RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)

From

01/08/2019

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 **"19EE01-Modern Optimization Techniques for Electric Power Systems"** — reg.

This is to bring to your kind notice that the Skill Development Team is planning to conduct a Program on "**19EE01- Modern Optimization Techniques for Electric Power System**" for all the Third Year Electrical & Electronics Engineering students from 09-08-19 to 14-08-2019.

The main focus of this program is to provide a better exposure to our students on Modern Optimization Techniques for Electric Power Systems

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,

Mr.B.Murugan

SAP/EEE DEPT

RAAK College of Engineering & Technology

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
PRINCIPAL
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No.1, Muthupillai Palayam Road,
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RAAKCET/PRINCIPAL/CIR/AUG2019 **02/08/2019**

CIRCULAR

This is to inform that the Skill Development Team is planning to conduct a value added course on **"19EE01-Modern Optimization Techniques for Electric Power Systems"** for all the Third Year Electrical & Electronics Engineering students from 09-08-2019 to 14-08-2019. 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

MORDEN OPTIMIZATIONTECHNIQUES FOR ELECTRIC POWER SYSTEMS

2019-2020

DATE: 09/08/2019 to 14/08/2019

VENUE: RAAKCET

TIME: 09 am to 04 pm

Resource Person:

Mr. T. Krishna
Assistant Professor,
Sri Venkateshwara College of Engg & Tech.

For Registration Contact:

Ms. N. Shalini, AP/ EEE.,
8932743482.

HOD

Mr. B. Murugan

RAAK College of Engineering & Technology

PRINCIPAL

Dr. A. Sivakumar

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.
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VALUE ADDED COURSES

2019-2020

Department of Electrical & Electronics Engineering

19EE01-Modern Optimization Techniques for Electric Power Systems

Duration: 36 hours

Course Objective:

- To learn the concepts and techniques of evolutionary power system applications.
- To learn the concepts and techniques of optimization in power system applications.
- To study the classical optimization techniques.

Course Outcome:

Upon successful completion of the course students able to

- Understand the concept of optimization techniques.
- Apply evolutionary algorithms for unit commitment and economic dispatch problems.
- Interpret hybrid approach for power system reliability and security.

Module 1: Classification of optimization problems **(9 Hours)**

Definition-Classification of optimization problems-Unconstrained and Constrained Optimization-Optimality Conditions-Classical Optimization techniques (Linear and nonlinear programming, Quadratic programming, Mixed integer programming)-Intelligent Search methods (Optimization neural network, Evolutionary algorithms, Tabu search, Particle swarm optimization, Application of fuzzy set theory).

Module2: Fundamentals of Evolutionary Algorithms **(9 Hours)**

Evolution in nature-Fundamentals of Evolutionary Algorithms-Working Principles of Genetic Algorithm-Evolutionary Strategy and Evolutionary Programming-Genetic Operators-Selection, Crossover and Mutation- Issues in GA implementation- GA based Economic Dispatch Solution-Fuzzy Economic Dispatch including losses- Tabu search algorithm for unit commitment problem-GA for unit commitment-GA based Optimal power flow- GA based state estimation.

Module 3: Velocity Updating **(9 Hours)**

Fundamental principle - Velocity Updating - Advanced operators - Parameter selection - Hybrid approaches (Hybrid of GA and PSO, Hybrid of EP and PSO) -Binary, discrete and combinatorial PSO-Implementation issues - Convergence issues - PSO based OPF problem and unit commitment-PSO for reactive power and voltage control-PSO for power system reliability and security.

Module 4: Simulated annealing algorithm **(9 Hours)**

Simulated annealing algorithm- Tabu search algorithm - SA and TS for unit commitment - Ant colony optimization - Bacteria Foraging optimization.

Module 5: Concept of pareto optimality **(9 Hours)**

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Puducherry - 605 110

Concept of pareto optimality - Conventional approaches for MOOP - Multi objective GA - Fitness assignment - Sharing function - Economic Emission dispatch using MOGA – Multi objective PSO (Dynamic neighbourhood PSO, Vector evaluated PSO) – Multi objective OPF problem.

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

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Sulthanpet Post,
Puducherry - 605 110

CO - ATTAINMENT MAPPING

Sl. No	Register Number	Student Name	CO1	CO2	CO3	CO4
1	17TE3101	GUNALAN.M	✓	✓	✓	✓

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COLLEGE OF ENGINEERING AND TECHNOLOGY

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VALUE ADDED COURSES

2019-2020

Department of Electrical & Electronics Engineering

19EE01-Modern Optimization Techniques for Electric Power Systems

COURSE PLAN

S.no	Date	Hours	Time	Topic	Resource person
DAY -1					
1	09.08.19	1.2	9AM -11AM	Definition-Classification of optimization problems-Unconstrained and Constrained Optimization	Mr. T.Krishna & Mr.S.Manimaran
2		3,4	11.15AM – 1.15 PM	Optimality Conditions-Classical Optimization techniques (Linear and nonlinear programming, Quadratic programming, Mixed integer programming)	Mr.S.Manimaran
3		5.6	2 PM -4PM	Intelligent Search methods (Optimization neural network, Evolutionary algorithms, Tabu search, Particle swarm optimization, Application of fuzzy set theory).	Mr. T.Krishna
DAY 2					
4	10.08.19	7,8	9AM -11AM	Evolution in nature-Fundamentals of Evolutionary Algorithms-Working Principles of Genetic Algorithm	Mr.S.Manimaran
5		9,10,	11.15AM – 1.15 PM	Evolutionary Strategy and Evolutionary Programming-Genetic Operators-Selection, Crossover and Mutation	Mr. T.Krishna
6		11,12	2 PM -4PM	Evolutionary Strategy and Evolutionary Programming-Genetic Operators-Selection, Crossover and Mutation	Mr.S.Manimaran
DAY -3					
7	11.08.19	13,14	9AM -11AM	Tabu search algorithm for unit commitment problem-GA for unit commitment-GA based Optimal power flow- GA	Mr. T.Krishna

Dr. S. SRINIVASAMURTHI, M.E., Ph.D.
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Sulthanpet Post,
Puducherry - 605 110

RAAK College of Engineering & Technology

				based state estimation.	
8		15,16	11.15AM – 1.15 PM	Fundamental principle - Velocity Updating - Advanced operators	Mr.S.Manimaran
9		17,18	2 PM -4PM	Parameter selection - Hybrid approaches (Hybrid of GA and PSO, Hybrid of EP and PSO)	Mr. T.Krishna
DAY -4					
10	12.08.19	19,20	9AM -11AM	Binary, discrete and combinatorial PSO- Implementation issues	Mr.S.Manimaran
11		21,22	11.15AM – 1.15 PM	Convergence issues - PSO based OPF problem and unit commitment- PSO for reactive power and voltage control	Mr. T.Krishna
12		23,24	2 PM -4PM	PSO for power system reliability and security	Mr.S.Manimaran
DAY -5					
13	13.08.19	25,26	9AM -11AM	Simulated annealing algorithm- Tabu search algorithm	Mr. T.Krishna
14		27,28	11.15AM – 1.15 PM	SA and TS for unit commitment	Mr.S.Manimaran
15		29,30	2 PM -4PM	Ant colony optimization - Bacteria Foraging optimization.	Mr. T.Krishna
DAY -6					
16	14.08.19	31,32	9AM -11AM	Concept of pareto optimality - Conventional approaches for MOOP	Mr.S.Manimaran
17		33,34	11.15AM – 1.15 PM	Multi objective GA - Fitness assignment - Sharing function - Economic Emission dispatch using MOGA	Mr. T.Krishna
18		35,36	2 PM -4PM	Multi objective PSO (Dynamic neighbourhood PSO, Vector evaluated PSO) – Multi objective OPF problem.	Mr.S.Manimaran
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, M.E., Ph.D.
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Sulthanpet Post,

RAAK

COLLEGE OF ENGINEERING AND TECHNOLOGY

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VALUE ADDED COURSES

2019-2020

Department of Electrical & Electronics Engineering

EVENT REPORT

Name of the Course: 19EE01-Modern Optimization Techniques for Electric Power System

Name of the Instructors: Mr. T.Krishna & Mr.S.Manimaran

Year/ Branch: III/EEE

Duration of Course: 36 Hours (09-08-2019 to 14-08-2019)

Assessment Date: 20.08.2019

Post Event Summary:

The course was inaugurated on 09-08-19 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 20.08.2019 assessment was conducted and feedbacks were collected from all the participants.

CO - Attainment:

CO1: Understand the concept of optimization techniques.

CO2: Apply evolutionary algorithms for unit commitment and economic dispatch problems.

CO3: Interpret hybrid approach for power system reliability and security.

CO4: Understand the concept of evolutionary algorithms

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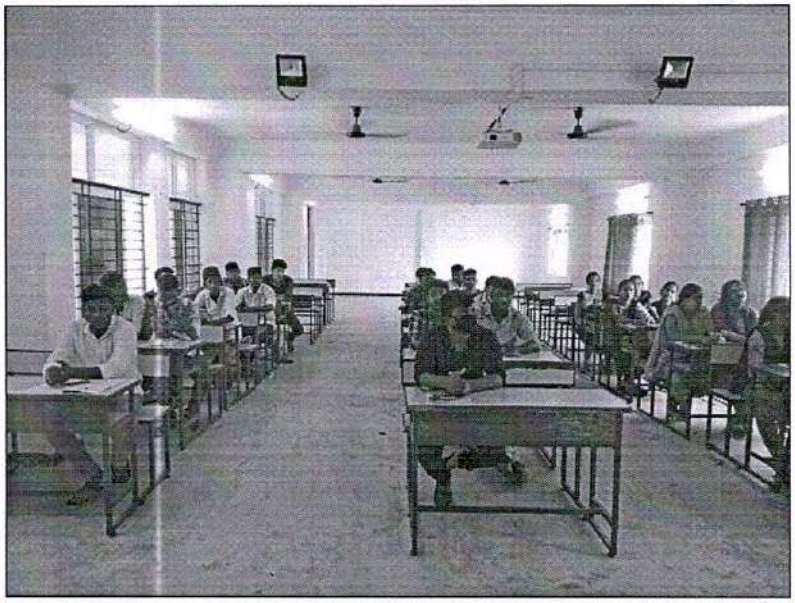
An ISO 9001:2015 Certified Institution

Value Added Course on Modern Optimization Techniques for Electric Power Systems

2019-2020



Tabu search algorithm for unit commitment problem-GA for unit commitment-GA based Optimal power flow- GA based state estimation on 11.08.19

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From

Mr.B.Murugan

Senior Assistant professor/EEE

RAAK College of Engineering and Technology

Puducherry -110

01/08/2019

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 **"19EE02- Vehicular Electric Power System -"** - reg.

This is to bring to your kind notice that the Skill Development Team is planning to conduct a Program on "**19EE02-Vehicular Electric Power System**" for all the second Year Electrical & Electronics Engineering students from 09-08-19 to 14-08-2019.

The main focus of this program is to provide a better exposure to our students on Vehicular Electric Power System.

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,

Mr.B.Murugan

SAP/EEE

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RAAKCET/PRINCIPAL/CIR/AUG2019 **02/08/2019**

CIRCULAR

This is to inform that the Skill Development Team is planning to conduct a value added course on "**19EE02-Vehicular Electric power system**" for all the Second Year Electrical & Electronics Engineering students from 09-08-2019 to 14-08-2019. 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

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DEPARTMENT OF ELELCTRICAL AND ELECTRONICS ENGINEERING PRESENTS

VALUE ADDED COURSE ON

VEHICULAR ELECTRIC POWER SYSTEMS

2019-2020

DATE: 09/08/2019 to 14/08/2019

VENUE: RAAKCET

TIME: 09 am to 04 pm

Resource Person:

Mr. S. Sathiyamoorthy
Assistant Professor,
Christ Institute of Engg & Tech.

For Registration Contact:

Mr. E. Arunagiri , AP/ EEE.,
9356545782.

HOD

Mr. B. Murugan

RAAK College of Engineering & Technology

PRINCIPAL

Dr. A. Sivakumar

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VALUE ADDED COURSES

2019-2020

Department of Electrical & Electronics Engineering

19EE02-Vehicular Electric Power Systems

Duration: 36 hours

Course Objective:

- This course introduces the fundamental concepts, principles and analysis of hybrid Vehicles.
- This course introduces the fundamental concepts, principles and analysis of Electric vehicles.
- To study the concepts of Vehicular Electric Power systems.

Course Outcome:

Upon successful completion of the course students able to

- Understand the various aspects of hybrid and electric vehicles.
- Plan the selection of electrical machines for hybrid and electric vehicles.
- Select various energy storage technologies for hybrid and electric vehicles.
- Implement energy management techniques for hybrid and electric vehicles.

Module 1: History of hybrid and electric vehicles **(9 Hours)**

History of hybrid and electric vehicles, social and environmental importance of hybrid and electric vehicles, impact of modern drive-trains on energy supplies. Basics of vehicle performance, vehicle power source characterization, transmission characteristics, mathematical models to describe vehicle performance, Capabilities, Automation system computer facilities.

Module2: Electrical components **(9 Hours)**

Introduction to electric components used in hybrid and electric vehicles- Configuration and control of DC Motor drives, Induction Motor drives, Permanent Magnet Motor drives, and Switched Reluctance Motor drives- drive system efficiency.

Module 3: Energy storage technologies. **(9 Hours)**

Energy storage technologies in hybrid vehicles-flywheel, hydraulic, fuel cell and hybrid fuel cell energy storage system-ultra capacitors- comparison- battery charging control.

Module 4: Energy management **(9 Hours)**

Introduction to energy management strategies used in hybrid and electric vehicle, classification of different energy management strategies, comparison of different energy management strategies, implementation issues of energy strategies.

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Module 5: Electrical power system **(9 Hours)**

Electrical power system in air craft, sea and undersea vehicles, space vehicles-hybrid vehicle control strategies- supporting subsystem

COURSE DESIGNED BY APPROVED BY PRINCIPAL

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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

2019-2020

Department of Electrical & Electronics Engineering

19EE02-Vehicular Electric Power Systems

COURSE PLAN

S.no	Date	Hours	Time	Topic	Resource person
DAY -1					
1	09.08.19	1.2	9AM -11AM	History of hybrid and electric vehicles	Mr. S.Sathiyamoorthy.& Mr.P.Vignesh jagadesan
2		3,4	11.15AM – 1.15 PM	Social and environmental importance of hybrid and electric vehicles	Mr. S.Sathiyamoorthy
3		5.6	2 PM -4PM	Impact of modern drive-trains on energy supplies.	Mr.P.Vignesh jagadesan
DAY 2					
4	10.08.19	7,8	9AM -11AM	Basics of vehicle performance	Mr. S.Sathiyamoorthy
5		9,10,	11.15AM – 1.15 PM	vehicle power source characterization, transmission characteristics,	Mr.P.Vignesh jagadesan
6		11,12	2 PM -4PM	vehicle power source characterization, transmission characteristics,	Mr. S.Sathiyamoorthy
DAY -3					
7	11.08.19	13,14	9AM -11AM	mathematical models to describe vehicle performance, Capabilities	Mr.P.Vignesh jagadesan
8		15,16	11.15AM – 1.15 PM	Automation system computer facilities.	Mr. S.Sathiyamoorthy
9		17,18	2 PM -4PM	Introduction to electric components used in hybrid and electric vehicles	Mr.P.Vignesh jagadesan
DAY -4					
10	12.08.19	19,20	9AM -11AM	Configuration and control of DC Motor drives, Induction Motor drives,	Mr. S.Sathiyamoorthy
11		21,22	11.15AM – 1.15 PM	Permanent Magnet	Mr.P.Vignesh

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				Motor drives, and Switched Reluctance Motor drives	jagadesan
12		23,24	2 PM -4PM	drive system efficiency.	Mr.P.Vignesh jagadesan
DAY -5					
13	13.08.19	25,26	9AM -11AM	Energy storage technologies in hybrid vehicles-flywheel, hydraulic, fuel cell	Mr. S.Sathiyamoorthy
14		27,28	11.15AM – 1.15 PM	hybrid fuel cell energy storage system-ultra capacitors- comparison-battery charging control.	Mr.P.Vignesh jagadesan
15		29,30	2 PM -4PM	Introduction to energy management strategies used in hybrid and electric vehicle, classification of different energy management strategies	Mr. S.Sathiyamoorthy
DAY -6					
16	14.08.19	31,32	9AM -11AM	comparison of different energy management strategies, implementation issues of energy strategies.	Mr.P.Vignesh jagadesan
17		33,34	11.15AM – 1.15 PM	Electrical power system in air craft, sea and undersea vehicles	Mr. S.Sathiyamoorthy
18		35,36	2 PM -4PM	space vehicles-hybrid vehicle control strategies- supporting subsystem.	Mr.P.Vignesh jagadesan
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

RAAK College of Engineering & Technology

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VALUE ADDED COURSES

2019-2020

Department of Electrical & Electronics Engineering

EVENT REPORT

Name of the Course: 19EE02-Vehicular Electric Power System

Name of the Instructors: Mr. S.Sathiyamoorthy.& Mr.P.Vignesh jagadesan

Year/ Branch: II/EEE

Duration of Course: 36 Hours (09-08-2019 to 14-08-2019)

Assessment Date: 20.08.2019

Post Event Summary:

The course was inaugurated on 09-08-19 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 20.08.2019 assessment was conducted and feedbacks were collected from all the participants.

CO - Attainment:

CO1 Understand the various aspects of hybrid and electric vehicles.

CO2 Plan the selection of electrical machines for hybrid and electric vehicles.

CO3 Select various energy storage technologies for hybrid and electric vehicles.

CO4 Implement energy management techniques for hybrid and electric vehicles.

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COLLEGE OF ENGINEERING AND TECHNOLOGY

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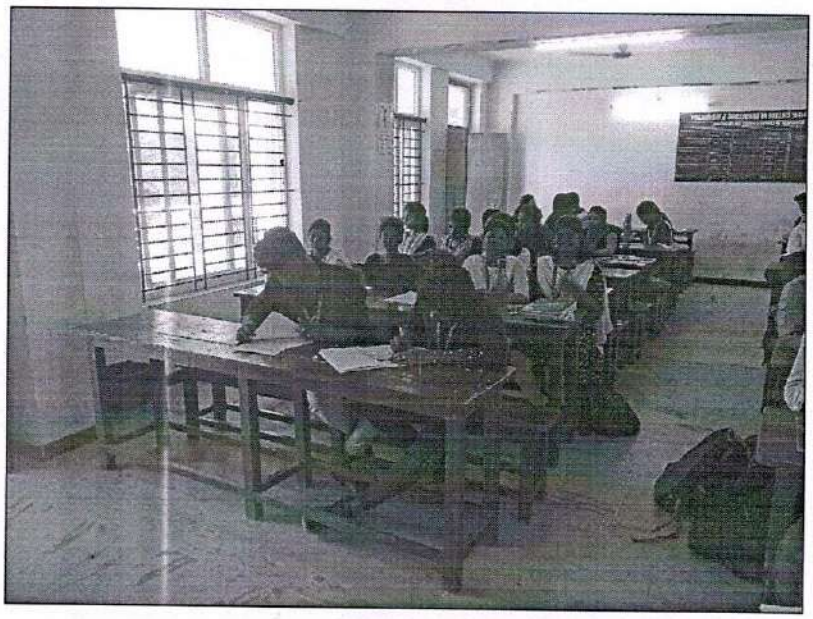
Value Added Course On Vehicular Electric Power System 2019-20



vehicle power source characterization, transmission characteristics on 10.08.19

RAAK College of Engineering & Technology

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