RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
An ISO 9001:2015 Certified Institution

From

02/08/2021

Mr.B.Murugan

Senior Assistant professor/EEE

RAAK College of Engineering and Technology

Puducherry -110

To

The Principal

RAAK College of Engineering and Technology

Puducherry -110

Respected Sir,

Sub: Requisition for Approval to Conduct Skill Development program / Value added Course on **"21EE01- Electric Vehicle Technology"** — reg.

This is to bring to your kind notice that the Skill Development Team is planning to conduct a Program on "21EE01- Electric Vehicle Technology" for all the Final Year Electrical and Electronics Engineering students from 09-08-2021 to 14-08-2021.The main focus of this program is to provide a better exposure to our students on the Electric Vehicle Technology.

The syllabus and course plan structured are not listed in the Pondicherry University Curriculum. and the same have been verified and approved by the Principal/HoD/Professors and Skill development team.

Hence, I kindly request you to approve event planned. The details and the necessary proofs are attached with this letter.

Thanking you,

Yours faithfully,

B.Murugan

SAP/EEE

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
RAAK College of Engineering & Technology
No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 110

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RAAKCET/PRINCIPAL/CIR/AUG2021

03/08/2021

CIRCULAR

This is to inform that the Skill Devlopment Team is planning to conduct a value added course on "**21EE01- Electric Vehicle Technology**" for all the Final Year Electrical and Electronics Engineering students from 09-08-2021 to 14-08-2021.students are asked to utilize this opportunity and improve their skills.

PRINCIPAL

Circulation to:

1. All Students
2. All Faculty & Staff Members
3. All HoDs

Copy to:

1. All HoDs
2. Office

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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DEPARTMENT OF ELELCTRICAL AND ELECTRONICS ENGINEERING PRESENTS

VALUE ADDED COURSE ON

ELECTRIC VEHICLE TECHNOLOGY (ONLINE MODE)

2021-2022

DATE: 09/08/2021 to 14/08/2021

VENUE: RAAKCET

TIME: 09 am to 04 pm

Resource Person:

Dr. Sathishkumar
C.K college of Engineering cuddalore.

For Registration Contact:

Mr. G. Rajavel, AP/ EEE.,
9748576547.

HOD

Mr. B. Murugan

PRINCIPAL

Dr. S. Seenuvasamurthi

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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raakengg@mail.com
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VALUE ADDED COURSES

2021-2022

Department of Electrical and Electronics Engineering

21EE01- Electric Vehicle Technology Syllabus

Duration: 36 hours

Course Objective:

- The main objective of this course is to understand the basics of Electrical vehicle dynamics,.
- To learn drive train control in Electrical vehicle.
- To study energy storage technology in Electrical vehicle
- To study the model of Electrical vehicle design.

Course Outcome:

Upon successful completion of the course students able to

Understand the architecture and vehicle dynamics of electric and hybrid vehicles

- Analyze and model the power management systems for electric and hybrid vehicles
- Devise power electronics based control strategies for electric and hybrid vehicles
- Analyze and design various components of electric and hybrid vehicles with environment concern.
- Investigate and model the issues in mathematical domain related to grid interconnections of electric and hybrid vehicle.

Module 1: Introduction to vehicle dynamics **(9 Hours)**

Introduction to vehicle dynamics – Fundamentals of vehicle propulsion and brake – Vehicle Resistance – Dynamic equation of vehicle motion – Tire-Ground Adhesion – Maximum tractive effort – Power train tractive effort – Vehicle power plant characteristics – Transmission characteristics – Vehicle Performance – Gradeability – Acceleration performance – Brake performance

Module 2: Basic components of electric vehicles **(9 Hours)**

Basic components of electric vehicles – Fundamentals of electric traction – Basic architecture of electric drive trains – Electric vehicle drive train topologies – Configuration and power flow control of series, parallel and hybrid drive trains – Power converters for electric vehicles

Module 3: Electric vehicle storage technology **(9 Hours)**

Electric vehicle storage technology – Different types of batteries for electric vehicles – Basic battery parameters – Battery modeling and equivalent circuit – Methods of electric vehicle battery charging – Alternative energy sources – Hydrogen storage systems – Reformers – Supercapacitors/Ultracapacitors - Fuel cell powered vehicles – Flywheel technology

Module 4: Electric propulsion drive systems **(9 Hours)**

Electric propulsion drive systems – DC motor drives and control – Induction motor drives and control – Permanent magnet brushless DC motor drives and control – AC and Switch reluctance motor drives and control – Drive system efficiency

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Sulthanpet Post,
Puducherry - 605 110

CO - ATTAINMENT MAPPING

Sl. No	Register Number	Student Name	CO1	CO2	CO3	CO4
1	18TE0852	MAHALAKSHMI.M	✓	✓	✓	✓
2	18TC1207	KAVITHA.U	✓	✓	✓	✓

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VALUE ADDED COURSES
2021-2022
Department of Electrical and Electronics Engineering
21EE01- Electric Vehicle Technology
COURSE PLAN

S.no	Date	Hours	Time	Topic	Resource person
DAY -1					
1	09.08.21	1.2	9AM -11AM	Introduction to vehicle dynamics,Fundamentals of vehicle propulsion and brake	Dr.Sathishkumar
2		3,4	11.15AM – 1.15 PM	Vehicle Resistance,Dynamic equation of vehicle motion	Mr.R.Shivasankar
3		5.6	2 PM -4PM	Tire-Ground Adhesion, Maximum tractive effort,Power train tractive effort,Vehicle power plant characteristics	Dr.Sathishkumar
DAY 2					
4	10.08.21	7,8	9AM -11AM	Transmission characteristics, Vehicle Performance,Gradeability,Acceleration performance ,Brake performance	: Mr.R.Shivasankar
5		9,10,	11.15AM – 1.15 PM	Basic components of electric vehicles, Fundamentals of electric traction	Dr.Sathishkumar
6		11,12	2 PM -4PM	Basic architecture of electric drive trains ,Electric vehicle drive train topologies	: Mr.R.Shivasankar
DAY -3					
7	11.08.21	13,14	9AM -11AM	Configuration and power flow control of series, parallel and hybrid drive trains,Power converters for electric vehicles	Dr.Sathishkumar
8		15,16	11.15AM – 1.15 PM	Electric vehicle storage technology Different types of batteries for electric vehicles	: Mr.R.Shivasankar
9		17,18	2 PM -4PM	Basic battery parameters,Battery modeling and equivalent circuit Methods of electric vehicle battery charging	Dr.Sathishkumar
DAY -4					
10	12.08.21	19,20	9AM -11AM	Alternative energy sources, Hydrogen storage systems,Reformers – Supercapacitors/Ultracapacitors - Fuel cell powered vehicles ,Flywheel technology	: Mr.R.Shivasankar
11		21,22	11.15AM – 1.15 PM	Electric propulsion drive systems,DC	Dr.Sathishkumar

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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				motor drives and control	
12		23,24	2 PM -4PM	Induction motor drives and control Permanent magnet brushless DC motor drives and control	: Mr.R.Shivasankar
DAY -5					
13	13.08.21	25,26	9AM -11AM	AC and Switch reluctance motor drives and control ,Drive system efficiency	: Mr.R.Shivasankar
14		27,28	11.15AM – 1.15 PM	Design specifications , Selection of motor and sizing	: Mr.R.Shivasankar
15		29,30	2 PM -4PM	Selection of power electronics components and sizing, Inverter technology	: Mr.R.Shivasankar
DAY -6					
16	14.08.21	31,32	9AM -11AM	Design of battery pack and auxiliary energy storage system	: Mr.R.Shivasankar
17		33,34	11.15AM – 1.15 PM	Design of ancillary systems	: Mr.R.Shivasankar
18		35,36	2 PM -4PM	EV recharging and refueling system design	
ASESSMENT EXAM WILL BE CONDUCTED AFTER ONE WEEK OF COURSE COMPLETION *					

BREAK TIME: 11.00 TO 11.15 AM **LUNCH BREAK: 1.15 PM TO 2.00 PM**

COURSE DESIGNED BY
Mr.B.MURUGAN

APPROVED BY
SKILL DEVELOPMENT TEAM

PRINCIPAL
Dr.S.SEENUVASAMURTHI

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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Puducherry - 605 110

4

VALUE ADDED COURSES

2021-2022

Department of Electrical and Electronics Engineering

EVENT REPORT

Name of the Course: 21EE01- Electric Vehicle Technology (Online mode)

Name of the Instructors: Dr.Sathishkumar & Mr.R.Shivasankar

Year/ Branch: 1V/Electrical and Electronics Engineering

Duration of Course: 36 Hours (09-08-2021 to 14-08-2021)

Assessment Date: 20.08.2021

Post Event Summary:

The course was inaugurated on 09-08-2021 at 9.30 A.M. by our respectable principal and sessions were continued as per the schedule. Students were enriched their knowledge by attending the course. Finally, the course concluded by vote of thanks.

On 20.08.2021 assessment was conducted and feedbacks were collected from all the participants.

CO - Attainment:

CO1: Understand the architecture and vehicle dynamics of electric and hybrid vehicles

CO2: Analyze and model the power management systems for electric vehicles

CO3: Devise power electronics based control strategies for electric vehicles

CO4: A:nalyze and design various components of electric vehicles with environment concern.

College of Engineering & Technology

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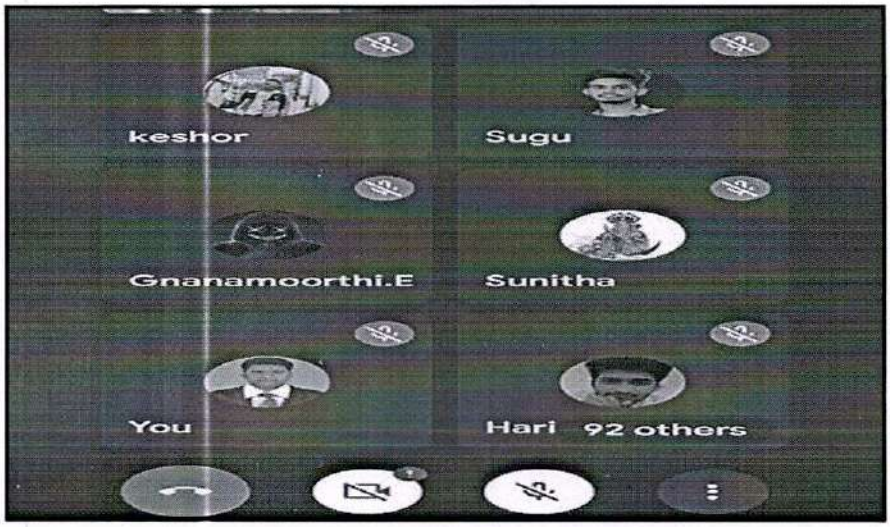
Value Added Course on Electric Vehicle Technology 2021-22



principles of single electron Transistor – split- gate transistor on 10.08.21

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From

02/08/2021

Mr.B.Murugan

Senier Assistant professor/EEE

RAAK College of Engineering and Technology

Puducherry-110

To

The Principal

RAAK College of Engineering and Technology

Puducherry-110

Respected sir,

Sub: Requisition for Approval to Conduct Skill Development program / Value added Course on **"21EE02- Machine Learning and Deep Learning"** — reg.

This is to bring to your kind notice that the Skill Development Team is planning to conduct a Program on "21EE02- Machine Learning and Deep Learning" for all the Final Year Electrical and Electronics Engineering students from 09-08-2021 to 14-08-2021.

The main focus of this program is to provide a better exposure to our students on Machine Learning and Deep Learning.

The syllabus and course plan structured are not listed in the Pondicherry University Curriculum. and the same have been verified and approved by the Principal/HoD/Professors and Skill development team.

Hence, I kindly request you to approve event planned. The details and the necessary proofs are attached with this letter.

Thanking you,

Yours faithfully

B.Murugan

SAP/EEE

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RAAKCET/PRINCIPAL/CIR/AUG2021

03/08/2021

CIRCULAR

This is to inform that the Skill Devlopment Team is planning to conduct a value added course on **"21EE02-Machine learning and Deep learning"** for all the Third Year Electrical and Electronics Engineering students from 09-08-2021 to 14-08-2021.students are asked to utilize this opportunity and improve their skills.

PRINCIPAL

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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DEPARTMENT OF ELELCTRICAL AND ELECTRONICS ENGINEERING PRESENTS

VALUE ADDED COURSE ON

MACHINE LEARNING AND DEEP LEARNING (ONLINE MODE)

2021-2022

DATE: 09/08/2021 to 14/08/2021

VENUE: RAAKCET

TIME: 09 am to 04 pm

Resource Person:

Mr. S. Ayyasamy
Assistant professor,
Christ Institute of Engg & Tech.

For Registration Contact:

Mrs. K. Padmapriya , AP/ EEE.,
9553214568.

HOD

Mr. B. Murugan

RAAK College of Engineering & Technology

PRINCIPAL

Dr. S. Seenuvasamurthi

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VALUE ADDED COURSES

2021-2022

Department of Electrical and Electronics Engineering

21EE02- Machine Learning and Deep Learning

Syllabus

Duration: 36 hours

Course Objective:

- To get familiarize with the introduction to machine learning and deep learning
- To analyse and illustrate various categories of learning schemes
- To develop skills of solving practical applications

Course Outcome:

Upon successful completion of the course students able to

- Remember various types of machine learning and deep learning algorithms
- Analyse various classification and Clustering methods in ML and DL
- Apply ML and DL algorithms for solving practical applications related to electrical and electronics engineering

Module 1: Introductions to Machine Learning **(9 Hours)**

Introductions to Machine Learning: Categories, Supervised learning (SL), Classification, Regression- error based learning, examples, LMS, Logistic regression, Perceptron, Exponential family, Generative learning algorithms, Unsupervised Learning (USL), Application of USL for clustering-noise reduction-Dimensionality Reduction, Semi Supervised learning, Reinforced Learning –Genetic algorithm

Module 2: Classification and Clustering **(9 Hours)**

Classification and Clustering: k-means clustering, Binary Classification, Multi- Class, Classification Techniques, k-nearest neighbours, Support Vector Machines, Naïve Bayes Classifier-Gaussian based Naïve Bayes, Decision Trees-Binary and Bushy tress-tree building process- Regression trees-Stopping criteria & pruning

Module 3: Introduction to neural network **(9 Hours)**

Introduction to neural network : Biological Neural networks- Perceptron Learning Algorithm, Linear Separability-Feedforward Networks: Multilayer Perceptron, Gradient Descent; Training Neural Network-validation and testing, Backpropagation neural networks, Empirical Risk Minimization.

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regularization, autoencoders, model selection, and optimization

Module 4: Deep Neural Networks **(9 Hours)**

Deep Neural Networks: Convolutional Neural networks, LeNet, AlexNet, ZF-Net, VGGNet, GoogLeNet, ResNet, Recurrent Neural Networks, Long Short-Term Memory, Gate Recurrent Unit, Deep Belief Network, Ensemble methods: Bagging, boosting, Evaluating and debugging learning algorithms

Module 5: ML and DL Applications **(9 Hours)**

ML and DL Applications: Control, Optimisation, Forecasting, Data mining, Pattern recognition, Deep learning tools, Recent trends.

Course Designed by **Approved by** **Principal**

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No.1, Muthupillai Palayam Road,
Sulthanpet Post,
Puducherry - 605 [illegible]

CO - ATTAINMENT MAPPING

Sl. No	Register Number	Student Name	CO1	CO2	CO3	CO4
1	19TE0551	NIRMAL GEORGE.A	✓	✓	✓	✓
2	19TE0552	BRANAN.D	✓	✓	✓	✓
3	19TE0553	SANJAIDHARAN.G	✓	✓	✓	✓
4	19TE0554	KEERTHIKA.N	✓	✓	✓	✓
5	19TE0555	KAVIMANI.M	✓	✓	✓	✓
6	19TE0556	MUTHUKUMARAN.V	✓	✓	✓	✓
7	19TE0557	RAKESH.M	✓	✓	✓	✓
8	19TE0558	VEDA.S	✓	✓	✓	✓
9	19TE0559	YUVARAJ.P	✓	✓	✓	✓
10	19TEL032	DINESHKAR.M	✓	✓	✓	✓

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VALUE ADDED COURSES
2021-2022
Department of Electrical and Electronics Engineering
21EE02- Machine Learning and Deep Learning
COURSE PLAN

S.no	Date	Hours	Time	Topic	Faculty details
DAY -1					
1	09.08.21	1.2	9AM -11AM	Introduction to Machine Learning, Supervised learning.	Mr.S.Ayyasamy & Mr.Manikandan
2		3,4	11.15AM – 1.15 PM	Classification, Regression- error based learning, examples	Mr.S.Ayyasamy
3		5.6	2 PM -4PM	LMS, Logistic regression, Perceptron, Exponential family, Generative learning algorithms	Mr.Manikandan
DAY 2					
4	10.08.21	7,8	9AM -11AM	Unsupervised Learning (USL), Application of USL for clustering	Mr.S.Ayyasamy
5		9,10,	11.15AM – 1.15 PM	noise reduction- Dimensionality Reduction, Semi Supervised learning.	Mr.Manikandan
6		11,12	2 PM -4PM	Reinforced Learning – Genetic algorithm	Mr.S.Ayyasamy
DAY -3					
7	11.08.21	13,14	9AM -11AM	Classification and Clustering: k-means clustering, Binary Classification	Mr.S.Ayyasamy
8		15,16	11.15AM – 1.15 PM	Classification Techniques, k-nearest neighbours, Support Vector Machines	Mr.Manikandan
9		17,18	2 PM -4PM	Naïve Bayes Classifier-Gaussian based Naïve Bayes, Decision Trees-Binary and Bushy tress-tree	Mr.S.Ayyasamy

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				building process	
DAY -4					
10	12.08.21	19,20	9AM -11AM	Introduction to neural network : Biological Neural networks	Mr.Manikandan
11		21,22	11.15AM – 1.15 PM	Perceptron Learning Algorithm, Linear Separability- Feedforward Networks	Mr.S.Ayyasamy
12		23,24	2 PM -4PM	Multilayer Perceptron, Gradient Descent	Mr.Manikandan
DAY -5					
13	13.08.21	25,26	9AM -11AM	Training Neural Network-validation and testing,	Mr.S.Ayyasamy
14		27,28	11.15AM – 1.15 PM	Backpropagation neural networks, Empirical Risk Minimization	Mr.Manikandan
15		29,30	2 PM -4PM	Backpropagation neural networks, Empirical Risk Minimization	Mr.S.Ayyasamy
DAY -6					
16	14.08.21	31,32	9AM -11AM	Deep Neural Networks: Convolutional Neural networks	Mr.Manikandan
17		33,34	11.15AM – 1.15 PM	LeNet, AlexNet, ZF-Net, VGGNet, GoogLeNet, ResNet, Recurrent Neural Networks	Mr.S.Ayyasamy
18		35,36	2 PM -4PM	Long Short-Term Memory, Gate Recurrent Unit, Deep Belief Network, Ensemble methods: Bagging,	Mr.Manikandan
ASESSMENT EXAM WILL BE CONDUCTED AFTER ONE WEEK OF COURSE COMPLETION.*					

BREAK TIME: 11.00 TO 11.15 AM **LUNCH BREAK: 1.15 PM TO 2.00 PM**

COURSE DESIGNED BY
Mr.B.MURUGAN

APPROVED BY
SKILL DEVELOPMENT TEAM

PRINCIPAL
Dr.S.SEENUVASAMURTHI

RAAK College of Engineering & Technology

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VALUE ADDED COURSES

2021-2022

Department of Electrical and Electronics Engineering

EVENT REPORT

Name of the Course: 21EE02- Machine Learning and Deep Learning. (Online mode)

Name of the Instructors: Mr.S.Ayyasamy & Mr.Manikandan

Year/ Branch: III/Electrical and Electronics Engineering

Duration of Course: 36 Hours (09-08-2021 to 14-08-2021)

Assessment Date: 20.08.2021

Post Event Summary:

The course was inaugurated on 09-08-2021 at 9.30 A.M. by our respectable principal and sessions were continued as per the schedule. Students were enriched their knowledge by attending the course. Finally, the course concluded by vote of thanks.

On 20.08.2021 assessment was conducted and feedbacks were collected from all the participants.

CO - Attainment:

CO1: To get familiarize with the introduction to machine learning and deep learning

CO2: To analyse and illustrate various categories of learning schemes

CO3: To develop skills of solving practical applications

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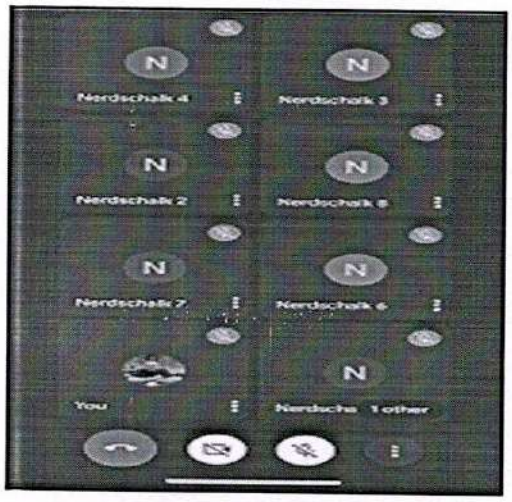
Value Added Course on Machine Learning and Deep Learning 2021-22



Perceptron Learning Algorithm, Linear Separability-Feed forward Networks

On 12.08.21

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
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From

02/08/2021

Mr.B.Murugan

Senior Assistant professor/EEE

RAAK College of Engineering and Technology

Puducherry -110

To

The principal

RAAK College of Engineering and Technology

Puducherry -110

Respected Sir,

Sub: Requisition for Approval to Conduct Skill Development program / Value added Course on **"21EE03- Nano Electronics"** — reg.

This is to bring to your kind notice that the Skill Development Team is planning to conduct a Program on "21EE03- Nano Electronics" for all the second Year Electrical and ElectronicsEngineering students from 09-08-2021 to 14-08-2021.

The main focus of this program is to provide a better exposure to our students on Nano Electronics.

The syllabus and course plan structured are not listed in the Pondicherry University Curriculum. and the same have been verified and approved by the Principal/HoD/Professors and Skill development team.

Hence, I kindly request you to approve event planned. The details and the necessary proofs are attached with this letter.

Thanking you,

Yours faithfully

B.Murugan

SAP/EEE

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RAAKCET/PRINCIPAL/CIR/AUG2021

03/08/2021

CIRCULAR

This is to inform that the Skill Development Team is planning to conduct a value added course on **"21EE03-Nano Electronics"** for all the Second Year Electrical and Electronics Engineering students from 09-08-2021 to 14-08-2021. Students are asked to utilize this opportunity and improve their skills.

PRINCIPAL

Circulation to:

1. All Students
2. All Faculty & Staff Members
3. All HoDs

Copy to:

1. All HoDs
2. Office

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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DEPARTMENT OF ELELCTRICAL AND ELECTRONICS ENGINEERING PRESENTS

VALUE ADDED COURSE ON

NANO ELECTRONICS (ONLINE MODE)

2021-2022

DATE: 09/08/2021 to 14/08/2021

VENUE: RAAKCET

TIME: 09 am to 04 pm

Resource Person:

Mr. Manikandan
Assistant professor,
Christ Institute of Engg & Tech.

For Registration Contact:

Mr. Appasamy, ocular device,
7831698548.

HOD

Mr. B. Murugan

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Dr. S. Seenuvasamurthi

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VALUE ADDED COURSES

2021-2022

Department of Electrical and Electronics Engineering

21EE03- Nano Electronics

Duration: 36 hours

Course Objective:

- A unique course to explore the nano-electronic devices.
- To study the application of nano-electronic devices.
- To learn the electronic device concepts and operation.
- To study the devices made for quantum electronics.

Course Outcome:

Upon successful completion of the course students able to

- To enrich the electronic device concepts and operation.
- To understand the devices made for quantum electronics.
- To appreciate the concepts of carbon nanotubes and its application to circuits.
- To apply the nanoelectronics concepts for different applications

Module 1: Limitations of conventional MOSFETS **(9 Hours)**

Limitations of conventional MOSFETS at Nano scales, introductory concepts of Ballistic transport and Quantum confinement, Difference in few electron devices (as analog version) and single Electron Devices (as digital version) of Nano Electronic devices,, Quantum Effects in MOSFETS, Double – gate MOSFET, Multi- gate MOSFETs, FIN- FET.

Module2:Resonant Tunneling phenomena **(9 Hours)**

Resonant Tunneling phenomena and applications in diodes & Transistors – principles of single electron Transistor – split- gate transistor, Electron wave Transistor, Electron – spin transistor, Quantum Oscillators, Quantum cellular Automata (QCA), Introduction to Quantum computing devices.

Module 3: Carbon – Nano tube theory **(9 Hours)**

Carbon – Nano tube theory : Structure & nomenclature, Optical properties, Electronic structure of graphene, SW & MW CNTs, 1D quantization in nano tubes, CNTFETs, CNT memories, CNT based swiches, Logic gates.

Module 4: Characterization of switches **(9 Hours)**

Overview, Characterization of switches and complex molecular devices, poly phenylene based molecular rectifying diode swiches. Polymer electronics, self – assembling circuits, optical molecular memories technologies, Quantum mechanical Tunnel devices, Quantum Dots & Quantum wires.

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Module 5: Introduction to spintronics **(9 Hours)**

Introduction to spintronics, principles & concepts, spintronic devices & applications, spin – filters, spin diodes, spin transistors.

Course designed by **Approved by** **Principal**

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CO - ATTAINMENT MAPPING

Sl. No	Register Number	Student Name	CO1	CO2	CO3	CO4
1	20TE0251	ARUN.S	✓	✓	✓	✓
2	20TE0252	KANMANI.K	✓	✓	✓	✓
3	20TE0253	NALLARASAN.E	✓	✓	✓	✓
4	20TE0254	PRITHEESH KUMAR.R	✓	✓	✓	✓
5	20TE0255	VENKATESAN.S	✓	✓	✓	✓
6	20TEL095	ARUN.P	✓	✓	✓	✓
7	20TEL097	GOKUL.C	✓	✓	✓	✓
8	20TEL098	MARIYAPPAN.S	✓	✓	✓	✓
9	20TEL099	MOHAMED AASHIK.M	✓	✓	✓	✓
10	20TEL100	PUVIARASU.M	✓	✓	✓	✓

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VALUE ADDED COURSES

2021-2022

Department of Electrical and Electronics Engineering

21EE03- Nano Electronics

COURSE PLAN

S.no	Date	Hours	Time	Topic	Remarks
DAY -1					
1	09.08.21	1.2	9AM -11AM	Limitations of conventional MOSFETS at Nano scales, introductory concepts of Ballistic transport and Quantum confinement,	Mr.Manikandan & Mr.S.Ayyasamy
2		3,4	11.15AM – 1.15 PM	Difference in few electron devices (as analog version) and single Electron Devices	Mr.S.Ayyasamy
3		5.6	2 PM -4PM	Quantum Effects in MOSFETS, Double – gate MOSFET, Multi-gate MOSFETs, FIN- FET	: Mr.Manikandan
DAY 2					
4	10.08.21	7,8	9AM -11AM	Resonant Tunneling phenomena and applications in diodes & Transistors	Mr.S.Ayyasamy
5		9,10,	11.15AM – 1.15 PM	principles of single electron Transistor – split- gate transistor	: Mr.Manikandan
6		11,12	2 PM -4PM	Electron wave Transistor, Electron – spin transistor	Mr.S.Ayyasamy
DAY -3					
7	11.08.21	13,14	9AM -11AM	, Quantum Oscillators, Quantum cellular Automata (QCA),	: Mr.Manikandan
8		15,16	11.15AM – 1.15 PM	Introduction to Quantum computing devices.	Mr.S.Ayyasamy
9		17,18	2 PM -4PM	Carbon – Nano tube theory	: Mr.Manikandan
DAY -4					
10	12.08.21	19,20	9AM -11AM	Structure & nomenclature, Optical properties,	Mr.S.Ayyasamy

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				CNTs	
12		23,24	2 PM -4PM	1D quantization in nano tubes, CNTFETs, CNT memories	Mr.S.Ayyasamy
DAY -5					
13	13.08.21	25,26	9AM -11AM	Overview, Characterization of switches and complex molecular devices	: Mr.Manikandan
14		27,28	11.15AM – 1.15 PM	poly phenylene based molecular rectifying diode swiches.	Mr.S.Ayyasamy
15		29,30	2 PM -4PM	Polymer electronics, self – assembling circuits	: Mr.Manikandan
DAY -6					
16	14.08.21	31,32	9AM -11AM	optical molecular memories technologies, Quantum mechanical Tunnel devices, Quantum Dots & Quantum wires.	Mr.S.Ayyasamy
17		33,34	11.15AM – 1.15 PM	Introduction to spintronics, principles & concepts	: Mr.Manikandan
18		35,36	2 PM -4PM	spintronic devices & applications, spin – filters, spin diodes, spin transistors.	Mr.S.Ayyasamy
ASESSMENT EXAM WILL BE CONDUCTED AFTER ONE WEEK OF COURSE COMPLETION *					

BREAK TIME: 11.00 TO 11.15 AM **LUNCH BREAK: 1.15 PM TO 2.00 PM**

COURSE DESIGNED BY

Mr.B.MURUGAN

APPROVED BY

SKILL DEVELOPMENT TEAM

PRINCIPAL

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VALUE ADDED COURSES

2021-2022

Department of Electrical and Electronics Engineering

EVENT REPORT

Name of the Course: 21EE03-Nano Electronics (Online mode)

Name of the Instructors: Mr.Manikandan & Mr.S.Ayyasamy

Year/ Branch: II/Electrical and Electronics Engineering

Duration of Course: 36 Hours (09-08-2021 to 14-08-2021)

Assessment Date: 20.08.2021

Post Event Summary:

The course was inaugurated on 09-08-2021 at 9.30 A.M. by our respectable principal and sessions were continued as per the schedule. Students were enriched their knowledge by attending the course. Finally, the course concluded by vote of thanks.

On 20.08.2022 assessment was conducted and feedbacks were collected from all the participants.

CO - Attainment:

CO1 To enrich the electronic device concepts and operation.

CO2 To understand the devices made for quantum electronics.

CO3 To appreciate the concepts of carbon nanotubes and its application to circuits.

CO4 To apply the nanoelectronics concepts for different applications

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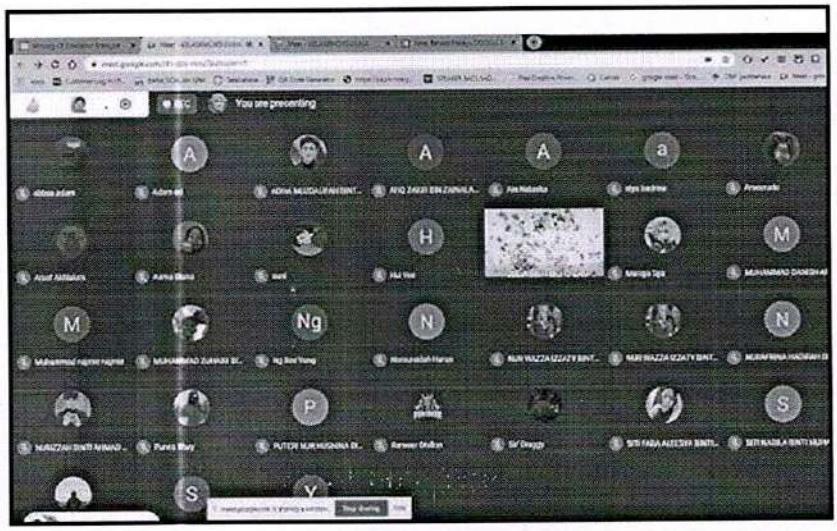
Value Added Course on Nano Electronics 2021-22



Alternative energy sources, Hydrogen storage systems, Reformers Super capacitors/

Ultra capacitors on 12.08.21

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