCET
10-08-2020		Introduction to LED bulb and Soldering
	09:30AM-12:00PM	Mr. Manu C,
		AP, EEE, SNGCET
	ie	Demonstration practice through hole
	02:30PM-4:30PM	soldering technique
		Mr. Sreeraj. T K
		Lab Instructor EEE, SNGCET
	D	AY2
		Soldering Practice
	09:30 AM-12:30 PM	Mr. Manu C,
		AP, EEE, SNGCET
11-08-2020		Soldering Practice
	01:30PM-4:30PM	Mr. Manu C,
		AP, EEE, SNGCET
	D	AY3
12-08-2020	09:30 AM-12:30 PM	Advanced Soldering Technique and PCB design
		Mr. Sreeraj. T K
		Lab Instructor EEE, SNGCET
		Trouble Shooting soldering issues on
	01:30PM-4:30PM	sample board
1		Mr. Sreeraj. T K
		Lab Instructor EEE, SNGCET

	D	AY 4
13-08-2020	09:30 AM-12:30 PM	Over view of LED bulb manufacturing process Mr. Manu C, AP, EEE, SNGCET
	01:30PM-4:30PM	Demonstration LED bulb manufacturing. Mr. Manu C, AP EEE, SNGCET
	D	AY 5
	09:30 AM-12:30 PM	Hands on practice Mr. Manu C, AP EEE, SNGCET
14.08.2020	01:30PM-3:00PM	Hands on practice Mr. Manu C, AP EEE, SNGCET
14-08-2020		Feedback session From students
15	3.00 PM-4.30 PM	<b>Certificate distribution ceremony</b> Mr. Abhilash Krishnan T K HOD EEE, SNGCET

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## Sree Narayana Guru College of Engineering & Technology

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



Department of Mechanical Engineering

Organising

# 5 DAYS WORKSHOP ON ADDITIVE MANUFACTURING

Key Highlights :

- Powder metallurgy
- Sheet Lamination
- Powder Mixing
- Material Extrusion



## **REGISTER NOW**

Exclusively for Final Year students

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY



#### DEPARTMENT OF MECHANICAL ENGINEERING

### 5Day Online Workshop on ADDITIVE MANUFACTURING, October 18 to 22, 2021

DAY 1		
Date	Time	
	9:00 AM-9:15 AM	Introduction by Coordinator
	9:15 AM-9:25 AM	Mr. Manuraj T V, Dept. of ME, SNGCET Departmental address by Mr. Chandrajith E HoD, Dept. of ME, SNGCET
18-10-2021	9:30 AM-12:30 PM	<b>Expert talk by</b> Dr. Solamon Joseph, Lecturer ME, GPC Periye, Kasargod.
		Title: Introduction to Additive Manufacturing (Overview of Additive Manufacturing (AM) technologies, Historica development and current trends in AM,)
		<b>Expert talk by</b> Dr. Solamon Joseph, Lecturer ME, GPC Periye, Kasargod.
	01:30 PM-5:00 PM	
		<b>Title: Introduction to Additive Manufacturing (</b> Types of 3D printing processes (FDM, SLA, SLS, etc, Basic principles of CAD modeling for 3D printing.)
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DAY 2		
19-10-2021	9:00 AM-12:00 PM	<b>Expert talk by</b> Dr. Abdul Nazar K P, Associate Professor Dept of Mechanical Engineering, GEC Kannur
		Title: AM Technologies and Materials (In-depth look at different AM technologies, Selection criteria for choosing appropriate AM technology,)
	01:00 PM-5:00 PM	Expert talk by Dr. Abdul Nazar K P, Associate Professor Dept of Mechanical Engineering, GEC Kannur
		Title: AM Technologies and Materials (Materials used in additive manufacturing (polymers, metals, ceramics, Material properties and their impact on print quality and applications))
		DAY 3
20-10-2021	9:00 AM-12:30 PM	<b>Expert talk by</b> Dr. Abdul Nazar K P, Associate Professor Dept of Mechanical Engineering, GEC Kannur
		Title: Design for Additive Manufacturing (DFAM) (Principles of Design for Additive Manufacturing (DFAM), Design guidelines and considerations for AM.)
	01:30PM-5:00PM	<b>Expert talk by</b> Dr. Abdul Nazar K P, Associate Professor Dept of Mechanical Engineering, GEC Kannur
		Title: Design for Additive Manufacturing (DFAM) (Optimizing designs for strength, weight reduction, and functionality, Designing for support structures and post-processing considerations)

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DAY 4			
	09:00 AM-12:00 PM,	<b>Expert talk by</b> Mr. Jacob Thomas, Worshop Superintendent, GPC Periye, Kasargod.	
21-10-2021		Title: Advanced AM Topics (Post-processing techniques (cleaning, curing, heat treatment, finishing, Quality control and inspection methods for AM parts,	
	01:00PM-5:00PM	Expert talk by Mr. Jacob Thomas, Worshop Superintendent, GPC Periye, Kasargod. Title: Advanced AM Topics (Simulation tools for predicting AM outcomes, Integration of AM with traditional manufacturing processes (hybrid manufacturing))	
		DAY 5	
22-10-2021	9:00 AM-12:00 PM	Expert talk by Mr. Jacob Thomas, Worshop Superintendent, GPC Periye, Kasargod. Title: Industrial Applications and Future Directions (Industry-focused case studies showcasing successful integration of AM in production workflows.)	
	1:00 PM-5:00 PM	Expert talk by Mr. Jacob Thomas Worshop Superintendent, GPC Periye, Kasargod.	
		Title: Industrial Applications and Future Directions (Regulatory considerations and standards for AM in critical sectors (e.g., medical devices, aerospace), Closing remarks, certificate distribution, and networking opportunities.)	

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Online

## WATER SYSTEM DESIG WORKSHOP

**5 DAY ONLINE TRAINING** 



**REGISTER NOW** 

FACULTY COCORDINATOR **MS.ATHIRA BALAKRISHNAN MS SRUTHI DAS** 

STUDENT COCORDINATOR ANAGHA K **GOKUL AMBILOTH** 



## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF CIVIL ENGINEERING

#### WORKSHOP ON WATER SYSTEM DESIGN

### SCHEDULE

DAY	TIME	TOPICS
	9.00 am to 12 pm	Inaugural session
		&
		Expert talk by
		Agistant Drofogger SNGCET
		Assistant Professor SNOCE1
Day 1		Tonic: Environmental Impact
		Assessment
(06/12/2021)	1.00 pm to 4.00 pm	Expert tells by
	1.00 pm to 4.00 pm	Me Athira Balakrishnan
		Assistant Professor SNGCET
		Assistant Holesson SNGCL1
		Topic: Planning Principles Population
		and Demand Rates Demand Calculations
	9.00 am to 12 pm	Expert talk by
		Mrs. Saritha Sasindran
		Assistant Professor SNGCET
Day 2		Topic: Water Treatment Plants, Pumping Stations
Day 2	1.00 pm to 4.00 pm	Expert talk by
(07/12/2021)		Mrs. Saritha Sasindran
		Assistant Professor SNGCET
		Topic: System Component -
		Transmission Mains And Distribution
		Systems
	9.00 am to 12 pm	Expert talk by
brie is is is	V	Mrs. Saritha Sasindran
1996-1	Dr. LEENA A. V.	Assistant Professor SNGCET
	SREE NARAYANA GURU COLLEGE OF	Topic : Design Hydraulic Modelling and
Der: 2	ENGINEERING & TECHNOLOGY, PAYYANU	Analysis - Network Design Economic
Day 3	35	
		Calculations
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(08/12/2021)	1.00 pm to 4.00 pm	Expert talk by
		Dr. Leena A V
		Assistant Professor SNGCET
40		Topic : Water Hammer Analysis and
		Pipe Selection Longitudinal Section,
		Valves and Appurtenances
	9.00 am to 12 pm	Expert talk by
		Dr. Leena A V
1.000		Assistant Professor SNGCET
Day 4		
(09/12/2021)		Topic : Water System Component
	1.00 pm to 4.00 pm	Expert talk by
		Dr. Leena A V
		Assistant Professor SNGCET
		Topic : Estimation and Rate
	9.00 am to 12 pm	Expert talk by
		Mrs. Shilpa Valsakumar
		Assistant Professor SNGCET
Day 5		Topic : Construction Management - Site
(10/12/2021)		Mobilization and Laydown area
()		Construction Activities
	1.00 pm to 4.00 pm	Expert talk by
		Mrs. Shilpa Valsakumar
		Assistant Professor SNGCET
		Topic : Valuation and Bill Payment -
		Quality Control

LAKB Coordinator

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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

> Korom, Chalakkode P.O., Payyanur, Kannur - 670307 Managed by Sree Bhakthi Samvardhini Yogam, Talap, Kannur Affiliated to APJ Abdul Kalam Technological University and Approved by AICTE

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

# **ONLINE PYTHON WORKSHOP**

#### **RESOURCE PERSONS**



Mr. Sunder V Assistant Professor, SNGCET



Mrs. Sharija P Assistant Professor, SNGCET

## **EVENT COORDINATOR**

Ms. Jithika K M Assistant Professor SNGCET



9.00 AM - 4.00 PM



## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

#### FIVE DAY ONLINE WORKSHOP ON PYTHON

#### SCHEDULE

SL.NO:	DATE	TOPICS
1	01/03/2021 9:00 AM - 4:00 PM	Introduction to Python
2	02/03/2021 9:00 AM - 4:00 PM	Installation of Python
3	03/03/2021 9:00 AM - 4:00 PM	Basics of BS- python shell
4	04/03/2021 9:00 AM - 4:00 PM	Introduction to list
5	05/03/2021 9:00 AM - 4:00 PM	Coding Challenges

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Sree Narayana Guru College of Engineering & Technology

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



Department of

**Electronics and Communication Engineering** 

# IoT Workshop on Internet of Things using Arduino, Raspberry Pi & MQTT



24/05/2021 to 28/05/2021



Institution Code SNC



ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

101



## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY PAYYANUR



(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR) CHALAKODE P.O., PAYYANUR, KANNUR–670307, KERALA



#### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

#### IoT | Workshop on Internet of Things using Arduino, RaspberryPi & MQTT

#### **SCHEDULE**

Sl.No	Date	Торіс
1	24-05-2021 Time: 9:00am to 12:30pm & 1:30pm to 4:00pm	Introduction to the Internet of Things, Cloud Computing, The Arduino Open-Microcontroller Platform and Arduino Basics
2	<b>25-05-2021</b> Time: 9:00am to 12:30pm & 1:30pm to 4:00pm	Integrating Ethernet Module & Testing DHCP Connection, Make Electronics Gadget Talk to Internet, Integrating Ethernet Module
3	26-05-2021 Time: 9:00am to 12:30pm & 1:30pm to 4:00pm	Versions of Raspberry Pi & Their Difference
4	27-05-2021 Time: 9:00am to 12:30pm & 1:30pm to 4:00pm	Introduction to Raspberry Pi and Android
5	<b>28-05-2021</b> Time: 9:00am to 12:30pm & 1:30pm to 4:00pm	Understanding MQTT & HTTP

Dr. LEENA PRINCIP SREE NARAYANA GURU COLLEGE O ENGINEERING & TECHNOLOGY, P KANNUR



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Payyanur, Kannur, Kerala, Pin-670307 Promoted by Sree Bhakthi Samvardhini Yogam, Kannur Affiliated to APJ Abdul Kalam Technological University & Approved by AICTE, New Delhi www.sngcet.ac.in Email-info@sngcet.ac. in

## **DEPARTMENT OF ELECTRICAL & ELECTRONICS** ENGINEERING

## **Five days Online Program**

on

MASTERING HYBRID VEHICLE TECHNOLOGY :-A COMPREHENSIVE ONLINE PROGRAM

Participants- Mechanical Students

From 10/08/2020 to 14/08/2020

Platform : google meet



: 09.00 am to 04.30 pm

Staff Coordinator

Mr. Vaishakh M Nayanar Assistant Professor Department of EEE

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR 41

Student Coordinator

Ms. Vishal K S5- EEE Department of EEE



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#### DEPARTMENTOFELECTRICAL AND ELECTRONICS ENGINEERING

#### **5 DAYS WORKSHOP ON**

#### MASTERING HYBRID VEHICLE TECHNOLOGY: A COMPREHENSIVE ONLINE PROGRAM 10<sup>TH</sup> AUGUEST TO 14<sup>TH</sup> AUGUEST, 2020

	DAY	1
DATE	TIME	-
	9.00 AM -9.15 AM	Introduction by coordinator Mr. Vaishakh M Nayanar AP, EEE, SNGCET
	9.15 AM - 9.30AM	Departmental address by Mr. Raveendran K AP, EEE, SNGCET
10-08-2020	09:30AM-12:00PM	Introduction to Hybrid vehicles Mr. Vaishakh M Nayanar, AP, EEE, SNGCET
	02:30PM-4:30PM	Introduction to Hybrid power train Mr.Abhilash Krishnan TK, AP, EEE, SNGCET
	DAY	¥2
	09:30 AM-12:30 PM	Hybrid Vehicle Technologies Mr. Vaishakh M Nayanar AP, EEE, SNGCET
11-08-2020	01:30PM-4:30PM	Transmission systems in Hybrid Vehicles Mr. Vaishakh M Nayanar AP, EEE, SNGCET
	DA	Y3
12-08-2020	09:30 AM-12:30 PM	Hybrid vehicle performance and efficiencies Mr. Vaishakh M Nayanar, AP, EEE, SNGCET

	01:30PM-4:30PM	Service of hybrid vehicles Mr. Vaishakh M Nayanar, AP, EEE, SNGCET
	DA	Y 4
	09:30 AM-12:30 PM	Design consideration of Hybrid Vehicles Mr. Vaishakh M Nayanar, AP, EEE, SNGCET
13-08-2020	01:30PM-4:30PM	Demonstration of working Hybrid Vehicles. Mr. Vaishakh M Nayanar,
		AP, EEE, SNGCET
	DA	¥ 5
		Hybrid vehicle Simulation Process
	09:30 AM-12:30 PM	Mr. Manu C
		AP, EEE, SNGCET
	01-20DM 2-00DM	Test drive practice Mr. Manu C
14-08-2020	01:30PM-3:00PM	AP, EEE, SNGCET
		Feedback session From students
	<b>3.00</b> PM- <b>4.30</b> PM	Certificate distribution ceremony Mr. Raveendran K HoD Dept. of EEE, SNGCET

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## Sree Narayana Guru College of Engineering & Technology



CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

## Department of Mechanical Engineering Organising 5 Days Workshop on

## RENEWABLE ENERGY: PATHWAYS AND TECHNOLOGIES

# Key Highlights:

- Solar PV System
- Introduction to Hydroelectric Power
- Field Trip or Virtual Tour
- Energy Storage and Grid Integration

DE LEENA A. V.

• Opportunities in Renewable Energy



Exclusively for Final Year Students

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY



#### DEPARTMENT OF MECHANICAL ENGINEERING

#### 5Day Online Workshop on RENEWABLE ENERGY: PATHWAYS AND TECHNOLOGIES, February 15-19, 2021

DAY 1		
Date	Time	
	9:00 AM-9:15 AM	Introduction by Coordinator Mr. Manuraj T V, Dept. of ME, SNGCET
-	9:15 AM-9:25 AM	Departmental address by Mr. Chandrajith E HoD, Dept. of ME, SNGCET
15-02-2021 (Monday)	9:30 AM-12:30 PM	Expert talk by Mr. Lipin K Assistant Professor, Dept of ME, SNGCET
		Title: Introduction to Renewable Energy (Overview of Renewable Energy Sources, Importance of Renewable Energy in Sustainable Development)
	01-20 DM ( 5-00 DM (	Expert talk by Mr. Lipin K Assistant Professor, Dept of ME, SNGCET
	01:30PM-5:00PM	Title: Introduction to Renewable Energy (Solar Energy Technologies, Photovoltaic (PV))
		l

		DAY 2
	9:00 AM-12:30 PM	Expert talk by Mr. Aswin P Assistant Professor, Dept of ME, SNGCET
16-02-2021 (Tuesday)		<b>Title: Wind and Hydroelectric Power</b> (Wind Energy Fundamentals, Wind turbine technology and design, Offshore vs onshore wind farms, Introduction to Hydroelectric Power, Types of hydroelectric systems)
	01:30PM-5:00PM	Expert talk by Mr. Aswin P Assistant Professor, Dept of ME, SNGCET Title: Wind and Hydroelectric Power (Small Hydropower and Micro-Hydro Systems, Wind and Hydro Energy Integration in Power Grids, Case Study: Wind Farm or Hydroelectric Project Analysis)
		DAY 3
17-02-2021	9:00 AM-12:30 PM	Expert talk by Mr. Manuraj T V Assistant Professor, Dept of ME, SNGCET
(Wednesday )		Title: Bioenergy and Geothermal Energy (Bioenergy Overview, Biomass sources and conversion technologies, Biogas production and applications, Geothermal Energy Basics, Geothermal heat pumps, Geothermal power generation).
	01:30PM-5:00PM	Expert talk by Mr. Manuraj T V Assistant Professor, Dept of ME, SNGCET
	5	Title: Bioenergy and Geothermal Energy (Environmental and Social Impacts of Bioenergy, Geothermal Exploration and Reservoir Engineering.)

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		DAY 4	
09:00 AM-12:00 PM,		Expert talk by Mr. Chandrajith E HoD, Dept. of ME, SNGCET	
18-02-2021 (Thursday )		Title: Energy Storage and Grid Integration (Importance of Energy Storage in Renewable Energy Systems, Battery Technologies for Grid-Scale and Off-Grid Applications, Overview of Pumped Hydro Storage and Other Storage Methods.)	
	01:00 PM-5:00 PM	Expert talk by Mr. Chandrajith E HoD, Dept. of ME, SNGCET	
		Title: Energy Storage and Grid Integration (Smart Grid Technologies and Demand Response, Grid Integration Challenges and Solutions, Case Studies on Successful Renewable Energy Grid Integration.)	
		DAY 5	
	9:00 AM-12:30 PM	Expert talk by Mr. Lipin K Assistant Professor, Dept of ME, SNGCET	
19-02-2021 (Friday)		Title: Policy, Economics, and Future Trends (Renewable Energy Policies and Incentives, Financing Renewable Energy Projects, Techno- Economic Analysis of Renewable Energy Systems.)	
	01:30 PM-5:00 PM	Expert talk by Mr. Lipin K Assistant Professor, Dept of ME, SNGCET	
		Title: Policy, Economics, and Future Trends (Emerging Trends in Renewable Energy Research and Development, Role of Innovation and Entrepreneurship in Renewable Energy.)	

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CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

## DEPARTMENT OF CIVIL ENGINEEERING

Presents

# 6 DAY ONLINE TRAINING ON FUNDAMENTALS OF WATER DISTRIBUTION SYSTEM & DESIGN

JOIN ON GOOGLE MEET

**Student coordinators** 

11/05/2020 to 16/05/2020

Mr. Arjun M V Ms. Krishna Veni K

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

**Faculty coordinators** 

Mrs. Shilpa Valsakumar Mr. Abhishek C V



#### SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF CIVIL ENGINEERING

#### WORKSHOP ON

#### FUNDAMENTALS OF WATER DISTRIBUTION SYSTEM & DESIGN

#### (11/05/2020 to 16/05/2020)

#### SCHEDULE

#### **Day 1: Introduction to Hydronic Systems**

FN - 9.00am to 12.00pm

Session 1: Overview of Hydronic Systems

Session 2: Components of Closed Hydronic Systems

AN - 1.00pm to 4.00pm

Session 3: Components of Open Hydronic Systems

Session 4: Q&A and Discussion

#### Day 2: Basics of Piping System Design

#### FN - 9.00am to 12.00pm

Session 1: Introduction to Piping System Design

Session 2: Basic Concepts and Principles

Session 3: Types of Pipes Used in Hydronic Systems

#### AN - 1.00pm to 4.00pm

Session 4: Pipe Sizing and Selection

Session 5: Q&A and Discussion

#### **Day 3: Centrifugal Pumps Operation and Selection**

FN – 9.00am to 12.00pm
Session 1: Principles of Centrifugal Pumps Operation
Session 2: Pump Characteristics and Performance Curves
AN – 1.00pm to 4.00pm
Session 3: Matching Pumps to Systems
Session 4: Pump Selection Criteria and Considerations

Session 5: Q&A and Discussion

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#### **Day 4: Terminal Unit Control and Optimization**

FN - 9.00am to 12.00pm

Session 1: Introduction to Terminal Unit Control Session 2: Understanding Control Variables

AN – 1.00pm to 4.00pm

Session 3: Control Strategies and Optimization Techniques Session 4: Case Studies and Examples Session 5: Q&A and Discussion

#### Day 5: Water Chiller Operation and Efficiency

FN - 9.00am to 12.00pm

Session 1: Basics of Water Chillers and Chiller Plants Session 2: Chiller Efficiency and Energy Optimization

AN - 1.00pm to 4.00pm

Session 3: Maintenance Strategies for Chiller Systems Session 4: Case Studies on Chiller Optimization Session 5: Q&A and Discussion

#### **Day 6: Practical Applications and Review**

FN - 9.00am to 12.00pm

Session 1: Practical Demonstration: Designing a Hydronic System Session 2: Group Presentations: Case Study Analysis

AN - 1.00pm to 4.00pm

Session 3: Review of Key Concepts and Learning Outcomes Session 4: Participant Feedback and Suggestions Session 5: Closing Ceremony

#### **Session Handlers :**

- 1. Dr. Leena A V Associate Professor SNGCET
- 2. Dr. Susan Abraham Associate Professor SNGCET
- 3. Mrs. Saritha Sasindran Assistant Professor SNGCET
- 4. Mrs. Shilpa Valsakumar Assistant Professor SNGCET

Dr. LEEM SREE NARAYA A GURU COLLEGE OF ENGINEERING & ECHNOLOGY, PAYYANUR KANNUR

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Coordinator



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

# Online Workshop on Trending Perspectives of AI in Robotics

**RESOURCE PERSONS** 



Mr. Sunder V Assistant Professor, ASIET, Kalady



Mrs. Gripsy Paul Mannickathan Assistant Professor, ASIET, Kalady

## **EVENT COORDINATOR**

Ms. Sreeraji Narayanan Assistant Professor SNGCET





SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

#### FIVE DAY ONLINE WORKSHOP ON TRENDING PERSPECTIVE OF AI IN ROBOTICS

#### SCHEDULE

SL. No	DATE	TOPIC
1.	07/04/2020 10:00 AM - 4:00 PM	Introduction to AI in Robotics
2.	08/04/2020 10:00 AM - 4:00 PM	AI Algorithms for Robotics
3.	09/04/2020 10:00 AM - 4:00 PM	Cutting-edge Research and Future Directions
4.	10/04/2020 10:00 AM - 4:00 PM	Advanced AI Techniques in Robotics
5.	11/04/2020 10:00 AM - 4:00 PM	Applications of AI in Robotics

1 pm

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CHALACODE PO, PAYANNUR, KANNUR 670307

## DEPARTMENT OF ELECTRONICS AND COMUNICATION



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## ENGINEERING PRESENTS AL IMAGE PROCESSING USING PYTHON

## **SREELAKSHMI C**

PROJECT ENGINEER, HEALTHCARE TECHNOLOGY INNOVATION CENTRE(HTIC), CHENNA

4 NOV-8 NOV 2019

9 TIME :9:00AM

**MEETING HALL** 

https://mail.google.com/mail/u/0/#inbox/FMfcgzGxSRMPQnFkcSkvnqtVQbtcQkDt?projector=1&messagePartId=0.1



SREE NARAYANA GURU

**COLLEGE OF ENGINEERING & TECHNOLOGY** 

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(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR) CHALAKODE P.O., PAYYANUR, KANNUR–670307, KERALA

#### SYLLABUS

Sl.No	Topic		
1	Introduction to Digital Image Processing and Python Basics, Basic Python Programming Concepts		
2	Fundamentals of Image Representation and Enhancement, Understanding Image Representation (Pixel, Resolution, Color Models) Basic Image Operations (Brightness, Contrast, Histogram)		
3	Image Filtering Techniques, Convolution and Filtering Concepts Common Image Filters (Blur, Sharpen, Edge Detection) Image Enhancement Techniques Histogram Equalization		
4	Image Transformation Techniques Fourier Transform Discrete Cosine Transform		
5	Image Segmentation Techniques & Practical Applications		



**Engineering and Fech** 

## SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY

(Promoted by Sree Bhakthi Samvardhini Yogam.Talap,Kannur) Chalakode P O,Payyanur,Kannur-670307

# DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING PRESENTS

# WORKSHOPON

INDUSTRIAL AUTOMANDA INTRODUCTION TO IO By

## MR.AJITH.P

INSTUCTOR DEPT OF FLECTRICAL AND FLECTRONIC ENGINEERING GCEK, KANNUR

27/12/2019 to 31/12/2019

**VENUE : SOFTWARE LAB** 



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

#### 5 Days Workshop on INDUSTRIAL AUTOMATION AND INTRODUCTION TO IoT

27<sup>th</sup> to 31<sup>th</sup> December, 2019

DAY 1		
Date	Time	
	09:00 AM-09:15 AM	Introduction by Coordinator
		Mr. Abhilash Krishnan T K,
		Assistant Professor
		Dept. of EEE, SNGCET
	09:15AM -09:30 AM	B
		Departmental address by
		Mr. Raveendran K.
27-12-2019	2	HoD
		Dept. of EEE, SNGCET
		Introduction to Industrial Automation
	09:30AM-12:00PM	Me Aiith D
		Instructor
		Dept. of EEE, GCEK
		Case Studies Showcasing real world application
		Case Studies Showcasing real work application
	02:30PM-4:30PM	Mr. Ajith P.
		Instructor
		Dept. of EEE, GCEK

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

		DAY 2
28-12-2019	09:00AM-12:30 PM	Fundamentals of control systems Mr. Ajith P. Instuctor Dept. of EEE, GCEK
	01:30 PM-4:30 PM	Introduction to PID systems Mr. Ajith P. Instructor Dept. of EEE, GCEK.
		DAY 3
29-12-2019	09:00 AM-12:30 PM	Introduction to PLCs Mr. Ajith P. Instructor Dept. of EEE, GCEK
•	01:30 PM-4:00 PM	Hands-on exercises on PLC programming and simulation Mr. Ajith P. Instructor Dept. of EEE, GCEK.

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DAY 4		
30. 12. 2010	09:00 AM-12:30 AM	Introduction to HMI and SCADA systems Mr. Ajith P. Instructor
30-12-2017		Dept, of EEE, GUEK
	-	Hands-on session on HMI development and SCADA
		configuration
	01:30PM-4:30PM	Mr. A jith D
		Instructor
		Dept. of EEE, GCEK
		DAY 5
		Introduction to Internet of Things (IoT) and Integration with
	09:00 AM-12:30 PM	Industrial Automation
31-12-2019		Mr. Ajith P.
		Instructor
		Dept. of EEE, GUEK
	01-200 4 2-450 4	Challenges of integrating industrial automation with IoT & case studies
	01:30PM-3:45PM	
		Mr. Ajith P.
		Dept. of EEE. GCEK
		Feedback session
	3.45 PM -4.30 PM	From students
		Driesus



# Sree Narayana Guru College of Engineering & Technology



CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

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## **Department of Mechanical** Engineering

5 Day workshop

on

# Key Highlights:

Automobile Design and Materials

trends

- Trends in Connected and Autononomous
- Future Challenges
- Application and Career



**Exclusively for pre final year students** 



SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY



#### DEPARTMENT OF MECHANICAL ENGINEERING

#### 5Day Workshop on LATEST TRENDS IN AUTOMOBILE ENGINEERING, November 18-22, 2019

DAY 1		
Date	Time	
	9:00 AM-9:15 AM	Introduction
		by
		Coordinator
		Mr. Manuraj T V, Dept. of ME, SNGCET
	9:15 AM-9:25 AM	Departmental address by
		Mr. Chandrajith E
		HoD, Dept. of ME, SNGCET
18-11-2019		Expert talk by
(Monday)	9:30AM-12:30PM	Mr. Aswin P
		Assistant Professor, Dept of
		ME, SNGCET
		Title: Introduction to Modern Automotive Technologies. (Overview of Automotive Industry, Introduction to current automotive market trends and challenges, Evolution of automotive engineering and its impact on modern vehicles.)
-		Expert talk by
		Mr. Aswin P
		Assistant Professor, Dept of ME,
		SNGCET
	01.30 PM-5.00 PM	
		Title: Introduction to Modern Automotive Technologies
		(Discussion on fuel cell technologies and their potential impact,
		venicle Dynamics and Control Understanding vehicle stability control systems. Introduction to advanced driver-assistance systems (ADAS))
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•	DAY 2		
•	9:00 AM-12:30 PM	Expert talk by Mr. Lipin K Assistant Professor, Dept of ME, SNGCET	
19-11-2019 (Tuesday)		Title: Innovations in Automotive Design and Materials (Lightweigh Materials and Structures, Importance of lightweight materials in vehicle	
	01:30PM-5:00PM	design, Case studies on the use of composites and advanced alloys.)     Expert talk by     Mr. Lipin K     Assistant Professor, Dept of ME,     SNGCET     Title: Innovations in Automotive Design and Materials (Overview of design optimization for aerodynamic performance, Advanced	
		Manufacturing Techniques, 3D printing and additive manufacturing in automotive prototyping, Robotics and automation in car assembly.) DAY 3	
20-11-2019 (Wednesday )	9:00 AM-12:30 PM	Expert talk by Mr. Chandrajith E HoD, Dept. of ME, SNGCET Title: Emerging Trends in Connected and Autonomous Vehicles (Internet of Things (IoT) in Automotive, Connected vehicle technologies and IoT applications, Cybersecurity challenges in connected vehicles.)	
	01:30PM-5:00PM	Expert talk by Mr. Chandrajith E HoD, Dept. of ME, SNGCET Title: Emerging Trends in Connected and Autonomous Vehicles (Autonomous Driving Technologies, Levels of autonomy and current state of autonomous vehicle development, Sensors and perception systems in self-driving cars.)	

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		DAY 4	
		Expert talk by	
		Mr. Manuraj T V	
	09:00 AM-12:00 PM,	Assistant Professor, Dept of ME, SNGCET	
21-11-2019 (Thursday		<b>Title: Sustainable Mobility and Future Challenges</b> (Sustainable Automotive Solutions, Role of electric vehicles and sustainable mobility, Circular economy approaches in automotive manufacturing.)	
		Expert talk by	
	1	Mr. Manuraj T V	
		Assistant Professor, Dept of ME, SNGCET	
	01:00 PM-5:00 PM		
		Title: Sustainable Mobility and Future Challenges (Urban Mobility and Smart Cities, Urban transportation challenges and solutions, Role of shared mobility and ride-sharing platforms.)	
		DAY 5	
		Expert talk by	
1.1.1		Mr. Lipin K	
	9:00 AM-12:30 PM	Assistant Professor, Dept of ME, SNGCET	
22-11-2019 (Friday)		Title: Industry Applications and Career Perspectives (Advanced Powertrain Technologies, Overview of electric vehicles (EVs) and hybrid vehicles)	
	01:30 PM-5:00 PM	Expert talk by Mr. Lipin K Assistant Professor, Dept of ME, SNGCET	
		Title: Industry Applications and Career Perspectives (Aerodynamics and Vehicle Design, Basics of aerodynamics and its role in vehicle efficiency.)	

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Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR





## DEPARTMENT OF CIVIL ENGINEEERING

Presents

## **5 DAY HANDS ON TRAINING ON**

# ADVANCED DESIGN TECHNIQUES

Venue: CE Seminard

15-04-2019 to 19-04-2019

ENGINEER

#### **Faculty coordinators**

**Student coordinators** 

Mr.Akhil v Mr. Abhishek C V

Ms. Jinsha C P Ms. Athira K V



## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF CIVIL ENGINEERING

#### WORKSHOP ON ADVANCED DESIGN TECHNIQUES

#### SCHEDULE

DAY	TIME	TOPICS
	9.00 am to 12 pm	Inaugural session & Expert talk by Dr. Leena A.V.
Day 1		Assistant Professor SNGCET Topic: Environmental Impact Assessment
(13-04-2019)	1.00 pm to 4.00 pm	Expert talk by Dr. Leena A V Assistant Professor SNGCET
		Topic: Planning Principles Population and Demand Rates Demand Calculations
	9.00 am to 12 pm	Expert talk by Dr. Leena A V Assistant Professor SNGCET
Day 2		Topic: Water Treatment Plants, Pumping Stations
(16-04-2019)	1.00 pm to 4.00 pm	Expert talk by Dr. Leena A V Assistant Professor SNGCET
	Leen	Topic: System Component - Transmission Mains And Distribution Systems
	9.00 am to 12 pm Dr. LEENA A. PRINCIPAL SREE NARAYANA GURU COU ENGINEERING & TECHNOLOGY KANNUR	Expert talk by <b>Dr. Leena A V</b> Assistant Professor SNGCET PAYYANUR Topic : Design Hydraulic Modelling and
Day 3	64	Analysis - Network Design Economic

		Calculations
(17-04-2019)	1.00 pm to 4.00 pm	Expert talk by
		Dr. Leena A V
		Assistant Professor SNGCET
		Topic : Water Hammer Analysis and
		Pipe Selection Longitudinal Section.
		Valves and Appurtenances
	9.00 am to 12 pm	Expert talk by
		Dr. Leena A V
		Assistant Professor SNGCET
Day 4		
(18-04-2019)		Topic : Water System Component
	1.00 pm to 4.00 pm	Expert talk by
		Dr. Leena A V
		Assistant Professor SNGCET
		Topic : Estimation and Rate
	9.00 am to 12 pm	Expert talk by
		Mrs. Shilpa Valsakumar
		Assistant Professor SNGCET
Day 5		Topic : Construction Management - Site
, -		Mobilization and Laydown area
(19-04-2019)		Construction Activities
-	1.00 pm to 4.00 pm	Expert talk by
		Mrs. Shilpa Valsakumar
		Assistant Professor SNGCET
		Topic : Valuation and Bill Payment -
		Ouality Control

Coordinator

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

> Korom, Chalakkode P.O., Payyanur, Kannur - 670307 Managed by Sree Bhakthi Samvardhini Yogam, Talap, Kannur Affiliated to APJ Abdul Kalam Technological University and Approved by AICTE

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

# WEB DEVELOPMENT TECHNOLOGIES

## **RESOURCE PERSON**



## **Ms.SREESHA GOVIND**

Assistant Professor SNGCET

EVENT COORDINATOR Ms. SREERAJI NARAYANAN

Assistant Professor SNGCET

VENUE MEETING HALL

18/02/2019- 22/02/2019 9.00 AM - 4.00 PM

PRINCIPAL SREE NARAXANA GURU COLLEGE OF ENGINEERINGO, TECHNOLOGY, PRYNNUS KANNUR



#### SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING FIVE DAY WORKSHOP ON WEB DEVELOPMENT TECHNOLOGIES SCHEDULE

SI.No	DATE & TIME	TOPIC
1	18/02/2019 9.00 AM - 4.00 PM	Introduction to web technologies
2	19/02/2019 9.00 AM - 4.00 PM	Markup Language-HTML
3	20/02/2019 9.00 AM - 4.00 PM	CSS- Cascading Style Sheet
4	21/02/2019 9.00 AM - 4.00 PM	JavaScript
5	22/02/2019 9.00 AM - 4.00 PM	Frameworks

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY PAYYANUR, KANNUR, KERALA Promoted by Sree Bhakthi Samyardhini Yogan, (Affiliated to KTU, Recognized by AICTE)



# HANDS ON TRAINING ON EMBEDDED C,C++

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ORGANIZED BY DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

On 25/07/2018

-29/2018

@SCL,ECE



SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY



(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR) CHALAKODE P.O., PAYYANUR, KANNUR–670307, KERALA

#### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

#### HANDS ON TRAINING ON EMBEDDED C, C++

#### SCHEDULE

Sl.No	Date	Time	Topic
1	25-07-2018	9.00 am	Introduction to Embedded Systems and C
		to	Programming Overview of Embedded
		12.30 pm	Systems.
		1.30 pm	Basics of Microcontrollers. Introduction to C
		to	Programming
	- Carlo Barrowski	4.30 pm	Data types, operators, and expressions
2	26-07-2018	9.00 am	Advanced C Programming for Embedded
		to	Systems
		12.30 pm	Control flow statements (if, else,
			switch).Functions and modular programming.
		1.30 pm	Arrays and pointers in C. Memory
		to	management in C
		4.30 pm	
3	27-07-2018	9.00 am	Embedded Systems Architecture.
		to	Microcontroller architecture basics.
		12.30 pm	
		1.30 pm	Input/Output (I/O) operations and interfacing.
		to	Timers and counters
		4.30 pm	
4	28-07-2018	9.00 am	Introduction to C++.Basics of Object-Oriented
		to	Programming (OOP).
		12.30 pm	
		1.30 pm	Classes and objects in C++.Memory
		to	management in C++
		4.30 pm	
5	29-07-2018	9.00 am	Embedded C and C++ Project Work.Select a
		to	small-scale embedded project.Develop the
		12.30 pm	project using Embedded C and C++.
		1.30 pm	Hands-on debugging and testing.Project
		to	presentation and feedback session
		4.30 pm	





Payyanur, Kannur, Kerala, Pin-670307 Promoted by Sree Bhakthi Samvardhini Yogam, Kannur Affiliated to APJ Abdul Kalam Technological University & Approved by AICTE, New Delhi

## DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

## CRAFTING WITH CAD- A 5 DAYS WORKSHOP SERIES

## Our Resource Person



Mr. Jacob Thomas HoD Department of Mechanical Engineering Govt. Poly Technic, Periya, Kasaragod

Date : 26/12/2018 to 30/12/2018

Venue : Software Lab

Time: 09.00AM to 04.30 PM

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

Staff Coordinator

Mr. Abhilash Krishnan TK Assistant Professor Department of EEE Student Coordinator

Mr. Vishnu Unnikrishnan S7- EEE Department of EEE



SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

#### **CRAFTING WITH CAD: A 5 DAYS WORKSHOP SERIES**

26<sup>th</sup> December to 31<sup>st</sup> December, 2021

DAY1 Time Date Introduction by Coordinator 09:00 AM-09:15 AM Ms. Prabha Chandran Assistant Professor Dept.ofEEE,SNGCET Departmental address by 09:15AM -09:30 AM Mr. Raveendran K HoD Dept.ofEEE,SNGCET Introduction to CAD 26-12-2018 Mr. Jacob Thomas 09:30AM-12:00PM Hod Department of Mechanical Engineering Govt.Polytechnic College, Periva **Introduction to Drawings** Mr. Jacob Thomas 02:30PM-4:30PM Hod Department of Mechanical Engineering Govt.Polytechnic College, Periya

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR
		DAY2
27-12-2018	09:00 AM-12:30 PM	Drawing Commands of CAD Mr. Jacob Thomas H od Department of Mechanical Engineering Govt.Polytechnic College , Periya
	01:30PM-4:30PM	Modifying Commands of CAD Mr. Jacob Thomas H od Department of Mechanical Engineering Govt.Polytechnic College , Periya
		DAY3
28-12-2018	09:00 AM-12:30 PM	Explanation of 2D drawings for the familiarization of Drawing and Modifying Commands Mr. Jacob Thomas H od Department of Mechanical Engineering Govt.Polytechnic College, Periya
	01:30 PM-4:30 PM	Practical Session :2D drawings for the familiarization of Drawing and Modifying Commands Mr. Jacob Thomas H od Department of Mechanical Engineering Govt.Polytechnic College , Periya

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR

		DAY4
29-12-2018	09:30AM-12:30AM	Introduction to toolbar and explanation of properties of drawing Mr.Jacob Thomas Hod Department of Mechanical Engineering Govt.Polytechnic College , Periya
	01:30PM-4:30PM	Practical Session Mr.Jacob Thomas Hod Department of Mechanical Engineering Govt.Polytechnic College , Periya
		DAY5
30-12-2018	09:00AM-12:30PM	Plotting and presentation of hard copies Mr.Jacob Thomas Hod Department of Mechanical Engineering Govt.Polytechnic College, Periya
	01:30PM-3:00PM	Practical Session Mr.Jacob Thomas Hod Department of Mechanical Engineering Govt.Polytechnic College, Periya
	3.00 PM -4.30 PM	Feedback session From students Certificate distribution ceremony Mr. Raveendran K HoD Dent of EFE_SNGCET

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANUR KANNUR SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY



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## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING SYLLABUS

#### "Crafting with CAD: A 5-Day Workshop Series"

Day	9.00 AM to 12.00PM	1.00 PM to 4.00 PM
Day1	<ul> <li>Introduction to Computer hardware and peripherals</li> <li>Input output devices</li> <li>Windows operating system</li> <li>Auto CAD application software in the platform of Windows.</li> <li>Control bar, pull down menu, status bar, workspace,</li> <li>Snap, Grid, Ortho mode O snap, O track, Line weight, dynamic UCS, Model space and paper space</li> <li>WCS and UCS</li> <li>Coordinate system and References</li> <li>Absolute system of reference</li> <li>Incremental system of reference</li> <li>Polar system of reference</li> <li>Limits and Units</li> </ul>	<ul> <li>Practical session</li> <li>Simple 2D drawings</li> <li>Based on :WCS and UCS</li> <li>Coordinate system and References</li> <li>Absolute system of reference</li> <li>Incremental system of reference</li> <li>Polar system of reference</li> <li>Limits and Units</li> </ul>
Day2	Drawing commands Line, Construction line Multi lines, Poly lines Rectangle, Polygons Arc, Circle, Splines Ellipse, Ellipse arc Make block and Insert block Point, Hatch, Gradient, Region Multiline text. Table.	Modifying Commands Erase, Copy Mirror, Offset Array- Circular and Rectangular Move, Rotate, Scale Stretch, Trim, Extend Break, Join Fillet and Chamfer Blend curves and Explode
Day 3	Practical session 2D drawings for the familiarization of Drawing and Modifying Commands	Practical session 2D drawings for the familiarization of Drawing and Modifying Commands
Day4	Tool bars	Practical Session

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# Sree Narayana Guru College of Engineering & Technology



CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

# Department of Mechanical Engineering 5 Day workshop

# Master CAM

# **Key Highlights :**

- 3 D modelling
- Machining Simulation
- Post Processing Operations for 3D printed object
- Toolpath Simulation

Date: 18-02-2019 to 22-02-2019 Venue : CAD/CAM Lab

Exclusively for prefinal year students

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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY



#### DEPARTMENT OF MECHANICAL ENGINEERING

#### 5Day Workshop on MASTERCAM: CNC PROGRAMMING, February 18-22, 2019

	DAY 1		
Date	Time		
	9:00 AM-9:15 AM	Introduction by Coordinator Mr. Manuraj T V, Dept. of ME, SNGCET	
	9:15 AM-9:25 AM	Departmental address by Mr. Chandrajith E HoD, Dept. of ME, SNGCET	
18-02-2019 (Monday)	9:30 AM-12:30 PM	<b>Expert talk by</b> Dr. Abdul Nazar K P, Associate Professor Dept of Mechanical Engineering, GEC Kannur	
		Title: 2D geometric commands and the applications.	
	01:30 PM-5:00 PM	Expert talk by Dr. Abdul Nazar K P, Associate Professor Dept of Mechanical Engineering, GEC Kannur	
		Title: 2D geometric commands and the applications.	

	and a million second and added to a second random	DAY 2
	9:00 AM-12:30 PM	Expert talk by Dr. Solamon Joseph, Lecturer ME, GPC Periye, Kasargod.
19-02-2019 (Tuesday)		Title: Translation commands for 2D geometry editing.
	01:30PM-5:00PM	Expert talk by Dr. Solamon Joseph, Lecturer ME, GPC Periye, Kasargod. Title: Featuring 2D geometry for 2D tool path, Contouring tool path generation.
		DAY 3
20-02-2019	9:00 AM-12:30 PM	<b>Expert talk by</b> Dr. Abdul Nazar K P, Associate Professor Dept of Mechanical Engineering, GEC Kannur
)		Title: Simulation of generated tool path, Generation of NC part program with the suitable post processor.
	01:30PM-5:00PM	Expert talk by Dr. Abdul Nazar K P, Associate Professor Dept of Mechanical Engineering, GEC Kannur
		Title: 3D modelling and solid editing, Translation of 3D models.

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		DAY 4
21-02-2019	09:00 AM-12:00 PM,	Expert talk by Mr. Jacob Thomas, Worshop Superintendent, GPC Periye, Kasargod. Title: Assigning operation parameters for 3D models to be machined
(1 hursday )	01:00PM-5:00PM	<b>Expert talk by</b> Mr. Jacob Thomas, Worshop Superintendent, GPC Periye, Kasargod. <b>Title: 3D machining Simulation.</b>
		DAY 5
22-02-2019 (Friday)	9:00 AM-12:30 PM	Expert talk by Mr. Jacob Thomas, Worshop Superintendent, GPC Periye, Kasargod. Title: post-processing operations for 3D printed objects.
	01:30 PM-5:00 PM	Expert talk by Mr. Jacob Thomas Worshop Superintendent, GPC Periye, Kasargod.
		Title: Assigning operation parameters for 3D models to be machined, 3D machining Simulation.

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# COURSE MODULES AND OUTCOMES



# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY DEPARTMENT OF CIVIL ENGINEERING

#### WORKSHOP ON ADVANCED QUANTITY SURVEYING

#### SYLLABUS

1. GENERAL

- a) Tender Documents
- b) Drawings
- c) Civil & Mep Dwgs
- d) Architectural Drawing
- e) Structural Drawing

Column Layout, Foundation Layout, Tiebeam Layout/Gf, Layout First Floor Frame Layout, Roof Frame, Layout Structural Details: Rein & Size

f) Items Concrete

g) Scope Of Works Civil Contractor

- h) Foundations
- i) Beams

#### 2. COST

- a) Material Cost
- b) Unit Cost
- c) Labour Cost
- d) Project Cost
- e) Cost Variance

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#### 3. CONVERSION AND ITS IMPORTANCE



# SCHEDULE OF FOOTINGS

	REINFORCE			CEMENT	
1	SIZE (LBD)	LONG SPAN STEEL		SHORT SPAN STEEL	
TYPE		BOTTOM	TOP	BOTTOM	TOP
F1	5'-8"x4'-8"x16"	¥12@6"c/c		Y12@6"c/c	
F2	6'-8"x8'-0'x20"	¥10@6"c/c		Y10@6"c/c	
F3	8'-4"x7'-4"x20"	¥1005"c/c		Y1005"c/c	
F4	9'-0"x8'-0"x20"	Y12@4"c/c	1	Y12@4"c/c	
F5	10'-4"x7'-0"x20"	Y1204"c/c		Y1204"c/c	
F6	15'-0"x15'-0"x20	"Y16@5"c/c	Y16@5"c/c	Y1605"c/c	Y16@5"c/c
F7	AS/DWG.x20"	Y1206"c/c	Y12@6"c/c	Y1206"c/c	Y1206"c/c
F8	16'-6"x8'-0"x20'	¥12@4"c/c	Y1204"c/c	Y1204"c/c	¥12@6"c/c
FS	12'-4"X6'-0"x20'	¥12@4"c/c	Y1204"c/c	Y1204"c/c	Y10@4"c/c
F10	15'-8"X6'-0"x20'	¥12@4"c/c	Y12@4"c/c	Y1204"c/c	Y10@4"c/c

#### 4. COMPOUND WALL SEQUENCE

- a. Excavation.
- b. Compaction
- c. Roadbase
- d. Compaction

e. PCC

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- f. Foundation
- g. Neck Columns
- h. Solid blocks
- i. Tie Beams
- j. Bitumen
- k. Backfilling
- 1. Hollow Block Works
- m. Stiffener Columns
- n. Coping Beam
- o. Plastering

#### 5. WATER TANK

- a) Water Tank Materials
- b) Water Tank Man
- c) Machinery
- d) Sequence Water Tank
- e) Common Mistakes Reinforcement



SECTIONPLAN

#### 6. BLOCK WORKS

- a) Thermal Insulated
- b) Hollow Blocks
- c) Solid Blocks
- d) Horldy Blocks
- e) Autoclaved Aerated Block
- f) Bed Joint

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#### 7. LEVELS





	LEVELS	
	Ground Floor or Interlock LvI: OlvI	
	Tie Beam Top Level: +0.60cms	
	Foundation Bottam Level: -1.60	
	FIND OUT	
1	Excavation Bottam Level	
2	Pcc bottam Level	
3	Pcc Top Level	en l'
4	All Foundation Bottam Level	
5	Fdn F1 Top Level	
б	Fdn F2 Top Level	
7	Fdn F3 Top Level	
8	Fdn F4Top Level	
9	Neck Column NC1 Top Level	
10	Neck Column NC2 Top Level	
11	Neck Column NC3 Top Level	
12	Neck Column NC4 Top Level	
13	Tie Beam Bottam Level	
14	Solid Block Top Level	



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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF CIVIL ENGINEERING

#### WORKSHOP ON ADVANCED QUANTITY SURVEYING

## **Course Objective**

cos	TOPICS		
CO 1	Risk Management and Contingency Planning: Students will develop expertise         in risk management strategies specific to quantity surveying, including         identifying, assessing, and mitigating risks related to cost, schedule, and quality         throughout the project lifecycle.		
CO 2	Advanced Cost Control Techniques: Students will learn advanced cost control techniques to monitor and manage project costs effectively, including earned value management (EVM), cost variance analysis, and forecasting methods to ensure projects remain within budget constraints.		
CO 3	International Standards and Best Practices: Students will be familiarized with international quantity surveying standards, codes of practice, and best practices, enabling them to work effectively on projects across different regions and jurisdictions		
CO 4	Specialized Quantity Surveying Areas: Students will explore specialized areas           within quantity surveying, such as facilities management, property development,           infrastructure projects, and sustainable construction, gaining insights into unique           challenges and requirements in these fields.		
CO 5	Professional Ethics and Conduct: Students will develop a strong understanding of professional ethics and conduct within the quantity surveying profession, including ethical responsibilities, confidentiality requirements, and compliance with industry regulations and codes of conduct		

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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY,

#### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

#### FIVE DAY WORKSHOP ON OS INSTALLATION

#### SYLLABUS

SL.NO:	TOPICS
	INTRODUCTION TO FUNDAMENTALS OF COMPUTER ARCHITECTURE
	Basic of Computer components and computer architecture
	Hardware and Software
1	Hardware Components
	Application software and System software
- 1-	HANDS ON SESSION ON HARDWARE COMPONENTS
,	Familiarization of hardware components
2	• Hands on session to know the components, how to connect each component in a system
	OS INSTALLATION
	Familiarization of various softwares
3	Computer Specification
	<ul> <li>Introduction to operating Systems</li> </ul>
	Installation procedure
	HANDS ON SESSION ON OS INSTALLATION
	• Identifying the hardware requirements
	Pre installation process
4	Installation Procedure
	Post installation task
	Troubleshooting
	Back up Recovery
	HANDS ON SESSION ON OS INSTALLATION
5	Installation of Windows / Ubuntu

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SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

#### **OS INSTALLATION**

Course Outcomes: After the completion of the course the student will be able to

CO#	CO		
C01	Explain the fundamentals of computer architecture (Cognitive Knowledge Level: Understanding)		
CO2	Illustrate the hardware components of a computer system and to get know about the connections between the system and the hardware components(Cognitive Knowledge Level: Understanding, Apply)		
CO3	Represent the computer specification and installation procedures of an operating system (Cognitive Knowledge Level: Apply)		
CO4	Demonstrate the installation procedures, trouble shooting and backup recovery (Cognitive Knowledge Level: Apply)		
C05	Experiment with the installation of windows/ubuntu (Cognitive Knowledge Level: Understanding, Apply)		

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## SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR) CHALAKODE P.O., PAYYANUR, KANNUR-670307, KERALA



#### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

#### **ROBOTICS WORKSHOP**

#### SYLLABUS

Sl.No	Торіс
1	Introduction to Robotics and Arduino
	<ul> <li>Overview of Robotics and its applications</li> </ul>
	<ul> <li>Introduction to Arduino boards and their features</li> </ul>
	<ul> <li>Installing Arduino IDE and configuring boards</li> </ul>
	• Basic Arduino programming concepts (variables, data types, loops)
2	Arduino Programming Fundamentals
	Control structures (if, else, switch)
	Functions and modular programming
	<ul> <li>Arrays and strings in Arduino programming</li> </ul>
	<ul> <li>Analog and digital input/output</li> </ul>
3	Sensor Integration with Arduino
	• Introduction to sensors (e.g., light sensors, temperature sensors)
	Connecting sensors to Arduino
	Reading sensor data and processing
	<ul> <li>Hands-on: Interfacing LEDs and basic sensors</li> </ul>
4	Actuator Control with Arduino
	<ul> <li>Introduction to actuators (e.g., motors, servos)</li> </ul>
	<ul> <li>Connecting actuators to Arduino PWM (Pulse Width Modulation)</li> </ul>
9	for motor control
	<ul> <li>Hands-on: Controlling motors and servos with Arduino</li> </ul>
5	Robotics Project and Advanced Concepts
	<ul> <li>Integration of sensors and actuators into a robotics project</li> </ul>
	• Project development using Arduino Troubleshooting and
	debugging
	Advanced Arduino concepts (interrupts, communication protocols)
	• Project presentation and discussionDevelop the project using
	Embedded C and C++
E	Hands-on debugging and testing

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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

(PROMOTED BY SREE BHAKTHI SAMVARDHINI YOGAM, KANNUR) CHALAKODE P.O., PAYYANUR, KANNUR-670307, KERALA



#### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

#### **ROBOTICS WORKSHOP**

#### · Project presentation and feedback session

#### **Assessment Criteria:**

Short quizzes and assessments throughout the workshop Participation in hands-on exercises.

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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

#### **ROBOTICS WORKSHOP**

Course Outcomes: After the completion of the course the student will be able to

CO #	COURSE OUTCOME
CO 1	Develop skills in robotics and to apply the same in real life applications. (Cognitive Knowledge Level: Understanding)
CO 2	To design smart application for real world problems using (Cognitive Knowledge Level: Understanding, Apply)

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#### SYLLABUS

#### PCB Design and Fabrication

#### Day 1: Introduction to PCBs and Basic Design Concepts

#### Morning Session:

Introduction to Printed Circuit Boards (PCBs): Definition, importance, and applications.

Overview of the PCB design process: From schematic to layout.

Introduction to common PCB design software tools (e.g., Eagle, Altium, KiCad).

#### Afternoon Session:

Understanding basic design concepts:

PCB layers: Types and functions.

Component placement: Considerations and best practices.

Introduction to routing traces: Signal paths, trace width, and clearance.

#### Day 2: Advanced PCB Design Techniques

#### Morning Session:

Understanding PCB layer stack-up: Importance and configuration.

Signal integrity considerations: Impedance matching, signal integrity analysis.

Designing for EMI/EMC compliance: Grounding techniques, signal shielding.

#### Afternoon Session:

High-speed design principles: Differential pairs, controlled impedance routing.

Design for manufacturability (DFM) guidelines: Design rule checks (DRC), panelization.

#### Day 3: PCB Design Software Proficiency

#### Morning Session:

Practical session: Hands-on training with PCB design software.

Familiarization with the user interface, toolbars, and shortcuts.

Dr. LEENA A. V. PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY, PAYYANU KANNUR Creating schematics: Adding components, connecting nets.

#### Afternoon Session:

Layout design: Placing components, routing traces, ground planes.

Introduction to design constraints and design rules.

#### **Day 4: PCB Fabrication Process**

#### Morning Session:

Overview of the PCB fabrication process: Steps involved from design to finished board.

Understanding Gerber files: Format, layers, and their role in fabrication.

Selection of PCB materials: Types, properties, and considerations.

#### Afternoon Session:

Design optimization for fabrication: Panelization, copper weight, solder mask considerations.

Introduction to PCB assembly (PCBA): SMT vs. Through-hole, assembly techniques.

#### Day 5: Hands-On Fabrication and Design Review

#### Morning Session:

Hands-on practical session: Participants design their PCB layouts using software.

Guidance provided on optimizing designs for fabrication and assembly.

#### Afternoon Session:

Design review and feedback: Participants present their designs for review and critique.

Discussion on common mistakes and how to avoid them.

Q&A session: Addressing participants' queries and clarifications.

Conclusion and Certificate Distribution.

This 5-days training syllabus provides a structured approach to learning PCB design and fabrication, covering essential concepts, advanced techniques, practical software training, and hands-on experience. Each day focuses on specific aspects of PCB design and fabrication, gradually building participants' skills and knowledge throughout the training program.

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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

#### "HANDS ON TRAINING ON PCB DESIGN AND FABRICATION"

#### **COURSE OUTCOMES**

CO 1 Understanding of PCB Fundamentals

CO 2 PCB Design Software Proficiency

- CO 3 Schematic Design Skills:
- CO 4 Understanding PCB Manufacturing Processes
- CO 5 Hands-On PCB Prototyping

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#### SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY DEPARTMENT OF MECHANICAL ENGINEERING

#### SYLLABUS FOR 3D PRINTING

Professional Skills(Trade Practical)	Professional Knowledge(Trade Theory)
1. Importance of trade training, List of tools &	All necessary guidance to be provided to the new
Machinery used in the trade.	comers to become familiar with the working of
<ol> <li>First Aid Method and basictraining.</li> <li>Safe disposal of waste materials like cotton</li> </ol>	storesprocedures
s. Sale disposal of waste materials like couoli waste metal chips/burrs etc	Soft Skills its importance and Job area after
<ol> <li>Hazard identification and avoidance.</li> </ol>	completion of training.
5. Safety signs for Danger, Warning, caution &	Importance of safety and general precautions
personal safety message.	observed in the industry/shop floor.
6. Preventive measures forelectrical accidents &	Introduction of First aid. Operation of electrical
steps to be taken in such accidents.	mainsand electrical safety. Introduction of
7. Use of Fire extinguishers.	PPEs. Response to emergencies e.g.; power
8. Practice and understand precautions to be	failure, fire, and system failure.
followed while working in fitting jobs.	Importance of housekeeping & good shop floor
9. Demonstrate the functions of 3D printing and	practices. Introduction to 55 concept & its
10 Demonstrate the functions of 3D printing and	Occupational Safety & Health Health Safety
Scanning. Perform Computer operation:	and Environment guidelines, legislations &
i)create new folder, ii) add subfolders,	regulations as applicable.
create application files, iv) change appearance	
of windows, v) search for files,	Introduction to 3D Printing and Scanning. Basic
folder iv) create shortcut icon in deskton and	computer: Introduction to computer, Windows
taskbar x) Move files to and from removable	operating system, file management system.
disk/ flash drive. xi) Install a printer from driver	Computer hardware and software specification.
software in operating system.	Facility Descion Manual (
11. Create, save and print a document, worksheet	Lingineering Drawing: Nomenciature,
and pdf (portable document format) files.	various equipments used in drawing office. Their
12. Draw perpendicular, inclined (given angle)	care and maintenance
and parallel lines. Draw triangles with given	
sides and angles.	Units of dimensioning, System of dimensioning,
13. Draw inscribed and circumscribed circles of	Method of dimensioning & common features.
trangle, pentagon andnexagon.	Methods of obtaining orthographic view. Position
14. Draw orthographic projection of cut	of the object, selection of the views, three views
cones pyramids	of drawing. Planes and their normal projections.
cones, pyramitis.	Orthographic projection. First angle and third

- 15. Draw 2D objects using: line, polyline, ray, polygon, circle, rectangle, arc, ellipse commands.
- Modify 2D objects using Move, Copy, Array, Insert Block, Make Block, Scale, Rotate, Hatch Commands.
- Perform computer application in 2D drawing space using commands from ribbon, menu bar, toolbars and by typing in command prompt.
- Modify 2D objects using Move, Copy, Array, Insert Block, Make Block, Scale, Rotate, Hatch Commands.
- Draw 3D solid figures by Sketching features & applied features.
- Handle imported geometries using Feature Works – Recognise features to native file formats.
- 21. Create a 3D transition figure
  - Using loft feature.
  - · Using sweep feature.
  - · Using library features.

i)Create 3D model by annotating Holes and Threads, ii) Create Centrelines, symbols and leaders, iii) Perform seamless Simulation within CAD Apply loads & boundary conditions, Material should come from part definition, contacts etc and perform base simulation.

iv)Plot various results- Stress, Strain, Deformation, Displacement, Factor of Safety plot, Design Insight plot, probe facility, Isoclipping, Section clipping.
v) Create automatic reports vi) Understand 2D simplification.

22. Learn Data Translation – Built in translation facility to export design to DWG, DXF, ProE, IPT(Inventor), Mechanical Desktop, Unigraphics, ParaSolid, CADKEY, IGES, STEP, PAR (SolidEdge), SAT(ACIS), VDA-FS, VRML, STL, TIFF, JPG, Adobe, Rhino, IDF & HISF.(20 hrs)

angle projection. Principal of orthographic projection. Projection of solids like prism, cones, pyramids and their frustums.

Introduction to 2D User interface. Drawing of Line, polyline, ray, polygon, circle, rectangle, arc, ellipse using different options. Trim, Offset, Fillet, Chamfer, Arc and Circle under modify commands. Move, Copy, Array, Insert Block, Make Block, Scale, Rotate, Hatch Commands. Creating templates, Inserting drawings, Layers, Modify Layers. Format dimension style, creating new dimension style, Modifying styles in dimensioning. Writing text on dimension line and on leader. Edit text dimension. Knowledge of shortcut keyboard command. Customization of keyboard command. Customization of drafting settings, changing orthographic snap to isometric snap. Procedure to create viewport in layout space in zooming scale.

3D Modeling and Design Software: Introduction to 3D Modeling and Software. User interface - Menu Bar - Command manager -Feature manager - Design Tree - settings on the Default options - suggested settings - key board short cuts. Feature manager Design Tree Selection of plane Control of sketches through parameter and property manager. Featured tools in Command Manager Feature Toolbar. Extrude Boss/Base Revolve Boss/Base Swept Boss/Base Lofted Boss/Base Boundary Boss/Base Extruded cut Hole Wizard Revolved Cut Boundary Cut Fillet, chamfer, mirror Linear pattern and circular pattern Understanding part GD&T with **DimXpert** Manager

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#### Sree Narayana Guru College of Engineering & Technology

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### Department of Mechanical Engineering Organizing

5 Days Workshop on

#### **3D** Printing

со	Level	Description
CO1	Apply	Demonstrate the working principles of Additive Manufacturing.
CO2	Apply	Develop STL file for CAD models with appropriate support structures and Orientation
CO3	Apply	Build complex engineering assemblies in plastic material with minimum build-time
CO4	Analyse	Evaluate the process parameters of AM machine to improve the quality of the parts produced
CO5	Apply	Model and fabricate working models using AM processes.

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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY DEPARTMENT OF CIVIL ENGINEERING

#### WORKSHOP ON ADVANCED QUANTITY SURVEYING

(04/04/2022 to 08/04/2022)

#### SYLLABUS

1. GENERAL

- a) Tender Documents
- b) Drawings
- c) Civil & Mep Dwgs
- d) Architectural Drawing
- e) Structural Drawing

Column Layout, Foundation Layout, Tie beam Layout/Gf, Layout First Floor Frame Layout, Roof Frame, Layout Structural Details: Rein & Size

f) Items Concrete

g) Scope Of Works Civil Contractor

- h) Foundations
- i) Beams

#### 2. COST

- a) Material Cost
- b) Unit Cost
- c) Labour Cost
- d) Project Cost
- e) Cost Variance

#### 3. FUNDAMENTALS OF QUANTITY SURVEYING

#### 4. ADVANCED MEASUREMENT TECHNIQUES

- 5. COST ESTIMATION AND ANALYSIS
- 6. SOFTWARE APPLICATIONS IN QUANTITY SURVEYING
- 7. CASE STUDIES AND PROJECT PRESENTATIONS

#### 8. COMPOUND WALL SEQUENCE

- a. Excavation.
- b. Compaction
- c. Roadbase
- d. Compaction

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- e. PCC
- f. Foundation
- g. Neck Columns
- h. Solid blocks
- i. Tie Beams
- j. Bitumen
- k. Backfilling
- 1. Hollow Block Works
- m. Stiffener Columns
- n. Coping Beam
- o. Plastering

#### 9. WATER TANK

- a) Water Tank Materials
- b) Water Tank Man
- c) Machinery
- d) Sequence Water Tank
- e) Common Mistakes Reinforcement

#### **10. BLOCK WORKS**

- a) Thermal Insulated
- b) Hollow Blocks
- c) Solid Blocks
- d) Horldy Blocks
- e) Autoclaved Aerated Block
- f) Bed Joint

Coordinator

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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF CIVIL ENGINEERING

## WORKSHOP ON COST ESTIMATION AND VALUATION TECHNOLOGIES Course Objective

СО	TOPICS
CO 1	Application of Advanced Analysis Methods: Students will be able to apply         advanced analysis methods, such as finite element analysis (FEA), computational         fluid dynamics (CFD), and structural optimization techniques, to solve complex         civil engineering design problems.
CO 2	Integration of Sustainable Design Principles: Students will learn how to integrate sustainable design principles into their engineering projects, including the use of renewable materials, energy-efficient design strategies.
CO 3	Utilization of Building Information Modeling (BIM): Students will gain proficiency in using Building Information Modeling (BIM) software to create detailed 3D models of civil engineering projects, enabling them to visualize, analyze, and optimize designs more effectively.
CO 4	Innovative Structural Design Strategies: Students will explore innovative structural design strategies, such as performance-based design, seismic-resistant design, and modular construction techniques, to create resilient and cost-effective infrastructure solutions.
CO 5	Effective Project Management Skills: Students will develop effective project management skills, including scheduling, budgeting, risk management, and communication, to successfully oversee the implementation of advanced civil engineering designs from conception to completion.

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#### **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

#### FIVE DAY WORKSHOP ON LEARN LATEX

#### SYLLABUS

SI. No	TOPIC
1.	Introduction to LaTeX
	Basic document structure
	Set up a LaTeX environment
	To create a simple documents
2.	Document Formatting
	Text formatting
	Page layout
	Creating lists, tables, and figures
3.	Mathematical Typesetting
	<ul> <li>How to write mathematical equations using LaTeX syntax</li> </ul>
	Practical examples and exercises
4.	Referencing and Citations
	<ul> <li>Bibliography management using BibTeX or BibLaTeX</li> </ul>
	To create custom citation styles
	Managing multiple bibliographies
5.	Advanced LaTeX Features
	<ul> <li>How to create templates, customizing document layouts, using packages for specialized tasks</li> </ul>
	Collaboration using version control systems

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#### **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

#### LEARN LATEX

Course Outcomes: After the completion of the course the student will be able to

CO#	CO	
CO1	Explain and use LaTeX	
COI	(Cognitive Knowledge Level: Understanding)	
con	Illustrate Document Formatting and creating of lists	
02	(Cognitive Knowledge Level: Understanding, Apply)	
CO3	Explain how to write mathematical equations using LaTeX syntax	
COS	(Cognitive Knowledge Level: Apply)	2
CO4	Represent referencing and citations	
CU4	(Cognitive Knowledge Level: Apply)	
COS	Explain advanced LaTeX features	
CUS	(Cognitive Knowledge Level: Understanding, Apply)	

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#### SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF ELECTRONICSAND COMMUNICATION ENGINEERING

#### **SYLLABUS**

Introduction to Arduino	History and background.Overview of Arduino boards (Uno, Nano, Mega, etc.).Applications of Arduino in various fields (IoT, robotics, automation, etc.)
Basic Electronics Components	Explanation of fundamental components.Resistors, capacitors, LEDs, pushbuttons, etc.Understanding component specifications (resistance, capacitance, voltage ratings, etc.) Safety precautions in handling electronic components
Introduction to Breadboards	Explanation of breadboard layout and connections.Hands-on activity: Building simple circuits on a breadboard
Hands-on Arduino Basics	Introduction to Arduino IDE (Integrated Development Environment) Setting up Arduino IDE on participants system.Uploading a simple "Hello World" program to Arduino board.Understanding the basic structure of an Arduino sketch (setup() and loop() functions)
Hands-on Activity: Blinking an LED	Wiring an LED to Arduino board.Writing a program to blink the LED on and off.Uploading and testing the program on Arduino board
Serial Communication	Introduction to serial communication and its importance in Arduino projects. Sending data from Arduino to computer via serial monitor .Reading data from serial monitor
Introduction to Sensors	Overview of common sensors used with Arduino (temperature, humidity, light, motion, etc.).Working principles of sensors.Hands-on activity: Interfacing a temperature sensor with Arduino
Reading Analog Sensor Data	Understanding analog-to-digital conversion (ADC).Reading analog sensor data using Arduino .Calibrating sensors and mapping sensor values
Introduction to Actuators	Overview of different types of actuators (motors, servos, relays, etc.). Working principles and applications of actuators
Hands-on Activity:Controllin g a DC Motor	Introduction to motor drivers and H-bridge circuits.Wiring and controlling a DC motor using Arduino
Introduction to Pulse Width Modulation (PWM)	Explanation of PWM and its application in motor speed control.Hands- on activity: Controlling motor speed using PWM signals
Serial Communication	Review of serial communication basics.Hands-on activity: Implementing two-way communication between Arduino and computer
Functions and	Introduction to functions in Arduino programming. Writing and using

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ENGINEERING &

Libraries	custom functions. Introduction to Arduino libraries and their usage
Troubleshooting and Debugging	Common programming errors and hardware issues. Strategies for troubleshooting and debugging Arduino projects. Hands-on activity: Identifying and fixing common errors in sample projects
Project Planning and Implementation	Brainstorming and planning individual or group projects. Gathering required components and materials Building and testing projects with guidance from instructors
Project Presentation	Each participant/group demonstrates their project to the rest of the workshop attendees. Explanation of project concept, components used, and functionality. Q&A session and feedback from instructors and peers

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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

#### WORKSHOP ON ARDUINO BASICS WITH HANDS ON TRAINING

Course Outcomes: After the completion of the course the student will be able to

<b>CO #</b>	COURSE OUTCOME
CO 1	Master Arduino programming language (based on C/C++) and various interfacing techniques
	(Cognitive Knowledge Level: Understanding)
CO 2	Ability to develop hands-on projects and prototypes using Arduino boards and sensors to solve real-world problems
	(Cognitive Knowledge Level: Understanding, Apply)

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#### **SYLLABUS**

#### Day 1: Introduction to LED Technology and Soldering Basics

Morning Session:

Basics of Electricity and Electronics

Introduction to LED technology: principles, components, and applications.

Use of Tools & Soldering Process.

Overview of soldering: types of solder, flux, soldering equipment.

Afternoon Session:

Demonstration: through-hole soldering technique.

Hands-on practice: through-hole soldering exercises.

#### Day 2: Surface Mount Soldering and Quality Control

#### Morning Session:

Surface mount soldering: techniques and considerations.

Quality control in soldering: visual inspection standards and defect identification.

Understand the functionality of multi-meter, Explain different modes of testing in multimeter.

#### Afternoon Session:

Demonstration: surface mount soldering technique.

Hands-on practice: surface mount soldering exercises.

#### Day 3: Advanced Soldering Techniques and Troubleshooting

#### Morning Session:

Advanced soldering techniques: reflow soldering, desoldering, and component replacement.

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Troubleshooting soldering issues: common problems and solutions.

PCB Design.

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#### Afternoon Session:

Practical exercises: troubleshooting soldering issues on sample boards.

#### **Day 4: LED Bulb Manufacturing Process**

#### Morning Session:

Overview of LED bulb manufacturing process: component assembly, PCB assembly Safety considerations in LED bulb manufacturing.

#### Afternoon Session:

Demonstration: LED bulb manufacturing process.

Lean manufacturing principles: optimizing production processes and minimizing waste.

#### Day 5: Optimization, Efficiency, and Final Assessment

#### Morning Session:

Hands-on practice: assembling LED bulbs with soldered connections and testing Afternoon Session:

Hands-on practice: assembling LED bulbs with soldered connections and testing

Feedback session: review of individual performance and areas for improvement.

Certification ceremony: distribution of training completion certificates.

Note: Each day will include breaks for refreshments and rest to ensure participants remain engaged and focused throughout the training program. Additionally, instructors will provide continuous guidance and support during hands-on practice sessions to maximize learning outcomes.



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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

#### "LED BULB MANUFACTURING & SOLDERING PRACTICE TRAINING PROGRAM"

#### **COURSE OUTCOMES**

- CO 1 Understanding LED Technology:
- CO 2 Components and Materials Knowledge
- CO 3 Soldering Techniques
- CO 4 Assembly Process and Troubleshooting Skills
- CO 5 Business and Entrepreneurship Skills

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#### SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

#### DEPARTMENT OF MECHANICAL ENGINEERING

#### <u>5 DAY ONLINE WORKSHOP ON ADDITIVE</u> <u>MANUFACTURING</u>

#### SYLLABUS

#### Day 1: Introduction to Additive Manufacturing

- Overview of Additive Manufacturing (AM) technologies
- · Historical development and current trends in AM
- Types of 3D printing processes (FDM, SLA, SLS, etc.)
- Basic principles of CAD modeling for 3D printing

#### Day 2: AM Technologies and Materials

- In-depth look at different AM technologies (FDM, SLA, SLS, DMLS, etc.)
- Selection criteria for choosing appropriate AM technology
- Materials used in additive manufacturing (polymers, metals, ceramics)
- Material properties and their impact on print quality and applications

#### Day 3: Design for Additive Manufacturing (DFAM)

- Principles of Design for Additive Manufacturing (DFAM)
- Design guidelines and considerations for AM
- Optimizing designs for strength, weight reduction, and functionality
- Designing for support structures and post-processing considerations

#### **Day 4: Advanced AM Topics**

- Post-processing techniques (cleaning, curing, heat treatment, finishing)
- Quality control and inspection methods for AM parts
- Simulation tools for predicting AM outcomes
- Integration of AM with traditional manufacturing processes (hybrid manufacturing)

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### **Day 5: Industrial Applications and Future Directions**

- Industry-focused case studies showcasing successful integration of AM in production workflows.
- Regulatory considerations and standards for AM in critical sectors (e.g., medical devices, aerospace).
- Closing remarks, certificate distribution, and networking opportunities.

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# Sree Narayana Guru College of Engineering & Technology

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



# Department of Mechanical Engineering Organizing

5 Days Workshop on

# Additive Manufacturing

со	Level	Description
CO1	Apply	Demonstrate appropriate level of understanding on principles of additive manufacturing processes.
co2	Apply	Choose appropriate materials for additive manufacturing processes
CO3	Apply	Apply suitable CAD tools and CAD interface for additive manufacturing process
CO4	Apply	Develop physical prototypes by identifying suitable process with optimum process parameters
CO5	Understand	Brief of ASTM standards for mechanical property evaluation of AM parts

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### DEPARTMENT OF CIVIL ENGINEERING

### WORKSHOP ON WATER SYSTEM DESIGN

### (11/05/2020 to 16/05/2020)

### SYLLABUS

DAY	TOPICS	
Day 1	Water System – Introduction – Environmental Impact Assessment – Planning Principles Population and Demand Rates Demand Calculations	
Day 2	System Component - Water Treatment Plants, Pumping Stations,Transmission Mains and Distribution Systems	
Day 3	Design Hydraulic Modelling and Analysis - Network Design Economic Calculations Water Hammer Analysis and Pipe Selection Longitudinal Section, Valves and Appurtenances	
Day 4	Water System Component - Estimation and Rate	
Day 5	Construction Management - Site Mobilization and Laydown area Construction Activities - Valuation and Bill Payment - Quality Control	

Coordinator

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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY DEPARTMENT OF CIVIL ENGINEERING

### WORKSHOP ON WATER SYSTEM DESIGN

# **Course Objective**

CO	TOPICS
	To be able to appreciate the role of environmental engineering
CO. • 1	in improving the quality of environment
	To be able to plan for collection and conveyance of water and
CO's 2	waste water
	To be able to enhance natural water purification processes in an
CO 3	engineered environment
CO 4	To be able to decide on appropriate technology for water and
	waste water treatment

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# SREE NARAYANA GURU COLLEGE OF ENGINEERING

### & TECHNOLOGY DEPARTMENT OF COMPUTER SCIENCE AND ENGINNERING

# **Online Workshop on Python**

### SYLLABUS

SI. No	Торіс	
	Introduction to Python	
	Python data types	
1	• Python basic syntax	
•	• popular libraries in python	
	Software used in python and organizations used python	
	Installation of Python	
2	• How to install pycharm	
	<ul> <li>Installation and configuration of pycharm</li> </ul>	
	Introduction to pycharm	
	Basics of BS- python shell	
	Basic concepts of python shell	
3	<ul> <li>installation of python</li> </ul>	
	control structure	
	<ul> <li>looping statements used in python</li> </ul>	
	Introduction to list	
	CS list	
4	<ul> <li>various list functions</li> </ul>	
	• range, cs for loop	
	Functions used in python	
	Coding Challenges	
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# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

# **PYTHON**

## Course Outcomes: After the completion of the course the student will be able to

CO#	СО
CO1	Explain basics of Python programs
COI	(Cognitive Knowledge Level: Understanding)
Azni (H	Illustrate uses of conditional (if, if-else and if-elif-else ) and
<b>CO2</b>	iterative (while and for) statements in Python programs.
	(Cognitive Knowledge Level: Understanding, Apply)
C03	Solve programs by utilizing the Python programming constructs such as Lists,
COS	Tuples, Sets and Dictionaries. (Cognitive Knowledge Level: Apply)
CO4	Represent graphical user interface for solutions using Python libraries.
C04	(Cognitive Knowledge Level: Apply)
COF	Solve coding challenges
05	(Cognitive Knowledge Level: Understanding, Apply)

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### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

# IoT | Workshop on Internet of Things using Arduino, RaspberryPi & MQTT

### SYLLABUS

Sl.No	Topic	
1	Introduction to the Internet of Things	
	The Internet of Things	
	The Basics of Sensors & Actuators	
	Introduction to Cloud Computing	
	The Ardumo Flatform	
	The Arduino Open-Microcontroller Platform Arduino Basics	10
	Arduino Board Lavout & Architecture	
	* Reading from Sensors	1.1
	* Programming fundamentals ( C language ) * Arduino Programming & Interface of Sensors	1
	Interfacing sensors with Arduino	
	Programming Arduino	
	Reading from Sensors	11
2	<ul> <li>Integrating Ethernet Module &amp; Testing DHCP Connection</li> <li>Creating Program for Localhost Web Server for controlling devices.</li> <li>Being Social on Twitter &amp; update status on Twitter through Arduino</li> <li>Make Electronics Gadget Talk to Internet</li> <li>Integrating Ethernet Module</li> <li>Creating App on Twitter</li> <li>Send Voltage &amp; Analog Data on Cloud Server.</li> <li>Cloud Computing</li> <li>Communicating with the Cloud using Web Services.</li> <li>Cloud Computing &amp; IOT.</li> <li>Popular Cloud Computing Services for Sensor Management.</li> </ul>	
3	The Internet of Things AMAYARAM SERS	me
	The Basics of Sensors & Actuators	



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### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

# IoT | Workshop on Internet of Things using Arduino, RaspberryPi & MQTT

	<ul> <li>Introduction to Cloud Computing</li> <li>Understanding and Introduction to R Pi</li> </ul>	
	What is SOC?	0
	<ul> <li>Versions of Raspberry Pi &amp; Their Difference</li> <li>Raspberry Pi 3</li> </ul>	
	Basics of Electronics	
	<ul> <li>Hardware Description</li> <li>Pin Configuration</li> </ul>	
	OS Installation on SD Card	
	Lite Ardune-Open-Microcoumiler History	
4	Talking to your Android Phone with Raspberry Pi     Connecting Raspberry Pi with Mobile Davice	
	<ul> <li>The Android Mobile OS.</li> </ul>	
	Using the Bluetooth Module	
5	<ul> <li>Using the Bluetooth Module</li> <li>Understanding MQTT</li> </ul>	_
5	<ul> <li>Using the Bluetooth Module</li> <li>Understanding MQTT</li> <li>Difference between HTTP &amp; MQTT</li> </ul>	

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# **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

# IOT | WORKSHOP ON INTERNET OF THINGS USING ARDUINO, RASPBERRY PI & MQTT

Course Outcomes: After the completion of the course the student will be able to

CO #	COURSE OUTCOME
CO 1	Gain a solid understanding of IoT concepts and master the
	programming of Arduino microcontrollers using the Arduino IDE
	(Cognitive Knowledge Level: Understanding)
CO 2	Knowledge in integrating Ethernet Module & Testing DHCP and to set up and configure Raspberry Pi and understand MOTT
	protocol (Cognitive Knowledge Level: Understanding, Apply)

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# SYLLABUS

### Day 1: Introduction to Hybrid Vehicles

### Morning Session:

- Overview of Hybrid Vehicles Definition
- types of hybrid vehicles (series, parallel, series-parallel)
- Advantages and challenges of hybrid technology Hybrid Vehicle
- Architecture Components of a hybrid vehicle (electric motor, internal combustion engine, battery, transmission, etc.)
- > How hybrid systems work: power flow, regenerative braking, start-stop systems

### Afternoon Session:

- Hybrid Powertrains
- Comparison of hybrid powertrain architectures
- Role of the internal combustion engine and electric motor in hybrid propulsion Hybrid Vehicle Control Systems
- Control strategies for optimizing performance and efficiency Introduction to regenerative braking and energy management systems.

### **Day 2:Hybrid Vehicle Technologies**

### Morning Session:

- Battery Technologies for Hybrid Vehicles
- > Types of batteries used in hybrid vehicles (NiMH, lithium-ion, etc.)
- > Battery management systems and thermal management
- Electric Motors and Generators Types of electric motors used in hybrid vehicles (AC induction, permanent magnet, etc.)
- Role of generators in hybrid systems.

### Afternoon Session:

- Transmission Systems
- > Types of transmissions used in hybrid vehicles (CVT, dual-clutch, etc.)
- Power-split and planetary gear systems
- Energy Storage and Management Charging infrastructure for hybrid vehicles
- Energy storage considerations and optimization techniques

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### Day 3: Hybrid Vehicle Performance and Efficiency

### Morning Session:

- Performance Characteristics of Hybrid Vehicles Acceleration
- top speed, and towing capacity
- Impact of hybrid technology on vehicle dynamics Fuel Economy and Emissions
- Factors affecting fuel efficiency in hybrid vehicles Emissions reduction strategies and regulatory compliance

### Afternoon Session:

- Maintenance and Service of Hybrid Vehicles Routine maintenance procedures
- Safety considerations for working with high-voltage systems
- Hybrid Vehicle Diagnostics Common issues and troubleshooting techniques
- Introduction to diagnostic tools and software

### **Day4: Integration of Hybrid Technology**

Morning Session:

- Hybrid Vehicle Design Considerations
- Vehicle packaging and integration of hybrid components
- Designing for optimal weight distribution and aerodynamics
- Vehicle Electrification Trends
- Market trends and future developments in hybrid and electric vehicles
- Impact of electrification on automotive industry

### Afternoon Session:

- Case Studies and Practical Examples
- Review of successful hybrid vehicle designs
- Analysis of real-world performance and efficiency data

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### **Day 5: Hands-On Workshop and Applications**

Morning Session:

- Hybrid Vehicle Simulation Exercises
- Using simulation software to model hybrid vehicle performance
- Analyzing different driving scenarios and their impact on efficiency
- Hybrid Vehicle Component Demonstration
- Hands-on demonstration of hybrid vehicle components
- > Safety protocols and procedures for working with hybrid systems

Afternoon Session:

- Hybrid Vehicle Test Drive
- Opportunity for participants to experience driving a hybrid vehicle
- Instructor-led discussion on driving techniques for maximizing efficiency

### Q&A and Conclusion

Review of key concepts covered during the program

Opportunity for participants to ask questions and provide feedback

This syllabus provides a comprehensive overview of hybrid vehicle technology, covering theoretical concepts, practical applications, and hands-on experience over the course of five days.

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### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

# "Mastering Hybrid Vehicle Technology: A Comprehensive Online Program" COURSE OUTCOMES

- CO 1 Explain the basic concepts of Conventional, Electric, Hybrid EV and Autonomous Vehicles
- CO 2 Describe different configurations of electric and hybrid electric drive trains
- CO 3 Discuss the propulsion unit for electric and hybrid vehicles
- CO 4 Compare various energy storage and EV charging systems
- CO 5 Select drive systems and various communication protocols for EV

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### DEPARTMENT OF MECHANICAL ENGINEERING

# <u>5 DAY ONLINE WORKSHOP ON RENEWABLE ENERGY:</u> <u>PATHWAYS AND TECHNOLOGIES</u>

## **SYLLABUS**

### Day 1: Introduction to Renewable Energy

#### **Morning Session**

- Overview of Renewable Energy Sources
- · Importance of Renewable Energy in Sustainable Development
- Global Energy Trends and Renewable Energy Targets

### Afternoon Session

- Solar Energy Technologies
- Photovoltaic (PV) systems
- Concentrated Solar Power (CSP)
- Hands-on Activity: Solar PV System Design Exercise

### Day 2: Wind and Hydroelectric Power

### **Morning Session**

- Wind Energy Fundamentals
- Wind turbine technology and design
- · Offshore vs. onshore wind farms
- Introduction to Hydroelectric Power
- Types of hydroelectric systems

### Afternoon Session

- Small Hydropower and Micro-Hydro Systems
- · Wind and Hydro Energy Integration in Power Grids
- Case Study: Wind Farm or Hydroelectric Project Analysis

### Day 3: Bioenergy and Geothermal Energy

### **Morning Session**

- Bioenergy Overview
- Biomass sources and conversion technologies
- Biogas production and applications
- Geothermal Energy Basics
- Geothermal heat pumps
- · Geothermal power generation

#### Afternoon Session

- · Environmental and Social Impacts of Bioenergy
- Geothermal Exploration and Reservoir Engineering
- Field Trip or Virtual Tour: Geothermal Site Visit or Biomass Facility

### **Day 4: Energy Storage and Grid Integration**

### **Morning Session**

- · Importance of Energy Storage in Renewable Energy Systems
- Battery Technologies for Grid-Scale and Off-Grid Applications
- · Overview of Pumped Hydro Storage and Other Storage Methods

#### Afternoon Session

- Smart Grid Technologies and Demand Response
- Grid Integration Challenges and Solutions
- Case Studies on Successful Renewable Energy Grid Integration

### Day 5: Policy, Economics, and Future Trends

#### **Morning Session**

- Renewable Energy Policies and Incentives
- Financing Renewable Energy Projects
- Techno-Economic Analysis of Renewable Energy Systems

#### Afternoon Session

- Emerging Trends in Renewable Energy Research and Development
- Role of Innovation and Entrepreneurship in Renewable Energy
- Panel Discussion: Future Outlook and Opportunities in Renewable Energy



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# Department of Mechanical Engineering Organizing

5 Days Workshop on

# **Renewable Energy: Pathways and Technologies**

со	Level	Description
CO1	Analyse	Identify the different parts of the automobile
CO2	Understand	Explain the working of various parts like engine, transmission, clutch, brakes
CO3	Apply	Describe how the steering and the suspension systems operate.
CO4	Understand	Understand the environmental implications of automobile emissions
CO5	Apply	Develop a strong base for understanding future developments in the automobile industry

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### DEPARTMENT OF CIVIL ENGINEERING

#### WORKSHOP ON

# FUNDAMENTALS OF WATER DISTRIBUTION SYSTEM & DESIGN (11/05/2020 to 16/05/2020)

### SYLLABUS

### Water System Design Components

Introductory concepts, basic system components, heat transfer in hydronic systems and load systems.

### Piping System Design

Basic considerations, design philosophy, sizing piping, and flow rate measurement.

### **Pipe Materials and Fittings**

Pipe materials, corrosion, valves and fittings, backflow-prevention devices, and pipe selection.

### Centrifugal Pumps

Types of pumps, pump selection and system design considerations.

### **Terminal Unit Performance and Control**

Types of terminals, performance and control, system control characteristics, and system control configurations.

#### Expansion Tanks and Air Elimination

Open and closed water systems, hydronic accessories, and sizing expansion tanks.

### Piping System Development

Piping system design, direct return analysis, primary-secondary analysis, types of pumps and valves, primary-secondary application study, antifreeze solutions for low temperature applications, and pumping design factors.

### Matching Pumps to Systems

Matching the pump to the system, parallel pumping, series pumping, standby pumps, trimming pump impellers, two-speed pumping, variable speed pumping and source distribution pumping.

### Water Chillers and Load Control

Basic water chiller components, refrigeration cycle, heat transfer chiller, refrigeration power, chiller types and control, chiller piping arrangements, chiller energy performance and thermal storage.

### **Design Of Structures**

Design parameters

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### WORKSHOP ON

# FUNDAMENTALS OF WATER DISTRIBUTION SYSTEM & DESIGN

# **Course Objective**

CO	TOPICS
	Water System Design Components: Introductory concepts, basic system
CO 1	components, neat transfer in hydroponic systems and load systems.
£	Integration of Sustainable Design Principles: Students will learn how to
CO 2	integrate sustainable design principles into their engineering projects, including
	the use of renewable materials, energy-efficient design strategies, and green
	infrastructure techniques.
	Utilization of Building Information Modeling (BIM): Students will gain
CO 3	proficiency in using Building Information Modeling (BIM) software to create
	detailed 3D models of civil engineering projects, enabling them to visualize,
	analyze, and optimize designs more effectively.
CO 4	Innovative Structural Design Strategies: Students will explore innovative
	structural design strategies, such as performance-based design, seismic-resistant
- 1	design, and modular construction techniques, to create resilient and cost-effective
	infrastructure solutions.
	Effective Project Management Skills: Students will develop effective project
CO 5	management skills, including scheduling, budgeting, risk management, and
	communication, to successfully oversee the implementation of advanced civil
	engineering designs from conception to completion.
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### SREE NARAYANA GURU COLLEGE OF ENGINEERING

### &TECHNOLOGY DEPARTMENT OF COMPUTER SCIENCE AND ENGINNERING

Transmit Gave Calling Online Workshop on Trending Perspective of AI in Robotics

### SYLLABUS

SL No	Торіс
1	<ul> <li>Introduction to AI in Robotics</li> <li>Overview of AI and Robotics</li> <li>Historical perspective and evolution</li> <li>Basic concepts: Machine Learning, Deep Learning, Reinforcement Learning</li> <li>Ethical considerations and societal impacts</li> </ul>
2	<ul> <li>AI Algorithms for Robotics</li> <li>Perception algorithms: Computer Vision, LiDAR, Sensor Fusion</li> <li>Localization and Mapping (SLAM)</li> <li>Path planning and Navigation</li> <li>Control algorithms: PID, MPC, Reinforcement Learning for control</li> </ul>
3	<ul> <li>Cutting-edge Research and Future Directions</li> <li>State-of-the-art research in AI and Robotics</li> <li>Emerging trends: Swarm robotics, Soft robotics, Bio-inspired robotics</li> <li>Challenges and open problems</li> <li>Opportunities for innovation and entrepreneurship</li> </ul>
4	Advanced AI Techniques in Robotics <ul> <li>Deep Reinforcement Learning for robotics</li> <li>Transfer learning and domain adaptation</li> <li>Human-robot interaction</li> <li>Explainable AI in robotics</li> </ul>
5	<ul> <li>Applications of AI in Robotics</li> <li>Industrial robotics: Automation, Manufacturing</li> <li>Service robotics: Healthcare, Hospitality, Retail</li> <li>Autonomous vehicles: Cars, Drones, Underwater vehicles</li> <li>Agricultural robotics: Precision farming, Harvesting robots</li> </ul>

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

# TRENDING PERSPECTIVE OF AI IN ROBOTICS

Course Outcomes: After the completion of the course the student will be able to

CO#	СО
C01	Explain the fundamental concepts of Artificial Intelligent, Robotics and their architecture
	(Cognitive Knowledge Level: Understanding)
	Illustrate AI Algorithms for Robotics using Perception algorithms and Control
CO2	algorithms
	(Cognitive Knowledge Level: Understanding, Apply)
C03	Solve Cutting-edge Research and Future Directions with State-of-the-art
COS	research in AI and Robotics, (Cognitive Knowledge Level: Apply)
Service to the	Represent Advanced AI Techniques in Robotics and use Deep Reinforcement
<b>CO4</b>	Learning for robotics
	(Cognitive Knowledge Level: Apply)
COF	Solve real life problems using applications of AI in Robotics.
05	(Cognitive Knowledge Level: Understanding, Apply)

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# SYLLABUS

Sl.No	Торіс		
1	Introduction to Digital Image Processing and Python Basics, Basic Python Programming Concepts		
2	Fundamentals of Image Representation and Enhancement, Understanding Image Representation (Pixel, Resolution, Color Models) Basic Image Operations (Brightness, Contrast, Histogram)		
3	Image Filtering Techniques, Convolution and Filtering Concepts Common Image Filters (Blur, Sharpen, Edge Detection) Image Enhancement Techniques Histogram Equalization		
4	Image Transformation Techniques Fourier Transform Discrete Cosine Transform		
5	Image Segmentation Techniques & Practical Applications		



# **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

# WORKSHOP ON DIGITAL IMAGE PROCESSING USING PYTHON

Course Outcomes: After the completion of the course the student will be able to

<b>CO #</b>	COURSE OUTCOME	
CO 1 Gain knowledge of basic concepts in digital image proc master fundamental Python programming concepts (Cognitive Knowledge Level: Understanding)		
CO 2	Proficiency in concepts of image representation, colour models, resolution, and spatial and frequency domains (Cognitive Knowledge Level: Understanding, Apply)	

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# SYLLABUS

### **Day 1: Introduction to Industrial Automation**

### Morning Session:

- Definition and significance of industrial automation
- Evolution of industrial automation
- Components of an industrial automation system

### Afternoon Session:

- Advantages and challenges of industrial automation
- Case studies showcasing real-world applications

### Day 2: Fundamentals of Control Systems

### Morning Session:

- Basic concepts of control systems
- Types of control systems (open loop, closed loop)
- Sensors and actuators in control systems

### Afternoon Session:

- Feedback mechanisms
- Introduction to PID control and its applications

### Day 3: Programmable Logic Controllers (PLCs)

#### Morning Session:

- Introduction to PLCs
- Architecture and components of PLCs
- Programming languages used in PLCs (Ladder Logic, Function Block Diagram, etc.)

#### Afternoon Session:

- PLC communication protocols
- Hands-on exercises on PLC programming and simulation

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### Day 4: Human-Machine Interface (HMI) and SCADA Systems

### Morning Session:

- Introduction to HMI and SCADA systems
- Role of HMI and SCADA in industrial automation
- Design principles for HMI development

### Afternoon Session:

- SCADA architecture and components
- Hands-on session on HMI development and SCADA configuration

### Day 5: Introduction to Internet of Things (IoT) and Integration with Industrial Automation

### Morning Session:

- Definition and characteristics of IoT
- Applications of IoT in industrial settings
- IoT architecture and components

### Afternoon Session:

- Benefits and challenges of integrating industrial automation with IoT
- Case studies and demonstrations showcasing IoT integration in industrial automation systems

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### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

# "Workshop On Industrial Automation And Introduction To IoT"

### **COURSE OUTCOMES**

CO 1 Understanding of Industrial Automation Concepts

CO 2 Proficiency in PLC Programming

- CO 3 Introduction to IoT (Internet of Things)
- CO 4 Hands-on Experience with Industrial Automation Tools
- CO 5 Problem-solving and Troubleshooting Skills

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### DEPARTMENT OF MECHANICAL ENGINEERING

# <u>5 DAY WORKSHOP ON LATEST TRENDS IN AUTOMOBILE</u> ENGINEERING

# **SYLLABUS**

### Day 1: Introduction to Modern Automotive Technologies Session 1:

- Overview of Automotive Industry
- Introduction to current automotive market trends and challenges.
- · Evolution of automotive engineering and its impact on modern vehicles.

### Session 2:

- Discussion on fuel cell technologies and their potential impact.
- Vehicle Dynamics and Control
- · Understanding vehicle stability control systems.
- Introduction to advanced driver-assistance systems (ADAS).

# Day 2: Innovations in Automotive Design and Materials Session 3:

- Lightweight Materials and Structures
- Importance of lightweight materials in vehicle design.
- · Case studies on the use of composites and advanced alloys.

### Session 4:

- · Overview of design optimization for aerodynamic performance.
- Advanced Manufacturing Techniques
- 3D printing and additive manufacturing in automotive prototyping.
- Robotics and automation in car assembly.

### **Day 3: Emerging Trends in Connected and Autonomous Vehicles** Session 5:

- Internet of Things (IoT) in Automotive
- · Connected vehicle technologies and IoT applications.
- · Cybersecurity challenges in connected vehicles.

### Session 6:

- Autonomous Driving Technologies
- · Levels of autonomy and current state of autonomous vehicle development.
- Sensors and perception systems in self-driving cars.

### Day 4: Sustainable Mobility and Future Challenges Session 7:

- Sustainable Automotive Solutions
- · Role of electric vehicles and sustainable mobility.
- Circular economy approaches in automotive manufacturing.

### Session 8:

- Urban Mobility and Smart Cities
- Urban transportation challenges and solutions.
- · Role of shared mobility and ride-sharing platforms.

### **Day 5: Industry Applications and Career Perspectives** Session 9:

- Advanced Powertrain Technologies
- Overview of electric vehicles (EVs) and hybrid vehicles.

### Session 10:

- Aerodynamics and Vehicle Design
- · Basics of aerodynamics and its role in vehicle efficiency.



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# Department of Mechanical Engineering Organizing

5 Days Workshop on

# Latest Trends in Automobile Engineering

со	Level	Description	
CO1	Analyse	Identify the different parts of the automobile	
CO2	Understand	Explain the working of various parts like engine, transmission, clutch, brakes	
CO3	Apply	Describe how the steering and the suspension systems operate.	
CO4	Understand	Understand the environmental implications of automobile emissions	
CO5	Apply	Develop a strong base for understanding future developments in the automobile industry	

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### DEPARTMENT OF CIVIL ENGINEERING

### WORKSHOP ON ADVANCED DESIGN TECHNIQUES

### **SYLLABUS**

DAY	TOPICS			
	Introduction - Environmental Impact Assessment - Planning			
Day 1	Principles Population and Demand Rates Demand Calculations			
	Water Treatment Plants, Pumping Stations, Transmission Mains			
Day 2	and Distribution Systems			
	Design Hydraulic Modelling and Analysis - Network Design			
Day 3	Economic Calculations Water Hammer Analysis and Pipe Selection			
	Longitudinal Section, Valves and Appurtenances			
Day 4 Water System Component - Estimation and Rate				
	Site Mobilization and Laydown area Construction Activities -			
Day 5	Valuation and Bill Payment - Quality Control			

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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY DEPARTMENT OF CIVIL ENGINEERING WORKSHOP ON ADVANCED DESIGN TECHNIQUES

# **Course Objective**

CO'ź	TOPICS
CO 1	Application of Advanced Analysis Methods: Students will be able to apply advanced analysis methods, such as finite element analysis (FEA), computational fluid dynamics (CFD), and structural optimization techniques, to solve complex civil engineering design problems.
CO 2	Integration of Sustainable Design Principles: Students will learn how to integrate sustainable design principles into their engineering projects, including the use of renewable materials, energy-efficient design strategies.
CO 3	Utilization of Building Information Modeling (BIM): Students will gain proficiency in using Building Information Modeling (BIM) software to create detailed 3D models of civil engineering projects, enabling them to visualize, analyze, and optimize designs more effectively.
CO 4	<b>Innovative Structural Design Strategies</b> : Students will explore innovative structural design strategies, such as performance-based design, seismic-resistant design, and modular construction techniques, to create resilient and cost-effective infrastructure solutions.
CO 5	<b>Effective Project Management Skills:</b> Students will develop effective project management skills, including scheduling, budgeting, risk management, and communication, to successfully oversee the implementation of advanced civil engineering designs from conception to completion.

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### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### WEB DEVELOPMENT TECHNOLOGIES

### A WORKSHOP ON WEB DEVELOPMENT TECHNOLOGIES

### SYLLUBUS

SI.No	TOPIC
1	Introduction to web technologies
	<ul> <li>HTML (Hypertext Markup Language)</li> </ul>
	CSS (Cascading Style Sheets)
	• JavaScript
	Web Browsers
	Web Servers
2	Markun Language-HTML
	HTML-Basic rules
	Syntax
	DOM Structure
	Tags and Meta Tags
	Forms and Input Flements
	Multimedia Integration (e.g. images videos audio)
	Tables
	Lists (Ordered and Unordered)
	Hyperlinks and Anchore
	Comments in HTMI
3	CSS- Cascading Style Sheets
	Selectors
	CSS Box Model
	Typography
	Colors and Backgrounds
	• Lavouts (c.g. Flexbox Grid)
	Responsive Design
	CSS Transitions and Animations
	CSS Frameworks (e.g. Bootstran)
	Madia Quaries
1.2.1	CSS Variables (Custom Properties)
	Browser Compatibility
-	
4	JavaScript
	Variables and Cantral Flow
	Functions and Control Flow
- 3	Arrays and Objects     DOM Maximulation and Founts
	DOW Manipulation and Events
	Asynchronous JavaScript and Promises
5	Frameworks
	• Types of Frameworks (e.g., front-end, back-end, full-stack)
	Popular Front-End Frameworks (e.g., React, Angular)
	Popular Back-End Frameworks (e.g., Laravel, Django)
	Full-Stack Frameworks
	Pros and Cons of Using Frameworks
	<ul> <li>MVC (Model-View-Controller) Architecture in Frameworks</li> </ul>



**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING** 

# WEB DEVELOPMENT TECHNOLOGIES

Course Outcomes: After the completion of the course the student will be able to

CO#	СО		
CO1	Explain the fundamental concepts of web technologies (Cognitive Knowledge Level: Understanding)		
CO2	Create web pages using HTML Cognitive Knowledge Level: Understanding, Apply )		
CO3	Create web pages using Cascading Style Sheets (Cognitive Knowledge Level: Apply)		
CO4	Create scripts using JavaScript in a web page. (Cognitive Knowledge Level: Apply)		
C05	Integrate JavaScript in a web page (Cognitive Knowledge Level: Understanding, Apply)		

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### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

# HANDS ON TRAINING ON EMBEDDED C, C++

### SYLLABUS

SI.No	Topic		
1	Introduction to Embedded Systems and C Programming		
	Overview of Embedded Systems		
	Basics of Microcontrollers		
	Introduction to C Programming		
	<ul> <li>Data types, operators, and expressions</li> </ul>		
2	Advanced C Programming for Embedded Systems		
	• Control flow statements (if, else, switch)		
	<ul> <li>Functions and modular programming</li> </ul>	. A	
	<ul> <li>Arrays and pointers in C</li> </ul>		
	Memory management in C		
3	Embedded Systems Architecture		
	<ul> <li>Microcontroller architecture basics</li> </ul>		
	<ul> <li>Input/Output (I/O) operations and interfacing</li> </ul>		
	Timers and counters	8.1	
4	Introduction to C++		
	<ul> <li>Basics of Object-Oriented Programming (OOP)</li> </ul>		
	<ul> <li>Classes and objects in C++</li> </ul>		
	<ul> <li>Memory management in C++</li> </ul>		
5	Embedded C and C++ Project Work		
	<ul> <li>Select a small-scale embedded project</li> </ul>		
	<ul> <li>Develop the project using Embedded C and C++</li> </ul>		
	<ul> <li>Hands-on debugging and testing</li> </ul>	or a l'E	
	<ul> <li>Project presentation and feedback session</li> </ul>	E	



## **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

# HANDS ON TRAINING ON EMBEDDED C, C++

Course Outcomes: After the completion of the course the student will be able to

CO #	COURSE OUTCOME	
CO 1	Understanding of the C, C++ programming language as it applies to embedded systems (Cognitive Knowledge Level: Understanding)	
CO 2	Through hands-on projects, students will gain experience in developing embedded systems applications (Cognitive Knowledge Level: Understanding, Apply)	

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# DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING SYLLABUS

# "Crafting with CAD: A 5-Day Workshop Series"

Day	9.00 AM to 12.00PM	1.00 PM to 4.00 PM
Day1	<ul> <li>Introduction to Computer hardware and peripherals</li> <li>Input output devices</li> <li>Windows operating system</li> <li>Auto CAD application software in the platform of Windows.</li> <li>Control bar, pull down menu, status bar, workspace,</li> <li>Snap, Grid, Ortho mode O snap, O track, Line weight, dynamic UCS, Model space and paper space</li> <li>WCS and UCS</li> <li>Coordinate system and References</li> <li>Absolute system of reference</li> <li>Incremental system of reference</li> <li>Polar system of reference</li> <li>Limits and Units</li> </ul>	<ul> <li>Practical session</li> <li>Simple 2D drawings</li> <li>Based on :WCS and UCS</li> <li>Coordinate system and References</li> <li>Absolute system of reference</li> <li>Incremental system of reference</li> <li>Polar system of reference</li> <li>Limits and Units</li> </ul>
Day2	Drawing commands Line, Construction line Multi lines, Poly lines Rectangle, Polygons Arc, Circle, Splines Ellipse, Ellipse arc Make block and Insert block Point, Hatch, Gradient, Region Multiline text. Table.	Modifying Commands Erase, Copy Mirror, Offset Array- Circular and Rectangular Move, Rotate, Scale Stretch, Trim, Extend Break, Join Fillet and Chamfer Blend curves and Explode
Day 3	Practical session 2D drawings for the familiarization of Drawing and Modifying Commands	Practical session 2D drawings for the familiarization of Drawing and Modifying Commands
Day4	Tool bars	Practical Session

SNGCET
	Tool pallets Design center External reference files Properties of drawings And Editing	2D drawings of Electrical circuits to familiarize the easiest and fastest methods for drawing requirements.	
Day5	Formats- layer, line type, Line weight, Text style, Dimension style, Point style, Multi leader style, Multi line style, Table style. Dimensioning Plotting and presentation of hard copies	Practical Session Drawing various type of Electrical circuits and Printing or Plotting.	

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#### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## "Workshop On Crafting with CAD"

### **COURSE OUTCOMES**

- CO 1 Proficiency in CAD Software
- CO 2 Understanding of Electrical Symbols and Components
- CO 3 Schematic Design Skills
- CO 4 Simulation and Analysis Abilities
- CO 5 Problem-solving Skills



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# SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY

### DEPARTMENT OF MECHANICAL ENGINEERING

# **5 DAY WORKSHOP ON MASTER CAM**

# **MasterCam Training Syllabus**

### Day 1

#### I. MasterCam Configuration/Settings:

- > Operating PC, Hardware Accelerations Settings
  - o Typically Second Mark from Left on Slider Bar
    - To Access Hardware Settings: Go to Desktop > Right Click > Select Properties > Select Settings > Select Advanced > Select TroubleShoot > Adjust Hardware Acceleration Slider bar.

#### HELP Option

- o Use feature for learning assistance.
  - Also, use quick learning mode (Hover Mouse cursor over icons on screen to see popup that tells function of particular icon or button)
- o Explain Update Feature which checks for software updates
- o Explain Zip2 go Feature which is used for technical support reasons

MasterCam Settings/Configuration (SETTINGS > CONFIGURATION or ALT + F8)

- Most commonly altered settings per user
  - o Setup Colors
  - Setup Default Machines
  - Start/Exit (Setting to personal Settings)
- o How to Save/Exit Custom Config file.
- o How to Load exist custom file and set to default

#### **II. Screen Layout:**

- > Toolbar display (Type MRU in HELP menu for greater details)
  - Select: SETTINGS > Toolbar States
  - o Show how Toolbars can be moved about screen to desired location
- Status Bar (Located Bottom of Screen)
  - o 3D/2D
  - o GVIEW (Graphics View)
    - o Explain Various Views
      - Only Router Pro Students: Explain "View By Entity"
        - Used Two lines to create New GView for Tool Control or

- Used One line to create New GView for Tool Control or Designing purposes
  - Be sure to select "Normal" line at base to project arrow away from part
- o PLANES
  - Use for construction of geom. DO NOT USE for creating new tool Control Lines or views
- o Z Depth
- o Colors
  - Changing Colors
- o Levels
  - Changing Levels
- o Attributes
  - Changing Attributes
  - Explain how Attribute dialogue can be used to change Color, Line type, Layer etc....
- ▶ Right Click Menu
  - o Zoom./Unzoom
    - Explain common optional features: F1 (Zoom Window), F2 (Zoom previous)
- Operations Manager
  - o Briefly Describe that it is to be used for managing toolpath information.

#### III. Intro. to Creating CAD Geometry (Sketch geom. on screen on demand)

- Using CREATE Option (Explain that Yellow input fields allow input with math functions)
  - o Lines (All)
  - o Circles/Arcs (All)
    - Tangent Entities
  - Points (All)
  - o Rectangles
  - Rectangular shapes
  - o Polygons
  - o Ellipses
  - o Bounding Box (2D)
  - o Letters
  - o Splines
    - Manual
    - Automatic
    - Curves (Only Router Pro Students)
      - > Used to apply wireframe geom. to existing surfaces
    - Blended (Only Router Pro Students)
      - > Typically used to attach arcs in 3D space
        - Use Magnitude to Adjust

- o Fillets
- o Chamfers
- o Primitives (Only Router Pro Students)
- Using ANALYZE option
  - o Explain how this feature can also be used as Editing Feature
- Using EDIT > Trim/Break option
  - o Trimming Entities
  - Breaking Entities
  - Extending Entities
- Using XFORM option
  - o Translate
  - o Rotate
  - o Mirror
  - o Scale
    - o Uniform/XYZ
  - Offset Contour
  - o Offset
  - Transform Rectangular Array
  - o Drag
  - o Stretch
  - o Nesting: Rectangular/Tru-Shape
    - o Explain Groups/Resulting Colors
    - Explain how to Clear Colors (Right Click > Clear Colors)

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#### IV. Creating 2D MasterCam - Toolpath file

- Distribute and Load post files
  - o Post files
    - .PST (C:\McamX2\router\posts)
    - .TXT (C:\McamX2\router\posts)
  - Machine Files
    - o .Control (C:\McamX2\cnc machines)
    - .RMD (C:\McamX2\cnc machines)
- Setup Tools in Tool Manager
  - Create Tool File per customer
    - Select: TOOLPATHS > Tool Manager
- Machine Type
  - Select: MACHINE TYPE option
    - Explain this can be setup through Configuration Defaults so that when file is opened, machine group will already exist in Operations manager.
  - Once Machine Type is Loaded Explain PROPERTIES of Machine Group
    - Go to Operations Manager Select: Machine Group > Select: PROPERTIES
      - Explain Tool Setup
        - "Assign Tool Numbers Squentially"
          - Be sure this is NOT Checked
      - Explain Stock Setup
        - Displays stock based on user input
        - o Allows visual for Verify Feature
- Appling Tool Paths to 2D Parts
  - Open and explain "Basic-2D\_1.MCX" drwg file
  - Use "MACHINE\_CONFIG.MCX" to explain Merge File option and to show customer how they can use a machine config. Drawing to help them understand part position relative to machine work envelope and use this file as a template. If there are some common toolpaths which will be used, those toolpaths can be added to the machine config file and this file used as a Template type file (will be able to load file and simply reselect Toolpath geom. and Regenerate).
    - Explain Back Plotting feature
      - Note that backplot movements can be saved as actual geom.
      - Show Verify feature

- Explain Ability to Edit Toolpath Parameters & Selected Operation Geom.
- Show ability to Turn visibility of Tool Paths ON/OFF
- Explain Regeneration of "Dirty" Operations after they've been edited
- Explain Ability to Post CNC code
  - Drilling
    - Automatic
    - o Entities
    - Window Points
    - Mask on Arc
    - Sorting Methods
  - Pocketing (Standard)
  - Contour (2D)
    - Ramp Contour Tool path
  - Circle Tool paths/Circle Mill
- Hand out Hard copy of "Basic-2D\_1.MCX" drwg file and let student/s work through project, helping them as needed.
  - Use Additional "2D" sample drwgs. if needed for time filler and additional explanation of toolpath options.
- Working with Toolpath geom. in Operations Manager
  - Copying Toolpaths
    - Allows user to copy existing toolpath and alter settings to fit a similar geom.
      - Select: Toolpath to Copy > Right Click > Select: Copy > Reposition Red Arrow to desired location > Select: Red Arrow > Right Click > Select: Paste
  - Importing
    - o Allows user to Import Toolpath Parameters from another MCX file
      - Select: Toolpath to Copy > Right Click > Select: Copy > Reposition Red Arrow to desired location > Select: Red Arrow > Right Click > Select: Paste
  - o Creating a New Toolpath Group
    - Allows user to manage Toolpaths in greater detail (ie: create a group for fixture machining, group for part trim, etc...)
      - Select: Machine Group in which you want to create a new Toolpath Group > Right Click > Select: Groups > Select: New Toolpath Group
  - Transforming toolpath
    - Allows user to Translate and Copy existing toolpath throughout material sheet



#### V. Creating 3D MasterCam - Toolpath file

Intro to Three-dimensional Drawing

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- Explain 1" Selection grid for ease of following 3D design
  - Select: SCREEN > Select: Screen Grid Settings
  - Set Grid to 1" size with .05 grid
  - Return to Graphics screen, change PLANES to show reaction with visible Grid
- Use CREATE option to draw sample shapes in different PLANES
- o Draw 3D wireframe part
  - Open/Explain "3D Wireframe-1.MCX"
    - > Create part by first drawing 2D profile, then sweeping geom. into 3D part using the XFORM > Translate > JOIN feature
  - Note: For Router students planning to use the 4th Axis/Aggregate
    - > Use various PLANES (ie: Front, Side, etc...) to create tool planes for creating Horizontal boring, Mortising, tool paths
- Hand out Hard copy of "3D\_Wireframe-1.MCX" drwg file and let student/s work through project, helping them as needed.
- Note: At this time For Router Pro Students (Skip to next topic: Surfaces for router Students):
  - Continue Applying toolpaths to "3D\_Wireframe-1.MCX"
    - > Create and Save a User-defined Gview/Construction Plane/Tool plane (Normal GVIEW)
      - Display this option on angled face of BLOCK
    - > Toolpath part
      - o Pocketing from Top
      - Pocketing On Angle (Using newly defined tool plane)
      - Contour Slot (Using newly defined tool plane)
      - Drill Hor. Hole (Using Right Side tool plane)
- Intro to Surfaces
  - Open/Explain "3D Surfaces-Router.mcx"
    - Create & demonstrate various primary surface methods
    - Ruled/Lofted Surfaces
      - > Differences between Ruled/Lofted
    - Revolved Surfaces
      - > Draw profile off to side and revolve geom. around a line designated as center axis to show this option
    - Swept Surfaces
    - Net Surface

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- > Draw closed boundary shape to show this option
- Draft Surface
  - > Extend one of the wire frame entities of "3D\_Surfaces-Router.mcx" to show this option
- Extruded Surface
  - > Draw profile off to side and extrude to show this option
- Flat Boundary Surface
  - > Draw closed boundary shape to show this option
- Secondary Surface Operations
  - Offset surfaces
  - Fence surfaces
  - Fillet Surfaces
  - Trimming Surfaces
  - Extending Surfaces
- Projecting curves onto surfaces
  - Draw entity or shape above surface of part and project to surface of existing part

 Importance of Surface Normals & how they affect surface fillets, offset surfaces, and head orientation (5 axis machining)

- Projection normal lines from surfaces
  - Create a point on angled surface
    - > CREATE > Point > Dynamic
    - Use XFORM > XFORM Project to create line
- Vertical (TOP PLANE) Toolpaths
  - Surface Rough
    - > Discuss Drive surfaces
    - > Check surfaces
    - > Tool Containment boundaries
    - > Depth limits
  - Surface Finish Tool paths
    - > Finish parallel
    - > Finish scallop
    - > Finish leftover
    - > Finish Pencil
- Hand out Hard copy of "3D\_Surfaces-Router.mcx" drwg file and let student/s work through project, helping them as needed.
- Note: At this time For Router Pro Students Move onto "3D\_Surfaces-Router\_Pro.mcx" file
- Continue 3D Design/Entry to 5 axis machining
  - o Open Explain "3D\_Surfaces-Router Pro.mcx" file
  - o Create wireframe

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#### Day 4

 Finish any remaining surface machining 3D designing functions cut short on Day 3.

Multi Axis Surface Toolpaths

- Use "3D\_Surfaces-Router.mcx" &/or "3D\_Surfaces-Router\_Pro.mcx"drwg file
   Illustrate Multiaxis Surfacing Toolpaths
  - 5 Axis Multi Surface
    - Note that Multi Surface performs most everything Flowline does
    - Show How Flowline can be changed in ToolPath Parameters of Multi Surface
  - 5 Axis Flowline
- Multi-Axis Trim Paths
  - Use "3D\_Surfaces-Router\_Pro.mcx" file to Illustrate
    - 5 Axis Curve
      - Variety of tool axis control methods, e.g., lines surface, etc.
      - Variety of entry/exit strategies
      - Step increment vs. chord height wall following methods
    - 5 Axis Swarf
      - o Variety of tool axis control methods, e.g., lines surface, etc.
      - Variety of entry/exit strategies
      - o Step increment vs. chord height wall following methods
    - 5 Axis Drill
      - Create points on surface of part
        - CREATE > Point > Dynamic
    - Discuss Misc. Values and there affects on Posted Code
      - o Hand out and explain "PostDocXMR1&2-5AX-R1.pdf" file
        - MISC values Located in: Toolpath Parameters

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Day 5

Work with the students on any real world projects brought to class.

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# Department of Mechanical Engineering Organizing

5 Days Workshop on

## Master CAM: CNC Programming

со	Level	Description	
CO1	Apply	Design and machine using CAD/CAM packages like MasterCAM	
CO2	Apply	Toolpaths Creations and Verification	
CO3	Apply	Surface Design and machining using MasterCAM	
CO4	Apply	Advanced Surface generation and Machining using MasterCAM	
CO5	Understand	Understand advanced features of CAD/CAM	

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# LIST OF MOOCS, SWAYAM, NPTEL ETC.



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#### LIST OF MOOC COURSES LIKE SWAYAM/NPTEL

#### ACADEMIC YEAR 2018-19

Sl.No.	NAME OF COURSE	YEAR	
1	DESIGNING LEARNER-CENTRIC MOOC	2018	
2	GEOTECHNICAL ENGINEERING LABORATORY	2018	
3	DEVELOPING SOFT SKILLS AND PERSONALITY	2018	
4	LANDSCAPE ARCHITECTURE AND SITE	2018	
5	FUNDAMENTALS OF 3D VISUALIZATION	2018	
6	PHOTOGEOLOGY IN TERRAIN EVALUATION (PART 2)	2018	
7	ENHANCING SOFT SKILLS AND PERSONALITY	2019	
8	PRINCIPLES AND APPLICATIONS OF BUILDING SCIENCE	2019	
9	Free code camp.org RESPONSIVE WEB DESIGN CERTIFICATION	2019	
10	INTRODUCTION TO PYTHON PROGRAMMING	2019	



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#### LIST OF MOOC COURSES LIKE SWAYAM/NPTEL

#### ACADEMIC YEAR 2019-2020

Sl.No.	NAME OF COURSE	YEAR
1	MACHINE LEARNING FOUNDATIONS: A CASE STUDY APPROACH	2020
2	NATURE-BASED SOLUTIONS FOR DISASTER AND CLIMATE RESILIENCE	2021



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#### LIST OF MOOC COURSES LIKE SWAYAM/NPTEL

#### ACADEMIC YEAR 2022-23

SI.No.	NAME OF COURSE	YEAR
1	CMOS DIGITAL VLSI DESIGN	2022-2023
2	DATA BASE MANAGEMENT SYSTEM	2022-2023
3	ANALOG CIRCUITS	2022-2023
4	AI CONSTRAINT SATISFACTION	2022-2023
5 ROBOTICS AND CONTROL		2022-2023
6	CLOUD COMPUTING AND DISTRIBUTED SYSTEM	2022-2023
7	BASIC TOOLS OF MICROWAVE ENGINEERING	2022-2023
8 ETHICAL HACKING		2022-2023
9	9 COMMUNICATION NETWORKS	
10 AN INTRODUCTION TO ARTIFICIAL INTELLIGENCE		2022-2023







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# COURSE MODULES AND OUTCOMES

### MULTI FACULTY

#### INTENDED AUDIENCE : Teachers, MOOC creators

INDUSTRIES APPLICABLE TO : Companies creating online courses. L&D (Training) divisions in companies across various sectors

#### COURSE OUTLINE :

Massive Open Online Courses (MOOCs) have become a popular avenue for diverse learners to upgrade their knowledge and skills. Instructors who are new to creating MOOCs tend to focus on the use of technology features to mimic their classroom actions. While it is necessary to be aware of the technology affordances, it is more important to focus on the pedagogy of how to use the MOOC features effectively to foster student engagement and learning. Hence MOOC instructors need a set of design principles and guidelines to create a learner-centric MOOC.

In this course, we will discuss the Learner-Centric MOOC (LCM) model, and how to apply it to create effective MOOCs.

#### **ABOUT INSTRUCTOR :**

Prof. Sameer Sahasrabudhe is a Professor of Practice in Design, at IIT Gandhinagar. He has a cumulative experience of over 25 years in various fields such as advertising, animation film-making, and educational multimedia production. He has contributed to the development of the Learner–Centric Model and has created many MOOCs for IITBombayX, edX, and SWAYAM. His course on 3D visualization and animation is subscribed by over One lakh learners worldwide and was shortlisted for the edX prize 2019. Sameer holds a PhD in Subject Communication; PG Diplomas in Distance Education and Animation Film-making; and a Graduation in Fine Arts.

Prof. Sahana Murthy is Professor in the Educational Technology interdisciplinary program at IIT Bombay. Her research interest is in developing students' problem-solving, design thinking and inquiry practices in STEM domains via interactive technology enhanced learning environments. Another area of focus is Teacher Use of Educational Technologies, which has led to the design of models and large-scale professional development workshops for for instructors. One such model, the learner-centric MOOC (LCM) model has formed the basis for several online and blended courses on NPTEL and IITBombayX platforms. Before joining IIT Bombay, she was a post-doctoral researcher in Physics Education Research at Rutgers University and MIT, USA. She received her Bachelor's degree from the University of Mumbai, Master's degree in physics from IIT Bombay, and PhD in physics from Rutgers University.

Prof. Jayakrishnan M is a Senior Scientist at National Programme for Technology Enhanced Learning, IIT Madras. He completed his PhD in "A Model for Large-scale In-service Teacher Training in Effective Technology Integration in Engineering Education" from the Inter-Disciplinary Programme in Educational Technology at IIT Bombay. His research interests in the field of Educational Technology include Teacher Technology Integration, Massive Open Online Learning, Sustainability in Teacher Professional Development and Computer Supported Collaborative Learning.

#### COURSE PLAN :

- Module 1 Overview & Introduction
- Module 2 Learning Dialogues (LeD)
- Module 3 Learning by doing activities (LbD)
- Module 4 Learning extension trajectories (LxT)
- Module 5 Reflection Week about the content covered till now
- Module 6 Learning experience Interactions (LxI)
- Module 7 Orchestration dynamic of MOOCs
- Module 8 Summary of the course and case studies

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# GEOTECHNICAL ENGINEERING LABORATORY

PROF. J.N. MANDAL Department of Civil Engineering IIT Bombay

 INTENDED AUDIENCE
 : Students from Civil Engineering, Earth Science and Engineering Geology

 PRE-REQUISITES
 : Basic Soil Mechanics and Foundation Engineering/ Geotechnical Engineering

 INDUSTRIES APPLICABLE TO
 : Larsen & Toubro, Reliance Infrastructure Limited, HCC, TATA Projects, AFCON, RITES Ltd, Gammon India Ltd, Simplex Infrastructure, IVRCL.

#### **COURSE OUTLINE :**

This course will show how to conduct the various types of tests used for soil testing. Each experiment of soil testing is presented with brief introduction covering the important details of the experiment, the theory and the purpose for which it is to be performed, followed by the detailed explanation of apparatus required, procedure and specimen calculations. These should enable students to perform the experiment and compute the results of experiments very easily.

#### **ABOUT INSTRUCTOR:**

Prof. J.N. Mandal is professor of Civil engineering at Indian Institute of Technology Bombay in Powai, Mumbai, India. The primary area of research interests include geotechnical and geosynthetics engineering, centrifuge, physical and numerical modeling, ground improvement, waste and nano materials, transportation and environmental geotechnics. He founded geosynthetics research and testing laboratory, offered the undergraduate and postgraduate courses on geosynthetics in 1984. Since then the significance growth of world class research and development has focused completely in the fore front of activities in the emerging area of geosynthetics. He is the author/editor of six books and also founded the International Geosynthetics Society chapter for India in 1988. He organized the first Indian Geotextile Conference in 1988 and chairman for International Conference of Geosynthetics and Geoenvironmental Engineering in 2004. He had the privilege of chairing many technical sessions at several national and international conferences in India and abroad. He developed a video film on Geosynthetics Edge in 1986 and focused on turning point program in TV on geosynthetics in 1993. He has previously served as an editorial board/advisory board members of International Journal of Geotextiles and Geomembranes, and International Journal of Construction and Building Materials, respectively and editor of Indian Geotechnical Journal. He was the member of International society of Soil Mechanics and Geotechnical Engineering technical committee TC 9 on Geotextiles and Geosynthetics and International Geosynthetic society Education Committee and Member of the International Scientific Advisory Board (ISAB) of the world city water Forum 2009. Dr. Mandal earned International/national awards for his outstanding contribution on geosynthetics reinforced soil structures. He has supervised many PhD theses and Masters Projects. He has carried out a large number of sponsored and challenging consultancy projects for various industries and agencies. He is also a reviewer for many international/national journals. He has more than 400 research papers to his credit in referred international /national journals/conferences.

#### COURSE PLAN :

- Week 01 : Soil Processing and Moisture Content Test, Specific Gravity Test, Field Density Test, Grain Size Analysis.
- Week 02 : Grain Size Analysis, Consistency limits, Laboratory Compaction test, Laboratory Permeability test
- Week 03 : Laboratory Permeability test, Shear Strength Test
- Week 04 : Shear Strength Test, Consolidation Test



# DEVELOPING SOFT SKILLS AND PERSONALITY

PROF. T. RAVICHANDRAN Department of Humanities and Social Sciences IIT Kanpur

INTENDED AUDIENCE : Students, Teachers, Professionals, Trainers, Leaders, Employers

**INDUSTRIES APPLICABLE TO** : All industries/companies/organisations will recognize and value this course and recommend this for their employees and trainee programs.

#### **COURSE OUTLINE :**

The course aims to cause a basic awareness about the significance of soft skills in professional and inter-personal communications and facilitate an all-round development of personality. Hard or technical skills help securing a basic position in one's life and career. But only soft skills can ensure a person retain it, climb further, reach a pinnacle, achieve excellence, and derive fulfillment and supreme joy. Soft skills comprise pleasant and appealing personality traits as self-confidence, positive attitude, emotional intelligence, social grace, flexibility, friendliness and effective communication skills.

#### ABOUT INSTRUCTOR :

Prof. T. RAVICHANDRAN is presently a Professor of English in the Department of Humanities and Social Sciences at the Indian Institute of Technology Kanpur, Uttar Pradesh, India. He has written about fifty research articles/book chapters, supervised six doctoral theses, edited a special issue on Cyberpunk Literature for the Creative Forum Journal, and published a book on Postmodern Identity. He is a recipient of the Fulbright-Nehru Academic and Professional Excellence Fellowship (2014-15) for his research/ teaching at Duke University, North Carolina, USA. He is honored with Champa Devi Gangwal Chair Professorship at IIT Kanpur. In his distinguished twenty-five years of teaching career, he has taught various courses in English Language and Literature. His NPTEL Video and Web courses on Communication Skills are well-acclaimed nationally and internationally. His NPTEL MOOC on Developing Soft Skills and Personality became hugely popular and well-received by about fifteen thousand participants from India and abroad

#### COURSE PLAN:

Week 1: Lecture 1: Introduction: A New Approach To Learning Lecture 2: Planning And Goal-Setting Lecture 3: Human Perceptions: Understanding People Lecture 4: Types Of Soft Skills: Self-Management Skills Lecture 5: Aiming For Excellence: Developing Potential And Self-Actualisation Lecture 6: Need Achievement And Spiritual Intelligence

Week 2: Lecture 7: Conflict Resolution Skills: Seeking Win-Win Solution Lecture 8: Inter-Personal Conflicts: Two Examples Lecture 9: Inter-Personal Conflicts: Two Solutions Lecture 10: Types Of Conflicts: Becoming A Conflict Resolution Expert Lecture 11: Types Of Stress: Self-Awareness About Stress Lecture 12: Regulating Stress: Making The Best Out Of Stress

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Week 3: Lecture 13: Habits: Guiding Principles Lecture 14: Habits: Identifying Good And Bad Habits Lecture 15: Habits: Habit Cycle Lecture 16: Breaking Bad Habits Lecture 17: Using The Zeigarnik Effect For Productivity And Personal Growth Lecture 18: Forming Habits Of Success

Week 4: Lecture 19: Communication: Significance Of Listening Lecture 20:Communication: Active Listening Lecture 21:Communication: Barriers To Active Listening Lecture 22:Telephone Communication: Basic Telephone Skills Lecture 23:Telephone Communication: Advanced Telephone Skills Lecture 24: Telephone Communication: Essential Telephone Skills

- Week 5: Lecture 25: Technology And Communication: Technological Personality Lecture 26: Technology And Communication: Mobile Personality? Lecture 27: Topic: Technology And Communication: E-Mail Principles Lecture 28: Technology And Communication: How Not To Send E-Mails! Lecture 29: Technology And Communication: Netiquette Lecture 30: Technology And Communication: E-Mail Etiquette
- Week 6: Lecture 31: Communication Skills: Effective Communication Lecture 32: Barriers To Communication: Arising Out Of Sender/Receiver's Personality Lecture 33: Barriers To Communication: Interpersonal Transactions Lecture 34: Barriers To Communication: Miscommunication Lecture 35: Non-Verbal Communication: Pre-Thinking Assessment-1 Lecture 36: Non-Verbal Communication: Pre-Thinking Assessment-2
- Week 7: Lecture 37: Nonverbal Communication: Introduction And Importance Lecture 38: Non-Verbal Communication: Issues And Types Lecture 39: Non-Verbal Communication: Basics And Universals Lecture 40: Non-Verbal Communication: Interpreting Non-Verbal Cues Lecture 41: Body Language: For Interviews Lecture 42: Body Language: For Group Discussions

Week 8: Lecture 43: Presentation Skills: Overcoming Fear Lecture 44: Presentation Skills: Becoming A Professional Lecture 45: Presentation Skills: The Role Of Body Language Lecture 46: Presentation Skills: Using Visuals Lecture 47: Reading Skills: Effective Reading Lecture 48: Human Relations: Developing Trust And Integrity

Dr. LEENA A V PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY PAYYANUR, KANNUR



# LANDSCAPE ARCHITECTURE AND SITE PLANNING - BASIC FUNDAMENTALS

PROF. UTTAM KUMAR BANERJEE Department of Architecture & Regional Planning IIT Kharagpur

TYPE OF COURSE EXAM DATE

: Rerun | Elective | UG COURSE DURATION : 8 weeks (15 Feb' 21 - 09 Apr' 21) : 24 Apr 2021

#### **PRE REQUISITES : Nil**

**INTENDED AUDIENCE** : Interested students

INDUSTRIES APPLICABLE TO : This course would be very useful for the Govt. or Private, Horticulture

and Gardening departments, Plant Nurseries and any individual Landscape connoisseurs.

#### COURSE OUTLINE :

In the event of rapid urbanization there is a trend of fast depletion of natural resources especially the vegetation.Depletion of natural ground-cover and Landscape is one of the major sources of natural hazards, such as Landslide, Flood, Heat Island, Soil erosion etc. There is growing interest in this field of knowledge. This course is tailored very effectively to introduce all aspects of Plant sciences, Planting design techniques, Garden maintenance and management. This course would be very useful for the students as well as practicing architects, planner, engineers and common people. The lectures would be supported with real-time illustrations through sketches and analysis, in addition to the digital illustrations time to time. These would result in easy comprehension by the students of different level of ability and Exposure. Multiple illustrations with case studies would be the strength of this course disseminated with lucid lectures.

#### ABOUT INSTRUCTOR :

Uttam K. Banerjee is currently a senior Professor in the Department of Architecture & Regional Planning, as well as Joint-Faculty in the RCG School of Infrastructure Design and Management at the Indian Institute of Technology Kharagpur, where he has served as the Head in both the departments from 2004 to 2007 and 2011 to 2014 respectively. He has graduated with Bachelor of Architecture (B.Arch), post-graduated with Master of City Planning (MCP) and Ph.D. in Transportation system evaluation from Indian Institute of Technology Kharagpur.He has a wide spectrum of knowledge with academic, research and professional experience in the multiple domains associated with Architecture, Planning, Infrastructure management, Facility Planning and asset management, Landscape, Environment and Computer Applications. Over the past years he had been constantly exposed to professional negotiations, interactions, as well as interviews.

#### COURSE PLAN :

Week 1: Introduction to Landscape Design

Week 2: History of Landscape

- Week 3: Landscape Elements
- Week 4: Site Analysis
- Week 5: User Analysis
- Week 6: Landform Design
- Week 7: Drainage Design
- Week 8: Plant Sciences and Plant Maintenance

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# PHOTOGEOLOGY IN **TERRAIN EVALUATION (PART - 1 & 2)**

PROF, JAVED N. MALIK Department of Civil Engineering **IIT Kanpur** 

TYPE OF COURSE EXAM DATE

: Rerun | Elective | UG COURSE DURATION : 8 weeks (26 Jul/21 - 17 Sep/21) : 26 Sep 2021

#### **INTENDED AUDIENCE** : Any Interested Learners

#### COURSE OUTLINE :

The course introduces the student to a globally applied tool known as Photogeology or Geo-photography; a technique first structured by the United States in late 19th century and later incorporated in United State Geological Survey. The weekly modules will demonstrate the concept and principles of Photogeology and its applications in real life. Students will learn reading the aerial and satellite photographs under the stereoscope and to generate a 3D view of the terrain. Using this tool they will be able to extract all types of information of the earth surface for various engineering and scientific purpose and projects. Students will have wonderful experience of aerial view of the earth surface and will extract information of landforms, sub-surface structures, and rock types etc. to perform terrain evaluation.

#### ABOUT INSTRUCTOR :

Prof. Javed Malik earned his Ph.D in 1998 from M.S. University Baroda, Vadodara, Gujarat (Geology), and did Post-Doctorate (Japan Society for Promotion of Science) from (1999-2001) Hiroshima University, JAPAN.

\* He Joined IIT Kanpur in 2001.

\* Areas of Specialization are : Active Tectonics, Paleoseismology and Paleo-tsunami

#### COURSE PLAN :

Week 01	:	Introduction to Photogeology and its Applications, Aerial Photography/ Satellite Imaging and their Applications, Aerial/ Satellite Photographs and Exercise on handling photographs, Principles of				
		Stereoscopy and Exercise on creating 3D image using Stereoscope				
Week 02	:	Photogrammetry – Exercise on Elements of Photo Interpretation and Line of Flight, Photogrammetry – Exercise on Photographic Measurements and Photo Scale, Role of Vertical Exaggeration in Photo- grammetry – Related Lab Exercise,				
Week 03	:	Introduction to Lithology Sedimentary Rocks, Introduction to Lithology Metamorphic				
	000	Rocks,Introduction to Lithology Igneous Rocks ,Related Exercise,Introduction to Physical and Structural geology,Introduction to Physical and Structural geology				
Week 04	:	Introduction to Physical and Structural geology Related Exercise on Identification of				
		structures, Fluvial Geomorphology Exercise on Landform Mapping, Fluvial Geomorphology Exercise on Terrace Mapping, Morphometric Analysis Exercise on performing Morphometric Analysis, Concretion of Anaglumb using Stores, pair in ENVI software, Lab Exercise				
		Introduction to Physical and Structural geology Introduction to Physical and Structural geology				
Week 05	:	Related Exercise on Identification of structures.Introduction to Lithology. Sedimentary Rocks				
Week 06	:	Introduction to Lithology, Sedimentary Rocks, Metamorphic, Rocks, Igneous Rocks				
Week 07	:	Fluvial Geomorphology Exercise on, Landform Mapping, Coastal and Aeolian Landforms, Active Tectonics and Geomorphology				
Week 08	:	Active Tectonics and Geomorphology, Morphometric Analysis â€" Exercise on performing Morphometric Analysis, Photogeology in Lithological Mapping Dr. LEEN PRINC				

AAV PAL SREE NARAYANA GURU COLLEGE OF **ENGINEERING & TECHNOLOGY** PAYYANUR, KANNUR



#### PROF.T. RAVICHANDRAN

Department of Humanities and Social Sciences IIT Kanpur

#### INTENDED AUDIENCE : Students, Teachers, Professionals, Trainers, Leaders, Employers

INDUSTRIES APPLICABLE TO : All industry/companies/organisations will recognize and value this course and recommend this for their employees and trainee programs.

#### COURSE OUTLINE :

The course aims to cause an enhanced awareness about the significance of soft skills in professional and inter-personal communications and facilitate an all-round development of personality. Hard or technical skills help securing a basic position in one's life and career. But only soft skills can ensure a person retain it, climb further, reach a pinnacle, achieve excellence, and derive fulfilment and supreme joy. Soft skills comprise pleasant and appealing personality traits as self-confidence, positive attitude, emotional intelligence, social grace, flexibility, friendliness and effective communication skills. The focus of this course is on interpersonal and management skills. It has been approved for "Faculty Development Programme" by AICTE.

#### **ABOUT INSTRUCTOR :**

Prof. T. Ravichandran is presently a Professor of English in the Department of Humanities and Social Sciences at the Indian Institute of Technology Kanpur, Uttar Pradesh, India. He has written about fifty research articles/ book chapters, supervised six doctoral theses, edited a special issue on Cyberpunk Literature for the Creative Forum Journal, and published a book on Postmodem Identity. He is a recipient of the Fulbright-Nehru Academic and Professional Excellence Fellowship (2014-15) for his research/teaching at Duke University, North Carolina, USA. He is honored with Champa Devi Gangwal Chair Professorship at IIT Kanpur. In his distinguished twenty-five years of teaching career, he has taught various courses in English Language and Literature. His NPTEL Video and Web courses on Communication Skills are well-acclaimed nationally and internationally. His NPTEL MOOC on Developing Soft Skills and Personality became hugely popular and well-received by about fifteen thousand participants from India and abroad.

#### **COURSE PLAN:**

Week 1 : Highlights of Developing Soft Skills and Personality Course-1-24 ; Highlights of Developing Soft Skills and Personality Course-25-48 ; Definitions and Types of Mindset ; Learning Mindsets ; Secrets of Developing Growth Mindsets

Week 2 : Importance of Time and Understanding Perceptions of Time ; Using Time Efficiently ; Understanding Procrastination ; Overcoming Procrastination ; Don't Say "Yes" to Make Others Happy!

Week 3 : Types of People ; How to Say "No" ; Controlling Anger ; Gaining Power from Positive Thinking-1 ; Gaining Power from Positive Thinking-2

Week 4 : What Makes Others Dislike You? ; What Makes Others Like You?-1 ; What Makes Others Like You?-2 ; Being Attractive-1 ; Being Attractive-2

Week 5 : Common Errors-1 ; Common Errors-2 ; Common Errors-3 ; Common Errors-4 ; Common Errors-5

Week 6 : Humour in Communication ; Humour in the Workplace ; Function of Humour in the Workplace ; Money and Personality ; Managing Money

Week 7 : Health and Personality ; Managing Health-1: Importance of Exercise ; Managing Health-2: Diet and Sleep ; Love and Personality ; Managing Love

Week 8 : Ethics and Etiquette ; Business Etiquette ; Managing Mind and Memory ; Improving Memory ; Care for Environment ; Highlights of the Course

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# PRINCIPLES AND APPLICATIONS OF BUILDING SCIENCE

PROF. E.RAJASEKAR Department of Architecture And Planning IIT Roorkee

**INTENDED AUDIENCE** : UG students of Engineering and Architecture; Design and Construction industry professionals

INDUSTRIES APPLICABLE TO : Design and Construction Firms, Architecture Firms, Construction companies It can be used as a part of induction course for recruits in design and construction firms.

#### COURSE OUTLINE :

Design and construction professionals require a command on fundamental principles of building physics in order to ensure functional efficiency in the built environments. The course provides a one-stop solution to design/construction industry professionals and students of architecture and engineering disciplines to understand these principles and learn their practical applications. The course comprises of 10 modules which cover climate responsive design of buildings, thermal comfort and energy efficiency, building acoustics and noise control and visual quality and day lighting. The participants will engage in a series of experiential learning modules - involving basic tutorials, animated examples, applied case studies and do-it-yourself exercises.

#### ABOUT INSTRUCTOR :

Prof. E. Rajasekar is an assistant professor at the Department of Architecture and Planning, IIT Roorkee, India. He is an Architect with post-graduation in Building Technology and Construction Management and PhD on Thermal comfort and building performance from IIT Madras. He is a Shastri Indo-Canadian Institute Doctoral Fellow. He specializes in the field of building performance assessment focused on thermal, acoustics and lighting parameters. He carries a rich research and industry experience in this field and has published more than 20 technical papers in peer-reviewed journals and conferences. He is a USGBC LEED accredited professional and a GRIHA certified professional.

#### COURSE PLAN :

Week 1: Solar geometry, climate responsive building design, thermal comfort

Week 2: Bio climatic design, building envelop, glazing systems, energy efficiency

Week 3: Fundamentals of building acoustics, Quality indicators, Acoustic materials, Noise control

Week 4: Visual quality in built environment, Effective day lighting design, Integrated design

Dr. LEENA A V PRINCIPAL SREE NARAYANA GURU COLLEGE OF ENGINEERING & TECHNOLOGY PAYYANUR, KANNUR



PROF. SUDEB DASGUPTA

Department of Electronics and Communication Engineering IIT Roorkee

PRE-REQUISITES : A basic course of Semiconductor Devices and Digital Electronics. A course on Computer Organization will be quite helpful.

INTENDED AUDIENCE : Final year Undergraduates and/or First year Master Student (Microelectronics) INDUSTRIES APPLICABLE TO : Cadence, Synopsys, ST Microelectronics, NXP Semiconductors, SCL, Chandigarh

#### COURSE OUTLINE :

This course brings circuit and system level views on design on the same platform. The course starts with basic device understanding and then deals with complex digital circuits keeping in mind the current trend in technology. The course follows a design perspective, starts from basic specifications and ends with system level blocks. Eight Assignments are provided which will add/help in understanding the course in a better manner both at conceptual as well as hands-on level.

#### ABOUT INSTRUCTOR :

Prof. S. Dasgupta is presently working as an Associate Professor, in Microelectronics and VLSI Group of the Department of Electronics and Communication Engineering at Indian Institute of Technology. Roorkee. He received his PhD degree in Electronics Engineering from Institute of Technology-Banaras Hindu University (currently IIT-BHU), Varanasi in 2000. During his PhD work, he carried out research in the area of effects of ionizing radiation on MOSFET. Subsequently, he was member of faculty of Department of Electronics Engg., at Indian School of Mines, Dhanbad (currently IIT-Dhanbad). In 2006, he joined as an Assistant Professor in the Department of Electronics and Communication Engineering at Indian Institute of Technology, Roorkee. He is currently the Chairman, Faculty Search Committee of the Department. He has authored/co-authored more than 200 research papers in peer reviewed international journals and conferences. His citations are around 2400 (after 2006) and h-index and iindex are 25 and 65 respectively. He is a member of IEEE, EDS, ISTE and associate member of Institute of Nanotechnology, UK. He has been a technical committee member International Conference on Micro-to-Nano, 2006; VDAT-2012, 13, 14, 15, 16, 17 and 18. He worked as the Organising Chair and Program Co-Chair for VDAT-2017 held at IIT Roorkee. He is also heading the Technical Program Group for Emerging Devices at VLSI Design Conference. He has presented tutorial in VDAT-2014 and VLSI Design Conference, Bangalore 2015 amongst many others. He has also been member of technical committees of various international conferences. He has presented large number of invited and keynote talk at various technical forum. He was awarded with Erasmus Mundus Fellowship of European Union in the year 2010 to work in the area of RDF at Politecnico Di Torino, Italy. He is the recipient of prestigious IUSSTF to work in the area of SRAM testing at University of Wisconsin at Madison, USA in the year 2011-12. He was also awarded with DAAD Fellowship to work on Analog Design using Reconfigurable Logic at TU, Dresden, Germany in the year 2013. He is the Principal Coordinator for SMDP-C2SD at IIT Roorkee. His areas of interest are Nanoelectronics, Nanoscale MOSFET modeling and simulation, Design and Development of low power novel devices, FinFET based Memory Design, Emerging Devices in Analog Design and Design and development of reconfigurable logic. He has guided/co-guided 15Ph.D scholars. Currently he is supervising 7 candidates leading to their Ph.D degree. He has been awarded INAE Young Engineer Award. Dr. Dasgupta acted as a reviewer for IEEE Transactions on Electron Devices, IEEE Electron Device Letters, IEEE Transactions on Nanotechnology, Superlattice and Microstructures, International Journal of Electronics, Semiconductor Science and Technology, Nanotechnology, IEEE Transactions on VLSI Systems, Microelectronic Engineering, and Microelectronic Reliability amongst other.

#### COURSE PLAN :

Week 1 : MOS Transistor Basic-I; L2: MOS Transistor Basic-I; L3: MOS Transistor Basic-II; L4: MOS Parasitic & SPICE Model; L5: CMOS Inverter Basics-I

Week 2 : CMOS Inverter Basics-II; L2: CMOS Inverter Basics-III; L3: Power Analysis-I; L4: Power Analysis-II; L5: SPICE Simulation-I

Week 3 : SPICE Simulation-II; L2: Combinational Logic Design-I; L3: Combinational Logic Design-II; L4: Combinational Logic Design-III; L5: Combinational Logic Design-IV

Week 4 : Combinational Logic Design-V; L2: Combinational Logic Design-VI; L3: Combinational Logic Design-VII; L4: Combinational Logic Design-VIII; L5: Combinational Logic Design-IX

Week 5 : Combinational Logic Design-X; L2: Logical Efforts-I; L3: Logical Efforts-II; L4: Logical Efforts-III; L5: Sequential Logic Design-I

Week 6 : Sequential Logic Design-II; L2: Sequential Logic Design-III; L3: Sequential Logic Design-IV; L4: Sequential Logic Design-V; L5: Sequential Logic Design-VI

Week 7 : Sequential Logic Design-VII; L2: Sequential Logic Design-VIII; L3: Clocking Strategies for Sequential Design-I; L4: Clocking Strategies for Sequential Design-II; L5: Clocking Strategies for Sequential Design-III

Week 8 : Clocking Strategies for Sequential Design-IV; L2: Sequential Logic Design-IX; L3: Clocking Strategies for Sequential Design-V; L4: Concept of Memory & its Designing-I; L5: Concept of Memory & its Designing-II

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PROF. PARTHA PRATIM DAS

Department of Computer Science and Engineering IIT Kharagpur PROF. SAMIRAN CHATTOPADHYAY Department of Computer Science and Engineering IIT Kharagpur

PRE-REQUISITES : Procedural and / or Object-Oriented Programming (C / C++ / Java / Python), Data Structures, Algorithms

INTENDED AUDIENCE : Students from all disciplines can enroll for this course.

**INDUSTRIES APPLICABLE TO :** DBMS is so fundamental that all companies dealing with systems as well as application development (including web, IoT, embedded systems, data mining, machine learning) have a need for the same.These include – Microsoft, Samsung, Xerox, Yahoo, Google, IBM, TCS, Infosys, Amazon, Flipkart, etc.

#### COURSE OUTLINE :

Databases form the backbone of all major applications today – tightly or loosely coupled, intranet or internet based, financial, social, administrative, and so on. Structured Database Management Systems (DBMS) based on relational and other models have long formed the basis for such databases. Consequently, Oracle, Microsoft SQL Server, Sybase etc. have emerged as leading commercial systems while MySQL, PostgreSQL etc. lead in open source and free domain. While DBMS's differ in details, they share a common set of models, design paradigms and a Structured Query Language (SQL).

While DBMS's differ in the details, they share a common set of models, design paradigms and a Structured Query Language (SQL). In this background the course examines data structures, file organizations, concepts and principles of DBMS's, data analysis, database design, data modeling, database management, data & query optimization, and database implementation. More specifically, the course introduces relational data models; entity-relationship modeling, SQL, data normalization, and database design. Further it introduces query coding practices using MySQL (or any other open system) through various assignments. Design of simple multi-tier client / server architectures based and Web-based database applications is also introduced.

#### ABOUT INSTRUCTOR :

Prof. Partha Pratim Das received his BTech, MTech and PhD degrees in 1984, 1985 and 1988 respectively from IIT Kharagpur. He served as a faculty in Department of Computer Science and Engineering, IIT Kharagpur from 1988 to 1998. In 1998, he joined Alumnus Software Ltd as a Business Development Manager. From 2001 to 2011, he worked for Interra Systems, Inc. as a Senior Director and headed its Kolkata Center. In 2011, he joined back to Department of Computer Science and Engineering, IIT Kharagpur as Professor. Prof. Das has also served as a Visiting Professor with Institute of Radio Physics and Electronics, Calcutta University from 2003 to 2013.

Prof. Das is currently the Head of Rajendra Mishra School of Engineering Entrepreneurship, the Professor-inCharge of the upcoming Research Park of IIT Kharagpur at Rajarhat, Kolkata, and the Joint Principal Investigator of National Digital Library of India project of MHRD.

Prof. Das has taught several courses in Computer Science including Software Engineering, Object-Oriented Systems, Programming and Data Structure, Compiler Design, Design and Analysis of Algorithms, Information System Design, Database Management Systems, Computational Geometry, Principles of Programming Languages, Embedded Systems, and Image Processing. Jointly with 2 others, he has also offered a course on Introduction to Design of Algorithms under the T10KT program of NME-ICT, MHRD (https://www.facebook.com/t10kt.algorithms/) to nearly 7000 teachers. Further, Dr. Das has been offering Programming in C++ and Object-Oriented Analysis and Design in NPTEL-NOC. Both courses are regularly attended by thousands of students.

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Prof. Das has published over 40 technical papers in international journals in areas of Digital Geometry, Image Processing, Parallel Computing and Knowledge-based Systems. In 2013 he has co-authored a research monograph titled Digital Geometry in Image Processing (CRC Press). His current interests include Human-Computer Interactions, Computer Analysis of Indian Classical Dance, Object-Oriented Systems Analysis and Design, Software Engineering, Compiler Technology, and Technology Enabled Learning. Dr. Das is a member of Association of Computing Machinery (ACM), The Institute of Electrical and Electronics Engineers (IEEE), and Indian Unit for Pattern Recognition and Artificial Intelligence (IUPRAI).

Prof.Samiran Chattopadhyay obtained his B Tech and M Tech degree in 1987 and 1989 respectively from IIT Kharagpur. He obtained his PhD degree from Jadavpur University in 1993. He served as a faculty in the Department of Computer Science and Engineering, Jadavpur University from 1989 to 1993. In 1993, he moved to industry and joined back the same department in Jadavpur University as an Associate Professor in 1997. Since 2001, he is a Professor of Information Technology in Jadavpur University.

Prof. Chattopadhyay is also a visiting fellow of the University of Northumbria, Newcastle upn Tyne UK. He was an adjunct faculty at IIT Kharagpur for the Distributed Systems course and a visiting faculty member for the MTech course by IIT Kharagpur which was offered in distance learning mode.

Dr. Chattopadhyay has more than two decades of experience of serving reputed Industry houses including Mindware, Computer Associates TCG Software, Interra Systems India Ltd. He is also a project consultant of the prestigious National Digital Library Mission of Government of India.

Pro. Chattopadhyay has taught several courses in Computer Science including Software Engineering, Object-Oriented Systems, Programming and Data Structure, Compiler Design, Design and Analysis of Algorithms, Information System Design, Database Management Systems, Ad hoc Wireless Networks, Cloud Computing. Dr. Chattopadhyay has been a co-faculty in Database Management Systems in NPTEL-NOC.

Prof. Chattopadhyay has published over 60 technical papers in international journals in the areas of Wireless Networks, Network Security, Machine learning applications. He has co- authored a research monograph titled 'Digital Geometry in Image Processing', a textbook titled 'Data Structures through C' and 'Big Data in e-Healthcare'. His current research interests include Network Security, Machine learning, Wireless network and Pervasive computing.

#### COURSE PLAN :

- Week 1: Course Overview, Introduction to RDBMS
- Week 2: Structured Query Language (SQL)
- Week 3: Relational Algebra, Entity-Relationship Model
- Week 4: Relational Database Design
- Week 5: Application Development, Case Studies, Storage and File Structure

Week 6: Indexing and Hashing, Query Processing

- Week 7: Query Optimization, Transactions (Serializability and Recoverability)
- Week 8: Concurrency Control, Recovery Systems, Course Summarization

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# NOC: Analog Circuits -Video course

#### **COURSE OUTLINE**

This course is an introduction to amplifiers using transistors. Students will be introduced to MOS transistors, their characteristics, techniques for biasing them, and amplifiers using them. The basic transistor amplifier stages are seen as realizations of different controlled sources using negative feedback. Small- and large-signal characteristics of each amplifier will be discussed. At the end of this course, students should be able to recognize and analyze the basic amplifiers and biasing arrangements using MOS or bipolar transistors.



# NPTEL

http://nptel.ac.in

# **Electrical Engineering**

#### **Pre-requisites:**

Typical 1st and 2nd year EE curriculum. Specific pre-requisite courses are:

1. Basic Electrical Circuits

(e.g.,http://nptel.ac.in/courses/117106108/,,,or

https://onlinecourses.nptel.ac.in/iitm\_ec\_1010/)

2. Networks and Systems

(e.g.,http://nptel.ac.in/courses/108106075/)

#### Coordinators:

Dr. Nagendra Krishnapura Department of Electrical EngineeringIIT Madras

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#### COURSE DETAIL

Week. No	Unit	Unit Contents	
1.	1	Course introduction; Need for nonlinear circuits; Incremental gain of a two port nonlinear circuit	
	2	Constraints on y-parameters and large signal characteristics to obtain a high gain; MOS transistor and its characteristics	
2.	3	AC coupling network to add signal to bias; AC coupling at input and output; Common source amplifier	
	4	Output conductance of a MOS transistor; Inherent gain limitation of a transistor	
3.	5	Sensitivity of gm to transistor parameters; Biasing a transistor at a constant current: Drain feedback	

		configuration; Current mirror	
	6	Common source amplifier using drain feedback	
4.	7	Common source amplifier using current mirror bias	
	8	Common source amplifier using source feedback bias; Using a resistor instead of a current source for biasing; Further biasing techniques	
5.	9	VCVS using a transistor; Source follower biasing	
	10	CCVS using a transistor; CCVS using an opamp	
6.	11	Biasing a CCVS; Emitter degenrated amplifier	
	12	Common gate amplifier and its biasing	
7.	13	VCCS using a transistor and its biasing	
	14	pMOS transistor and its small signal model	
8.	15	Biasing a pMOS transistor; Converting nMOS circuits to pMOS;	
	16	Amplifiers using a pMOS transistor	
9.	17	Bipolar junction transistor- large and small signal models	
	18	BJT circuits- Biasing; Common source amplifier; Emitter follower	Deen
10.	19	BJT Common base amplifier, Transimpedance amplifier	
	20	Swing limits of amplifiers	Dr. LEENA A V PRINCIPAL SREE NARAYANA GURU COLLEGE ENGINEERING & TECHNOLOGY PAYYANUR, KANNUR

	11.	21	Two transistors in feedback	
		22	Two transistors in feedback	
A G	joint venti ovt of Indi	ure by IIS ia	Sc and IITs, funded by MHRD,	http://nptel.ac.in

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PROF. DEEPAK KHEMANI

Department of Computer Science and Engineering IIT Madras

PRE-REQUISITES : Exposure to AI: Search Methods for Problem Solving and AI: Knowledge Representation & Reasoning helps, but is not necessary.

**INTENDED AUDIENCE** : Both UG and PG students studying Computer Science (any degree) can take it. **INDUSTRIES APPLICABLE TO** : Software companies dealing with artificial intelligence applications

#### COURSE OUTLINE :

Human beings solve problems in many different ways. Problem solving in artificial intelligence (AI) is inspired from these diverse approaches. All problem solvers may be based on search, on memory, or on knowledge representation and reasoning. An approach to problem solving is to pose problems as constraint satisfaction problems (CSP), and employ general methods to solve them. The task of a user then is only to pose a problem as a CSP, and then call an off-the-shelf solver. CSPs are amenable to combining search based methods with reasoning. In this 2 credit course we will look at general approaches to solving finite domain CSPs, and explore how search can be combined with constraint propagation to find solutions.

#### ABOUT INSTRUCTOR :

Prof. Deepak Khemani is Professor at Department of Computer Science and Engineering, IIT Madras. He completed his B.Tech. (1980) in Mechanical Engineering, and M.Tech. (1983) and PhD. (1989) in Computer Science from IIT Bombay, and has been with IIT Madras since then. In between he spent a year at Tata Research Development and Design Centre, Pune and another at the youngest IIT at Mandi. He has had shorter stays at several Computing departments in Europe.

Prof. Khemani's long-term goals are to build articulate problem solving systems using AI that can interact with human beings. His research interests include Memory Based Reasoning, Knowledge Representation and Reasoning, Planning and Constraint Satisfaction, Qualitative Reasoning and Natural Language Processing.

#### COURSE PLAN :

Module 1: Constraint satisfaction problems (CSP), examples.

Module 2: Constraint networks, equivalent and projection networks.

Module 3: Constraint propagation, arc consistency, path consistency, i-consistency.

Module 4: Directional consistency and graph ordering, backtrack free search, adaptive consistency.

Module 5: Search methods for solving CSPs, lookahead methods, dynamic variable and value ordering.

**Module 6:** Lookback methods, Gaschnig's backjumping, graph based backjumping, conflict directed back jumping. Combing lookahead with lookback, learning.

**Module 7**: Model based systems, model based diagnosis, truth maintenance systems, planning as CSP. Wrapping up.

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# ROBOTICS AND CONTROL: THEORY AND PRACTICE

PROF. N. SUKAVANAM Department of Mathematics IIT Roorkee

PROF .M. FELIX ORLANDO Department of Electrical Engineering IIT Roorkee PRE-REQUISITES : Basic Mathematics

**INTENDED AUDIENCE :** Electrical Engineering, Computer Science Engineering, Mechanical Engineering, Electronics and Communication Engineering, Mathematics students

#### **COURSE OUTLINE :**

Robotics has stimulated an growing interest among a wide range of scholars, researchers and students due to its interdisciplinary characteristics. The development of this field of science is boosted by various domains which are not limited to Cybernetics, Controls, Computers, Mechanics, Bio-Engineering, and Electronics. Among these areas, modelling, control, planning play a fundamental role not only in the growth of industrial robotics, but also towards the advanced fields including healthcare and field robotics.

Through this course the participants will acquire the ability to conduct research, develop innovative designs in the field of systems engineering and control of robots and to direct the development of engineering solutions in new or unfamiliar environments by linking creativity, innovation and transfer of technology.

#### ABOUT INSTRUCTOR :

Prof. N. Sukavanam received his Ph. D from the Indian Institute of Science, Bangalore in 1985. He served as a Scientist-B at Naval Science and Technological Laboratory, DRDO for two years (1984-86). Then joined as a Research Scientist in the Department of Mathematics, IIT Bombay (1987-90). Worked as a Lecturer at BITS Pilani from 1990 to 1996. Currently he is a Professor in the Department of Mathematics IIT Roorkee and heads the department.

Prof. M. Felix Orlando received his Ph.D. from Electrical Engineering Department at Indian Institute of Technology Kanpur (IITK) in 2013. In 2015, he completed his post doctoral fellowship at Case Western Reserve University, USA on Medical robotics. Dr. Felix Orlando has been working as an Assistant Professor in the Department of Electrical Engineering at the Indian Institute of Technology Roorkee (IITR) from November 2015 onwards.

#### COURSE PLAN :

**Week 1:** Simple manipulators: Two /three arm manipulators and their kinematics equations, Work space Homogeneous Transformation: Rotation, Translation, Composition of homogeneous transformations **Week 2:** Danavit-Hartimber Algorithm: D-H procedure for fixing joint coordinate frames, Robot parameters, Arm matrix, Inverse Kinematics for PUMA, SCARA manipulators.

Week 3: Introduction to Robotic Exoskeletons ,Optimal Design of a Three Finger Exoskeleton for Rehabilitation Purpose

Week 4: Differential transformation and velocity of a frame: Derivative of a frame, Velocity, Jacobian,

Inverse Jacobian, Trajectory Planning: Polynomial trajectory, Biped trajectory

Week 5: Dynamics: Lagrangian method, Robot dynamics equation, Control: Robot dynamics equation as a control system, Trajectory tracking control, PD controller, Neural network control design

Week 6: Redundancy Resolution of Human Fingers using Robotic Principles ,Manipulability Analysis of Human Fingers during Coordinated Object Rotation ,Kinematics of Flexible Link Robots

Week 7: Robot Assisted Needling System for Percutaneous Intervention-An Introduction ,Smart Robotic Needles for Percutaneous Cancerous Interventions

Week 8: Robust Force Control of a Two Finger Exoskeleton during Grasping ,Neural Control of an Index

**Finger Exoskeleton** 



# CLOUD COMPUTING AND DISTRIBUTED SYSTEMS

PROF. RAJIV MISRA Department of Computer Science and Engineering IIT Patna

PRE-REQUISITES : Minimum: Data Structures and Algorithms; Ideal: Computer Architecture, Basic OS and Networking concepts

INDUSTRIES SUPPORT : Companies like Amazon, Microsoft, Google, IBM, Facebook and start-ups working on this field.

#### COURSE OUTLINE :

Cloud computing is the on-demand delivery of computations, storage, applications, and other IT resources through a cloud services platform over the internet with pay-as-you-go business model. Today's Cloud computing systems are built using fundamental principles and models of distributed systems. This course provides an in-depth understanding of distributed computing "concepts", distributed algorithms, and the techniques, that underlie today's cloud computing technologies. The cloud computing and distributed systems concepts and models covered in course includes: virtualization, cloud storage: key-value/NoSQL stores, cloud networking,fault-tolerance cloud using PAXOS, peer-to-peer systems, classical distributed algorithms such as leader election, time, ordering in distributed systems, distributed mutual exclusion, distributed algorithms for failures and recovery approaches, emerging areas of big data and many more. And while discussing the concepts and techniques, we will also look at aspects of industry systems such as Apache Spark, Google's Chubby, Apache Zookeeper, HBase, MapReduce, Apache Cassandra, Google's B4, Microsoft's Swan and many others. Upon completing this course, students will have intimate knowledge about the internals of cloud computing and how the distributed systems concepts work inside clouds.

#### ABOUT INSTRUCTOR :

Prof. Rajiv Misra is an Associate Professor in Department of Computer Science and Engineering at Indian Institute of Technology Patna, India. He obtained his Ph.D degree from IIT Kharagpur, M.Tech degree in Computer Science and Engineering from the Indian Institute of Technology (IIT) Bombay, and Bachelors of engineering degree in Computer Science from MNIT Allahabad. His research interests spanned a design of distributed algorithms for Mobile, Adhoc and Sensor Networks, Cloud Computing and Wireless Networks. He has contributed significantly to these areas and published more than 70 papers in high quality journals and conferences, and 2 book chapters. His h-index is 10 with more than 590 citations. He has authored papers in IEEE Transactions on Mobile Computing, IEEE Transaction on Parallel and Distributed Systems, Adhoc Networks, Journal of Parallel and Distributed Computing.

#### **COURSE PLAN:**

#### Week 1: Introduction to Clouds, Virtualization and Virtual Machine

1. Introduction to Cloud Computing: Why Clouds, What is a Cloud, Whats new in todays Clouds, Cloud computing vs. Distributed computing, Utility computing, Features of today's Clouds: Massive scale, AAS Classification: HaaS, IaaS, PaaS, SaaS, Data-intensive Computing, New Cloud Paradigms, Categories of Clouds: Private clouds, Public clouds

2. Virtualization: What's virtualization, Benefits of Virtualization, Virtualization Models: Bare metal, Hosted hypervisor

3. Types of Virtualization: Processor virtualization, Memory virtualization, Full virtualization, Para virtualization, Device virtualization

4.Hotspot Mitigation for Virtual Machine Migration: Enterprise Data Centers, Data Center Workloads, Provisioning methods, Sandipiper Architecture, Resource provisioning, Black-box approach, Gray-box approach, Live VM Migration Stages, Hotspot Mitigation

#### Week 2: Network Virtualization and Geo-distributed Clouds

1.Server Virtualization: Methods of virtualization: Using Docker, Using Linux containers, Approaches for Networking of VMs: Hardware approach: Single-root I/O virtualization (SR-IOV), Software approach: Open vSwitch, Mininet and its applications

2.Software Defined Network: Key ideas of SDN, Evolution of SDN, SDN challenges, Multi-tenant Data Centers: The challenges, Network virtualization, Case Study: VL2, NVP

3.Geo-distributed Cloud Data Centers: Inter-Data Center Networking, Data center interconnection techniques: MPLS, Google's B4 and Microsoft's Swan

#### Week 3: Leader Election in Cloud, Distributed Systems and Industry Systems

1.Leader Election in Rings (Classical Distributed Algorithms): LeLann-Chang-Roberts (LCR) algorithm, The Hirschberg and Sinclair (HS) algorithm

2.Leader Election (Ring LE & Bully LE Algorithm): Leader Election Problem, Ring based leader election, Bully based leader election, Leader Election in Industry Systems: Google's Chubby and Apache Zookeeper

3.Design of Zookeeper: Race condition, Deadlock, Coordination, Zookeeper design goals, Data model, Zookeeper architecture, Sessions, States, Usecases, Operations, Access Control List (ACL), Zookeeper applications: Katta, Yahoo! Message Broker

#### Week 4: Classical Distributed Algorithms and the Industry Systems

1. Time and Clock Synchronization in Cloud Data Centers: Synchronization in the cloud, Key challenges, Clock Skew, Clock Drift, External and Internal clock synchronization, Christians algorithm, Error bounds, Network time protocol (NTP), Berkley's algorithm, Datacenter time protocol (DTP), Logical (or Lamport) ordering, Lamport timestamps, Vector timestamps

2. Global State and Snapshot Recording Algorithms: Global state, Issues in Recording a Global State, Model of Communication, Snapshot algorithm: Chandy-Lamport Algorithm

3.Distributed Mutual Exclusion: Mutual Exclusion in Cloud, Central algorithm, Ring-based Mutual Exclusion, Lamport's algorithm, Ricart-Agrawala's algorithm, Quorum-based Mutual Exclusion, Maekawa's algorithm, Problem of Deadlocks, Handling Deadlocks, Industry Mutual Exclusion : Chubby

#### Week 5: Consensus, Paxos and Recovery in Clouds

1.Consensus in Cloud Computing and Paxos: Issues in consensus, Consensus in synchronous and asynchronous system, Paxos Algorithm

2.Byzantine Agreement: Agreement, Faults, Tolerance, Measuring Reliability and Performance, SLIs, SLOs, SLAs, TLAs, Byzantine failure, Byzantine Generals Problem, Lamport-Shostak-Pease Algorithm, Fischer-Lynch-Paterson (FLP) Impossibility

3.Failures & Recovery Approaches in Distributed Systems: Local checkpoint, Consistent states, Interaction with outside world, Messages, Domino effect, Problem of Livelock, Rollback recovery schemes, Checkpointing and Recovery Algorithms: Koo-Toueg Coordinated Checkpointing Algorithm

#### Week 6: Cloud Storage: Key-value stores/NoSQL

1.Design of Key-Value Stores: Key-value Abstraction, Key-value/NoSQL Data Model, Design of Apache Cassandra, Data Placement Strategies, Snitches, Writes, Bloom Filter, Compaction, Deletes, Read, Membership, CAP Theorem, Eventual Consistency, Consistency levels in Cassandra, Consistency Solutions

2.Design of HBase: What is HBase, HBase Architecture, Components, Data model, Storage Hierarchy, Cross-Datacenter Replication, Auto Sharding and Distribution, Bloom Filter, Fold, Store, and Shift

#### Week 7: P2P Systems and their use in Industry Systems

1.Peer to Peer Systems in Cloud Computing: Napster, Gnutella, FastTrack, BitTorrent, DHT, Chord, Pastry and Kelips.

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#### Week 8: Cloud Applications: MapReduce, Spark and Apache Kafka

1.MapReduce: Paradigm, Programming Model, Applications, Scheduling, Fault-Tolerance, Implementation Overview, Examples

2.Introduction to Spark: Resilient Distributed Datasets (RDDs), RDD Operations, Spark applications: Page Rank Algorithm, GraphX, GraphX API, GraphX working

3.Introduction to Kafka: What is Kafka, Use cases for Kafka, Data model, Architecture, Types of messaging systems, Importance of brokers

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#### NPTEL Syllabus

### NOC: Basic Tools of Microwave Engineering -Video course

#### COURSE OUTLINE

The course will introduce three basic tools of a microwave engineer viz. smith chart, s-The course will introduce three basic tools of a microwave engineer viz. smith chart, s-parameter and signal flow graph. The lectures would try to emphasize the need to understand the key concepts behind these tools for solving various analysis and design problems in microwave engineering. The concepts of microwave measurement both in the traditional microwave bench and network analyzer would be explained and some typical applications of the tools like impedance matching, network analyzer calibration, and directional coupler characterization would be demonstrated. The course would lay the foundation for further exploring the vast area of microwave engineering analysis and design design.

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# **ETHICAL HACKING**

#### **PROF. INDRANIL SENGUPTA**

Dept. of Computer Science and Engineering IIT Kharagpur

INTENDED AUDIENCE: Computer Science and Engineering / Information Technology / Electronics and Communication Engineering / Electrical Engineering

PREREQUISITES : Basic concepts in programming and networking

INDUSTRIES APPLICABLETO : TCS, Wipro, CTS, Google, Microsoft, Qualcomm

#### COURSE OUTLINE

Ethical hacking is a subject that has become very important in present-day context, and can help individuals and organizations to adopt safe practices and usage of their IT infrastructure. Starting from the basic topics like networking, network security and cryptography, the course will cover various attacks and vulnerabilities and ways to secure them. There will be hands-on demonstrations that will be helpful to the participants. The participants are encouraged to try and replicate the demonstration experiments that will be discussed as part of the course.

#### ABOUT INSTRUCTOR

Prof. Indranil Sengupta has obtained his B.Tech., M.Tech. and Ph.D. degrees in Computer Science and Engineering from the University of Calcutta. He joined the Indian Institute of Technology, Kharagpur, as a faculty member in 1988, in the Department of Computer Science and Engineering, where he is presently a full Professor. He had been the former Heads of the Department of Computer Science and Engineering and also the School of Information Technology of the Institute. He has over 28 years of teaching and research experience. He has guided 22 PhD students, and has more than 200 publications to his credit in international journals and conferences. His research interests include cryptography and network security, VLSI design and testing, and mobile computing.

He is a Senior Member of IEEE. He had been the General Chairs of Asian Test Symposium (ATS-2005), International Conference on Cryptology in India (INDOCRYPT-2008), International Symposium on VLSI Design and Test (VDAT-2012), International Symposium on Electronic System Design (ISED-2012), and the upcoming Conference on reversible Computation (RC-2017). He had delivered invited and tutorial talks in several conferences in the areas of VLSI design and testing, and network security.

#### **COURSE PLAN**

Week 1: Introduction to ethical hacking. Fundamentals of computer networking. TCP/IP protocol stack.

Week 2: IP addressing and routing. TCP and UDP. IP subnets.

Week 3: Routing protocols. IP version 6.

Week 4: Installation of attacker and victim system. Information gathering using advanced google search, archive.org, netcraft, whois,

host, dig, dnsenum and NMAP tool.

**Week 5:** Vulnerability scanning using NMAP and Nessus. Creating a secure hacking environment. System Hacking: password cracking, privilege escalation, application execution. Malware and Virus. ARP spoofing and MAC attack.

Week 6: Introduction to cryptography, private-key encryption, public-key encryption.

Week 7: Cryptographic hash functions, digital signature and certificate, applications.

Week 8: Steganography, biometric authentication, network-based attacks, DNS and Email security.

Week 9: Packet sniffing using wireshark and burpsuite, password attack using burp suite. Social engineering attacks and Denial of service attacks.

Week 10: Elements of hardware security: side-channel attacks, physical indinable functions, hardware trojans.

Week 11: Different types of attacks using Metasploit framework: password cracking, privilege escalation, remote code execution,

etc.Attack on web servers: password attack, SQL injection, cross site scripting.

Week 12: Case studies: various attacks scenarios and their remedies.

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PROF. GOUTAM DAS Department of G. S. Sanyal School of Telecomunications IIT Kharagpur

INTENDED AUDIENCE : Master students in the field of telecommunication of final year B. Tech/BE students of EE, ECE,CS departments

INDUSTRIES APPLICABLE TO : CISCO, Broadcom, QUALCOMM, Ericson, Samsung, Vodafone, Jio, Tejas Network, Xilinx etc.

#### COURSE OUTLINE :

A network is a set of devices (nodes) connected through communication links. Computer network indicates a collection of autonomous computers interconnected by means of communication infrastructure. Two computers are said to be interconnected if they are able to exchange information. The connection might be via a copper wire, fiber optics, microwaves, infrared, and communication satellites. Networks come in many sizes, shapes and forms and are usually connected together to make larger networks. Internet is the most well-known example of a network of networks.

Study of networks require knowledge of networking architectures, protocol or algorithm that carries out different sub-task of networking or information exchange and tools for network design and its performance analysis.

#### ABOUT INSTRUCTOR :

Prof. Goutam Das received the Ph.D. degree from the University of Melbourne, Melbourne, Australia, in 2008. He has worked as a Postdoctoral Fellow at Ghent University, Ghent, Belgium, from 2009–2011. He is currently working as an Associate Professor in the Indian Institute of Technology Kharagpur, Kharagpur, India. His research interests include optical access networks, optical data center networks, radio over fiber technology, optical packet switched networks and media access protocol design for application specific requirements.

#### COURSE PLAN :

- Week 1: Communication Networks basics
- Week 2: Circuit Switched Networks
- Week 3: Switching Concepts

Week 4: Layered Architecture, Introduction to DLL Layer

- Week 5: MAC Protocols Ethernet, Wireless LAN, PON
- Week 6: Network Layer IP
- Week 7: Routing Algorithms and Associated Protocols
- Week 8: Transport Layer
- Week 9: Introduction to Queuing
- Week 10: Application of Queuing theory for Design of Circuit Networks
- Week 11: Performance analysis of CSMA CD, CSMA CA
- Week 12: Advanced Networking Concepts: Open Flow switching, SDN and NFV, Network slicing, cognitive Networks

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## AN INTRODUCTION TO ARTIFICIAL INTELLIGENCE

PROF. MAUSAM Department of Computer Science and Engineering IIT Delhi

PRE-REQUISITES : Data Structures, Probability

INTENDED AUDIENCE : Undergraduate students in computer science INDUSTRIES APPLICABLE TO : Most software companies

#### COURSE OUTLINE :

The course introduces a variety of concepts in the field of artificial intelligence. It discusses the philosophy of AI, and how to model a new problem as an AI problem. It describes a variety of models such as search, logic, Bayes nets, and MDPs, which can be used to model a new problem. It also teaches many first algorithms to solve each formulation. The course prepares a student to take a variety of focused, advanced courses in various subfields of AI.

#### ABOUT INSTRUCTOR :

Prof. Mausam is an Associate Professor of Computer Science department at IIT Delhi, and an affiliate faculty member at University of Washington, Seattle. His research explores several threads in artificial intelligence, including scaling probabilistic planning algorithms, large-scale information extraction over the Web, and enabling complex computation over crowdsourced platforms. He received his PhD from University of Washington in 2007 and a B.Tech. from IIT Delhi in 2001. ArnetMiner, a global citation aggregator, has rated Mausam as the 25th most influential scholar in AI for 2019. He was recently awarded the AAAI Senior Member status for his long-term participation in AAAI and distinction in the field of artificial intelligence.

#### **COURSE PLAN:**

Week 1: Introduction: Philosophy of AI, Definitions

Week 2: Modeling a Problem as Search Problem, Uninformed Search

Week 3: Heuristic Search, Domain Relaxations

Week 4: Local Search, Genetic Algorithms

Week 5: Adversarial Search

Week 6: Constraint Satisfaction

Week 7: Propositional Logic & Satisfiability

Week 8: Uncertainty in Al, Bayesian Networks

Week 9: Bayesian Networks Learning & Inference, Decision Theory

Week 10: Markov Decision Processes

Week 11: Reinforcement Learning

Week 12: Introduction to Deep Learning & Deep RL

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