

INNOVATIONS BY THE FACULTY IN TEACHING AND LEARNING

Innovations by the faculty in teaching and learning shall be summarized as per the following description.

Contributions to teaching and learning are activities that contribute to the improvement of student learning. These activities may include innovations not limited to, use of ICT, instruction delivery, instructional methods, assessment, evaluation and inclusive class rooms that lead to effective, efficient and engaging instruction. Any contributions to teaching and learning should satisfy the following criteria:

- The work must be made available on Institute website (yes)
- The work must be available for peer review and critique (yes)
- The work must be reproducible and developed further by other scholars (yes)

The department/institution may set up appropriate processes for making the contribution available to the public, getting them reviewed and for rewarding. These may typically include statement of clear goals, adequate preparation, use of appropriate methods, and significance of results, effective presentation and reflective critique.

Innovations by the Faculty in teaching and learning are summarized as per the following description:

Role-plays:

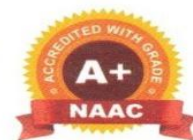
The demand and supply forms the basis of any business activity. To help understand this mechanism, the students are introduced to some simulated managerial situation. Faculty members assume the role of customers or regulatory authorities and the student groups are asked to introduce their ideas to potential consumers as well as funding agencies.

For more details, visit: <https://siddhartha.ac.in/eee.php>

Free writing:

The role of engineers is not only to solve existing problems but also to envision a better future. The aim of this activity is to allow the students to share their ideas that they think will shape the future. These ideas may stem from technological advancements, the role of technology in future, the needs of society in future and so on. These activities are conducted in class as well as the week end home assignment activities.

For more details, visit: <https://siddhartha.ac.in/eee.php>



e-learning :

The Department of Electrical And Electronic Engineering has initiated e-classrooms for final year students. The courses covered in Final years are available through Canvas by Instructure as well as Departmental Webpage, developed and maintained entirely by Faculty members of department.

For more details, visit: <https://siddhartha.ac.in/eee.php>

Departmental innovations to improve teaching and learning process:

Some of the innovations taken by the Department of Electrical And Electronic Engineering are listed below.

Innovative activities undertaken by faculty members to improve teaching and learning process:

- The faculty are oriented towards outcome based Education (OBE) and are actively utilizing the OBE to cater the learning needs of students by innovative way.
- Faculty Innovations in Teaching is being supported and followed at the institutional level, to improve teaching and learning process. Faculty members are encouraged for certification courses to enhance their competencies. Pedagogical approaches include PPTs, online classrooms, blogs, models, charts etc., along with conventional methodologies.

EXCLUSIVE NOTES PREPARATION FOR SUBJECTS

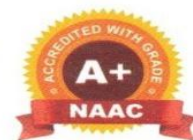
Exclusive notes on many subjects of Electrical And Electronic Engineering has been prepared by the faculty members of this department and distributed to the students to enable them to learn the subjects better. These notes contain important questions, critical analysis of problems with clearly depicted solutions. These notes serve as a helping tool for them and serve to enhance their performance in exams. visit: <https://siddhartha.ac.in/eee.php>

EXCLUSIVE VIDEOS COLLECTION AND DISPLAY FOR SUBJECTS

Exclusive videos have been collected by the faculty in different subjects for displaying them to students during discussions in class rooms. These videos enhance their understanding abilities and create more interest towards learning the subjects. visit: <https://siddhartha.ac.in/eee.php>

EXCLUSIVE NPTEL FACILITY FOR STUDENTS FOR LISTENING TO SPECIAL LECTURES

An exclusive audio-visual facility has been developed and is being maintained to listen to NPTEL lectures by experts from IITs. This facility is being used by the faculty and students and enables them to listen to lectures in addition to the regular class room teaching. Faculty and



students upgrade their knowledge by listening to these lectures. This facility is available in the library and departmental laboratory. visit: <https://siddhartha.ac.in/eee.php>

SOFT SKILLS CLASSES FOR PERSONALITY DEVELOPMENT

Understanding the need of one's personality that enables an individual to act more genuinely and effectively in a team environment, students are encouraged to deliver presentations in the class which help them to develop ability to gather information, make decisions and interact with others. Soft skills classes empower students with confidence, boldness, expressiveness etc., also the students' personality is overall developed.

REFRESHER COURSES AND ORIENTATION PROGRAMS ORGANIZED FOR IMPROVEMENTS IN TEACHING

1. Refresher courses have been organized by the department involving experienced faculty and subject experts for power electronics ,power system protection,Hve, electrical machines etc.. This has helped the faculty (especially junior faculty) to improve their knowledge and also learn effective techniques of teaching these subjects.
2. The department conducts seminars on latest research topics which is to be delivered by faculty members in turns every week so that the faculty are abreast with the latest developments in their fields of interest and specialization.

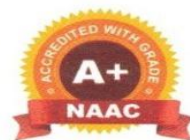
IMPROVED INSTRUCTION METHODOLOGY IN LABORATORIES

Special focus is given in instruction methodology in laboratories where the emphasis is more on students' ability to individually gain in-depth knowledge while conducting the experiments. In this regard, the following procedures are followed:

1. Laboratory manuals are prepared giving the details of the procedure, specifications, etc., along with a good number of objective questions. The students have to complete the experiment and also summarize their observations of the experiment in the form of results and discussions. All the details are then written meticulously in the respective laboratory observations and then in records.
2. The students are required to study the experiment and know the procedure in the manual before conduct of the experiment. The group of students is also encouraged to discuss among themselves during this study and be ready to answer any questions raised by the faculty in this regard.

QUALITY OF LABORATORY EXPERIMENTS

All laboratories are equipped with latest equipment with standard operation procedures. Students conduct experiments in group of 3. Each student prepares a lab record which is assessed by the teacher immediately after the completion of the experiment or before



commencement of the next practical. Each student in the practical record indicates the collection of data and analysis along with the conclusion.

It has been observed that this method of instruction made students prepare and understand the correlation of the experiments with the related theory and also made them confident on conducting the experiment on their own.

A. THE WORK MUST BE AVAILABLE ON INSTITUTE WEBSITE

Faculty Innovations in teaching and learning are placed in the institute website <https://siddhartha.ac.in/eee.php>

B. THE WORK MUST BE AVAILABLE FOR PEER REVIEW AND CRITIQUE

In every academic year, the faculty members conduct numerous activities to ease the learning. All the activities are made available in the web platform for reference, suggestions and comments by the students and academic peers. The mail-id of the concerned faculty member is provided in the website for this purpose. The activities are also posted in the intranet for internal review and suggestions.

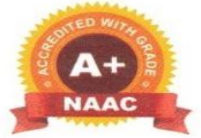
C. THE WORK MUST BE REPRODUCIBLE AND DEVELOPED BY OTHER SCHOLARS

The activities are provided with the download option; the viewers can implement them, develop further and reproduce.

D. STATEMENT OF CLEAR GOALS, USE OF APPROPRIATE METHODS, SIGNIFICANCE OF RESULTS, EFFECTIVE PRESENTATION AND REFLECTIVE CRITIQUE

The regular teaching is supplemented by activity based learning to help the students

- Understand the concepts clearly
- Able to work in teams
- Correlate the theory with application
- Improve thinking, analytical and creativity skills
- Develop presentation skills
- Increase their span of attention
- creating interest and curiosity through activities.



Name of the Faculty: Mrs. B. Harini Rao **A.Y.** 2023-24 **Sem:** III/II
Date: 15-04-2024 **Subject:** PSP

Role Play: Circuit Breaker Failure Handling

Objectives and Goals:

Objectives

- To understand the working principle of circuit breakers and their importance in protecting power systems.
- To identify causes of circuit breaker failure, such as mechanical, electrical, or control system faults.
- To demonstrate the sequence of operations followed by engineers and operators when a circuit breaker fails.
- To develop problem-solving and decision-making skills in emergency fault scenarios.
- To encourage teamwork and communication between protection engineers, control room operators, and maintenance staff during fault handling.

Goals

- Students should simulate real-time fault handling procedures to learn safe and efficient response methods.
- Participants should analyze relay operations and backup protection schemes used during circuit breaker failures.
- The role play should help learners correlate theoretical protection concepts (like breaker failure relays and tripping logic) with practical system operation.
- Students should be able to prepare a fault-handling report highlighting cause, effect, and preventive measures.
- The activity should build confidence in handling high-stress situations in substation or grid environments.

Characters / Roles

- Control Room Operator (CRO) – Monitors the substation, reports faults, and initiates tripping commands.
- Protection Engineer (PE) – Analyzes relay indications and protection schemes.
- Maintenance Engineer (ME) – Checks mechanical and electrical issues in the breaker.
- Shift In-Charge (SI) – Supervises and authorizes operations.
- Safety Officer (SO) – Ensures all safety measures are followed.

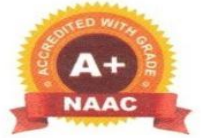
Scene Setting

A 132/33 kV substation. Suddenly, a line fault occurs, and the circuit breaker fails to open even after the relay has operated.

Role Play Flow & Dialogues

Step 1 – Fault Detection

CRO: (looking at SCADA screen) Sir, there's a fault indication on Line-2! The relay has operated, but the breaker hasn't tripped!



SI: Confirm the breaker status. Is there any trip command sent?

CRO: Yes, trip command issued — but breaker position is still showing ‘CLOSED’.

Step 2 – Analysis by Protection Engineer

PE: This indicates a possible circuit breaker failure. Let’s check the breaker failure relay and initiate the backup tripping scheme for isolation.

SI: Proceed immediately. Ensure no personnel are near the affected panel.

Step 3 – Backup Protection Activation

PE: Backup relay has tripped the upstream breaker successfully. Fault is now isolated.

SO: All areas are now safe. Let’s lock out the faulty breaker for inspection.

Step 4 – Maintenance Check

ME: (after inspection) The operating coil seems burnt, and there’s a hydraulic pressure loss in the mechanism. It’s a mechanical failure.

SI: Record this in the logbook and raise a maintenance request. The breaker must not be re-energized until repairs are complete.

Step 5 – Reporting and Discussion

PE: We’ll prepare a breaker failure analysis report, highlighting protection operation time, relay sequence, and cause of failure.

CRO: Also updating SCADA logs and fault recorder data for documentation.

SI: Good teamwork. This shows the importance of breaker failure protection schemes and coordination between departments.

Learning Outcomes

- Students understand breaker failure logic and backup protection coordination.
- Demonstrates real-time teamwork during emergencies.
- Reinforces theoretical concepts of protection systems and relays.



SIDDHARTHA

College Code - TP

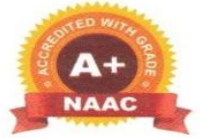
INSTITUTE OF ENGINEERING & TECHNOLOGY

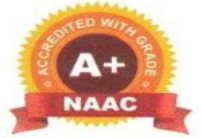
(Approved by AICTE, Affiliated to JNTUH & Courses Accredited by NBA)

Vinobha Nagar, Ibrahimpatnam, Ranga Reddy Dist - 501 506, Telangana, INDIA.

E-mail : info@siddhartha.ac.in; www.siddhartha.ac.in

UGC Autonomous





Name of the Faculty: Mr. A. Ram Reddy A.Y. 2022-23Sem: III/II

Date:08-09-2022 Subject: WSES

Role Play: Solar Energy vs Hydroelectric Energy

Objectives

- To understand the working principles of solar and hydroelectric power generation.
- To compare renewable energy sources based on efficiency, cost, and environmental impact.
- To create awareness about the importance of clean and sustainable energy systems.
- To improve students' communication, presentation, and critical thinking skills.
- To encourage teamwork and analytical thinking about energy solutions for the future.

Goals

- Students should be able to explain the generation process and advantages of both solar and hydroelectric systems.
- Participants should identify challenges such as cost, location dependency, and maintenance.
- The role play should help learners connect theoretical renewable energy concepts with real-life applications.
- Learners should demonstrate debate, cooperation, and problem-solving in energy discussions.
- The activity should promote an understanding of the global shift toward renewable energy sources.

Characters / Roles

- Moderator / Teacher – Introduces the topic and facilitates the discussion.
- Solar Energy Expert / Engineer – Explains the advantages and working of solar energy.
- Hydroelectric Plant Engineer – Defends the importance and reliability of hydro power.
- Environmental Activist – Focuses on sustainability and ecological impacts.
- Government Energy Officer – Talks about policies, subsidies, and national energy goals.
- Common Citizen / Student – Represents the consumer's perspective on power supply and cost.

Scene Setting

A classroom discussion titled "Powering the Future: Solar vs Hydroelectric Energy." Each participant presents their viewpoint, followed by a brief debate and conclusion.

Role Play Script

Moderator: Good morning everyone! Today's role play focuses on "Solar vs Hydroelectric Energy." Both are renewable, but which one is more sustainable for the future?

Solar Expert: Solar power is clean, silent, and abundant. It's perfect for homes and industries in sunny regions. With new technology, efficiency is increasing and costs are dropping.

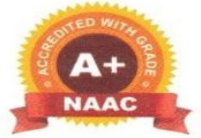
Hydroelectric Engineer: Hydro power is the backbone of renewable energy. It provides large-scale, stable electricity and supports grid reliability, unlike solar which depends on sunlight availability.

Environmental Activist: Both are renewable, but hydro projects can disturb river ecosystems, while solar farms require large land areas. We need balance — clean power without harming nature.

Government Officer: The government supports both through subsidies and policies. However, solar energy is easier to implement in rural and rooftop areas, while hydro is best for long-term national supply.

Common Citizen: As a consumer, I prefer energy that's affordable and reliable. Solar helps reduce bills, but hydro ensures steady supply during night and rainy seasons.

Moderator: Excellent points! Before we conclude, what is your vision for the future of renewable



energy?

Solar Expert: A bright future powered by the sun — independent, clean, and sustainable.

Hydro Engineer: Water energy will continue to drive large-scale power plants and keep the grid balanced.

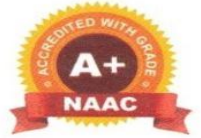
Environmental Activist: Let's aim for harmony — a mix of both for a greener planet.

Moderator: Wonderful! The future isn't solar or hydro — it's solar and hydro, working together for sustainable growth.

Learning Outcomes

- Students learn the technical, environmental, and economic aspects of renewable energy systems.
- Encourages collaboration and public speaking.
- Builds awareness about sustainable and mixed energy solutions for the future.





Name of the Faculty: Mrs. J. Reshma A.Y. 2024-25 Sem: III/I

Date: 12-06-2025

Subject: Electrical Vehicles

Role Play: Electric Vehicles vs Diesel Vehicles

Objectives

- To understand the fundamental differences between electric and diesel vehicle technologies.
- To analyze the advantages and disadvantages of EVs and DVs in terms of cost, performance, and environmental impact.
- To encourage critical thinking about sustainable transportation and energy efficiency.
- To enhance students' communication and debate skills through practical discussion.
- To promote awareness about government policies and innovations supporting electric mobility.

Goals

- Students should be able to explain how EVs and DVs operate and compare their working principles.
- The activity should help students identify environmental and economic benefits of EVs.
- Learners should demonstrate teamwork and presentation skills in role-based discussion.
- Participants should understand the real-world challenges in shifting from fossil fuels to electric mobility.
- The role play should help bridge classroom theory with real-world applications in transportation engineering.

Characters / Roles

- Moderator / Teacher – Introduces the topic and guides the discussion.
- EV Manufacturer Representative – Promotes the benefits of electric vehicles.
- Diesel Vehicle Manufacturer Representative – Defends diesel vehicles' performance and reliability.
- Environmental Activist – Focuses on pollution, sustainability, and climate change.
- Common Citizen / Vehicle Owner – Shares opinions based on cost and convenience.
- Government Officer / Policy Maker – Talks about subsidies, infrastructure, and policies.

Scene Setting

A talk show or debate in a classroom setup titled "The Future of Transportation: Electric vs Diesel Vehicles."

Role Play Script

Moderator: Good morning everyone! Today's discussion is about "Electric Vehicles vs Diesel Vehicles." Let's explore which technology truly drives our future.

EV Manufacturer: Electric vehicles are the future of transportation. They run quietly, produce zero tailpipe emissions, and are cheaper to operate. With battery technology improving, range anxiety is no longer a big issue.

Diesel Vehicle Representative: True, but diesel engines offer better power and are ideal for long-distance travel and heavy loads. EVs still rely on limited charging infrastructure and long charging times.

Environmental Activist: Diesel vehicles emit carbon dioxide and particulate matter that harm the environment. EVs help in reducing greenhouse gases and improving air quality, especially in urban areas.

Common Citizen: As a customer, I want affordability and reliability. Diesel vehicles are cheaper upfront, but EVs save money in the long run with lower fuel and maintenance costs.

Government Officer: Our government is investing in EV charging stations and offering subsidies to



make EVs affordable. We are moving towards sustainable mobility for a cleaner future.

Moderator: Both sides make valid points. The future depends on balancing technology, affordability, and environmental needs. Let's conclude with each participant's final thought.

EV Manufacturer: Electric mobility is not just a trend — it's a necessity for a sustainable planet.

Diesel Representative: Diesel still plays an important role, especially where high torque and range are critical.

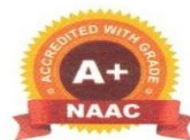
Environmental Activist: The choice we make today determines our environment tomorrow.

Moderator: Excellent discussion! Students, remember — innovation is not about replacing one system but improving how we power our world.

Learning Outcomes

- Students understand the technological, economic, and environmental aspects of EVs and DVs.
- Develops analytical and communication skills through active participation.
- Promotes awareness about sustainable and clean energy solutions.





e-learning:

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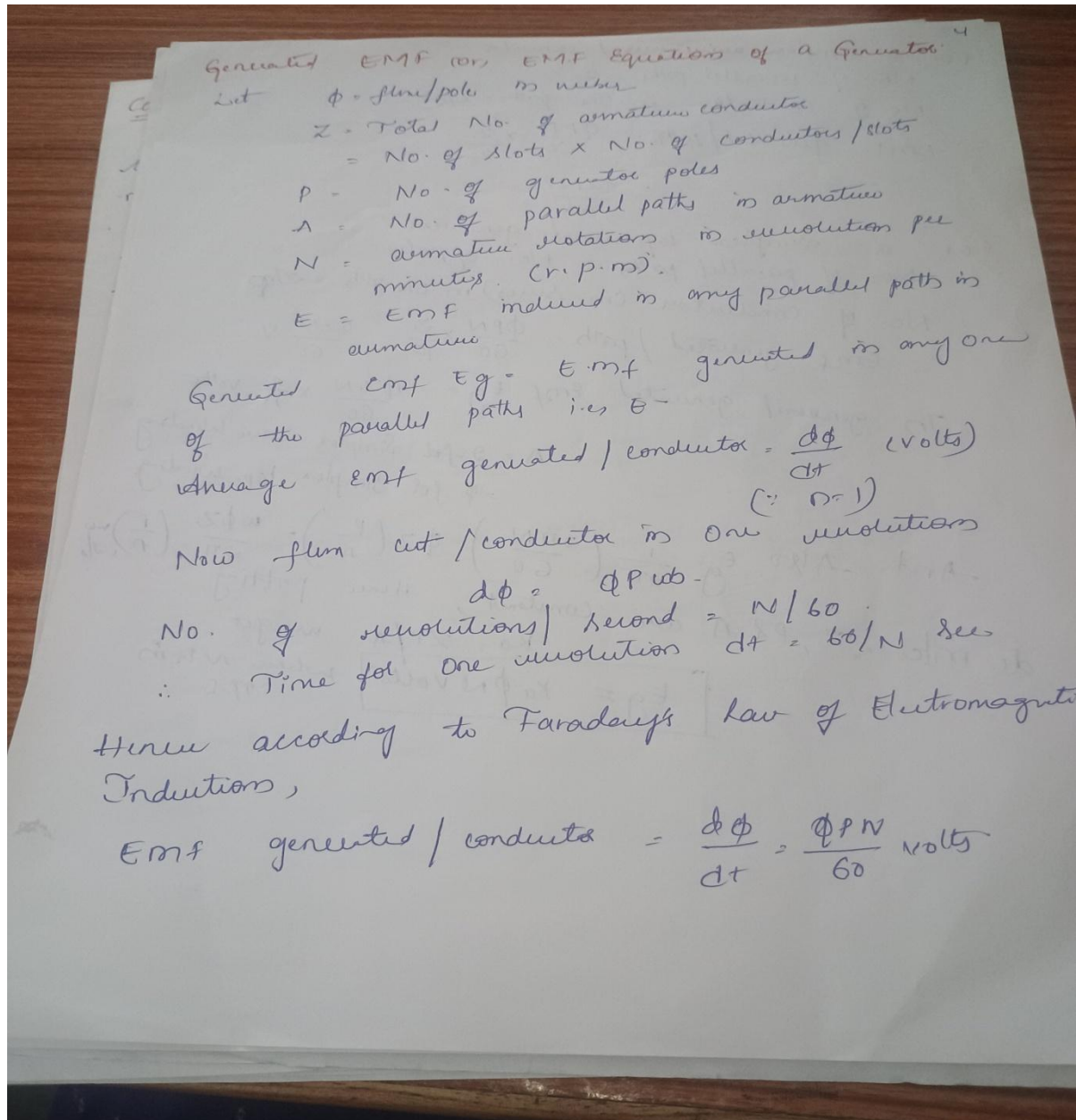
https://youtube.com/playlist?list=PLp6ek2hDcoNCc3IgSGVjIsiMhM_Ll9FEn&si=Bcxw1yOTuXG4lrXu

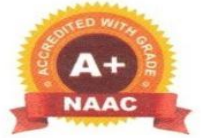
https://www.instagram.com/electrical._engineering?igsh=YmphazVzZ2x5bG5m.

s.no:	Name of faculty	Subject	Link
1.	Mrs.B.Harini rao	POWER SYSTEM	https://youtu.be/f7w73MusxgA?si=eJnoc0K7TO5y2oHq
2.	Dr.D.Prashant h sai	CONTROL SYSTEMS	https://youtu.be/HcLYoCmWOjI?si=cJcUdLFrSMHRrdIw
3	G.Sathish Goud	EM-1	https://youtube.com/playlist?list=PL9s6YpaXIcJt1IeX3JV1z1j1E9JUi3bFj&si=iqAKGbsGbStCaWZj



EXCLUSIVE NOTES PREPARATION FOR SUBJECTS:





EXCLUSIVE VIDEOS COLLECTION AND DISPLAY FOR SUBJECTS



Electrical Machines

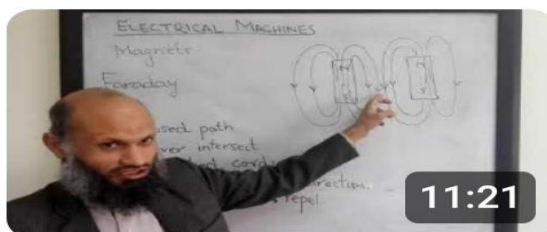
by MAFarooqi

Course • 65 lessons, 5 hours

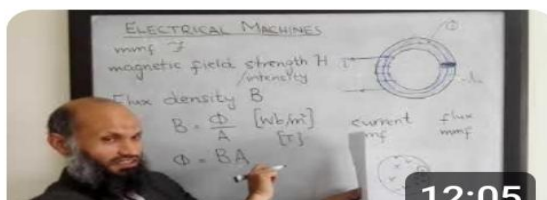
0 of 65 lessons complete

These video lectures are part of an introductory course on Electrical Machines Theory for undergraduate students ...more

Play ⓘ ⌵ 📌



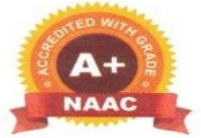
EE213 - 1a -
Magnets, lines o...
MAFarooqi
53K views • 4 years...



EE213 - 1b
- mmf, field stre...
MAFarooqi
28K views • 4 years...



Electrical Machines Youtube Lecture



Control Systems



by Neso Academy

Course • 87 lessons, 2 hours

0 of 87 lessons complete

This course of Control Systems introduces to the learner, the theory and the practical applications of Control Syst...more



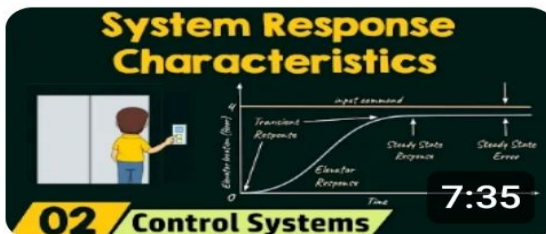
Play



Introduction to Control Systems



Neso Academy
10 lakh views • 5 y...

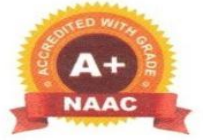


System Response Chara...



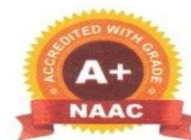
Neso Academy
3.8 lakh views • 5 y...

Control system youtube lecture



QUALITY OF LABORATORY EXPERIMENTS





THE WORK MUST BE AVAILABLE ON INSTITUTE WEBSITE

THE WORK MUST BE AVAILABLE FOR PEER REVIEW AND CRITIQUE

THE WORK MUST BE REPRODUCIBLE AND DEVELOPED BY OTHER SCHOLARS:

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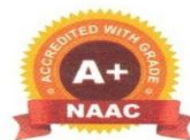
SIDDHARTHA
INSTITUTE OF ENGINEERING & TECHNOLOGY
APPROVED BY AICTE & AFFILIATED TO JNTU HYDRABAD



> Department Academic Committee
Advanced Infrastructure
Department Events
> Course Files
> Guest Lectures
> Workshops / Seminars
> Industrial Visits
> Student Chapters - ISTE and IETE
> Cultural Events / Fest
> Innovations

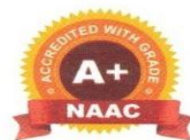
ACTIVITIES

With an intention to provide exposure to our students and faculties, we have organized seminars, paper presentations and technical quiz etc. So that they can perceive the methodologies followed by others and learn the



ADD ON COURSES(2023-2024):

S. No	Title of the programs	Tentative Month of Add-on Program conduction	Co-Ordinator
1	IOT Applications in Electrical Engineering	August-2023	Mr. G. Sathish Goud
2	Smart Hybrid EV	November-2023	Mr. A. Ram Reddy
3	Smart Grid & Energy Auditing	February-2024	Dr. A. Sateesh Kumar
4	Software's used in Electrical Electronics Engineering	March-2024	Dr. D. Prashanth Sai



ADD ON COURSES(2022-2023):

S. No	Title of the programs	Tentative Month of Add-on Program conduction	Co-Ordinator
1	Lab View	August-2022	Dr.Prashanth Sai
2	Embedded Controllers And Its Applications In Electrical Engineering	September - 2022	Dr.Rajnish Sharma
3	Industrial Automation With Plc And Scada	November - 2022	Mr.Syeed Umar Sayeed
4	Arduino Programming	February-2022	Mr.Satish Goud