The Department muchy held on 12.11.22 at players department under the Inchange Dr. Civs. Taypele New . The following goods is to be discussed. Boude! 1) repulable the acodeene beends. 2) prepare ta NANC docuerts. 3) Individule paper publications upalati in website. on "cross cuting issues in nuclear every,
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From
Dr. G V S Jayapala Rao, In charge
Department of Physics,
Govt. Degree College for Men,
Srikakulam.

To
The Principal,
Govt. Degree College for Men,
Srikakulam.

Subject: Request to Introduce Certificate Course for UG -B.Sc Students- reg.

Respected Madam,

The Department of Physics in its meeting held on 12-11-22 at Department of Physics passed a resolution to request the introduction of a certificate course on Cross cutting issues in Nuclear Energy for B.Sc students at Govt. Degree College (M)-Srikakulam. This course will provide valuable additional skills and opportunities, enhancing our student's academic and career prospects. Your consideration of this request is greatly appreciated.

Thanking you Madam,

Yours Sincerely,

CERTIFICATE COURSE BROCHURE 2022-23

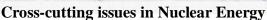


GOVERNMENT DEGREE COLLEGE (MEN)

ACCREDITED BY NAAC WITH B++ (CGPA 2.90)

Srikakulam - 532001, Andhra Pradesh, India

ph: 08942 222383 e-mail: info@gdcmsklm.ac.in website: https://www.gdcmsklm.ac.in





Offered by

Department of Physics, Govt. Degree College (Men), Srikakulam

About the Course: Cross-cutting issues in nuclear energy encompass various challenges that transcend specific aspects of the industry. Safety remains paramount, addressing both operational and accidental risks. Proliferation resistance involves preventing the spread of nuclear weapons technology. Efficient waste management is critical for handling radioactive byproducts responsibly. Additionally, public perception, regulatory frameworks, and international cooperation are vital factors. Economic considerations, such as the cost of construction and decommissioning, further influence the industry's viability. Tackling these multidimensional challenges requires a comprehensive and interdisciplinary approach to ensure the continued development and safe deployment of nuclear energy for meeting global energy needs while minimizing environmental and security risks.

Number of Credits: Nil

Mode of Teaching: Offline

Fee Structure: NIL

Course Contents: Overview of Nuclear Energy, Importance of Cross-Cutting Issues, Regulatory Framework, Ethics in Nuclear Energy, Environmental Impact Assessment (EIA), Nuclear Energy and Climate Change, Nuclear Security, Social and Economic Aspects, Advanced Nuclear Technologies, Future Trends and Challenges.

References: 1. Nuclear Power: A Reference Handbook by Harry Henderson.

2. Nuclear Energy Policy: A Reference Handbook Earl Kruschke.

Eligibility Criteria: B.sc final year Mathematical Science students only. Important Dates

Registration start date: 02 /01/2023
 Last date for registration: 10/01/2023
 Commencement of classes: 20/01/2023
 Last class work: 25/02/2023
 Date of final examination: 25/02/2023

Paper Code: GCMPHY02

Admission Procedure: Interested participants can complete the registration process through the following registration forms forthe above course is available at the department of Physics. Admission process for this course is on first-come-first- serve basis and the last date for registration to the courses 10/01/2023 (Tuesday).

Class Duration: Classes will be held for 30 hours starting from 20/01/2023 (Thurs day). Every week classes will be held on Monday to Friday (except for the national holidays/festivals). Final examination will be conducted on 25/02/2023 (Saturday). The class timings will be 4.30 - 5.30 hours IST (except for the day of the final examination).

Assessment: Assessment will be based on completion of assignments and performance in the test conducted at the end of thecourse. The participant must obtain at least 50% in the test to avail the course completion certificate.

Course Coordinator

Mr. Mohanarao Barri, Lecturer in Physics, Department of Physics According to the Department of physics resolution,
To start a certificate coxerse on cross-cutting
issues in muclear overery" from 20-1-2023.

for 30 hrs during warling days in physics lab.
All final year students are objetile for it.
Intooling students are bequested to enroll
your names to in-charge of physics as or
before 19-1-2023.

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GOVT. DEGREE COLLEGE(MEN), SRIKAKULAM DEPT. OF PHYSICS

CERTIFICATE COURSE

CROSS CUTTING ISSUES IN NUCLEAR ENERGY

SYLLABUS

Session 1 (2 hours): Overview of Nuclear Energy

Introduction to nuclear power generation

Historical perspective and milestones

Basic principles of nuclear reactions

Session 2 (2 hours): Importance of Cross-Cutting Issues

Definition and significance of cross-cutting issues

Role in nuclear energy safety and sustainability

Examples of cross-cutting issues in nuclear energy

Session 3 (2 hours): Regulatory Framework

Overview of nuclear regulatory bodies

Regulatory requirements and standards

Safety culture and its importance

Session 4 (2 hours): Ethics in Nuclear Energy

Ethical considerations in nuclear science and technology

Case studies on ethical challenges

Professional responsibility and accountability

Week 2: Environmental Impact and Sustainability

Session 5 (3 hours): Environmental Impact Assessment (EIA)

Basics of EIA in the context of nuclear energy

Case studies on EIA for nuclear facilities

Mitigation strategies and best practices

Session 6 (3 hours): Nuclear Energy and Climate Change

Contribution of nuclear energy to climate change mitigation

Comparison with other energy sources

Sustainable development goals and nuclear energy

Week 3: Nuclear Security and International Cooperation

Session 7 (3 hours): Nuclear Security

Nuclear security challenges and threats

International frameworks for nuclear security

Role of technology in nuclear security

Session 8 (3 hours): Non-Proliferation and Treaty Regimes

Overview of non-proliferation treaties

International cooperation in nuclear energy

Case studies on successful collaborations

Week 4: Social and Economic Aspects

Session 9 (3 hours): Social Acceptance of Nuclear Energy

Public perception and communication strategies

Community engagement and involvement

Addressing public concerns and misconceptions

Session 10 (3 hours): Economic Considerations in Nuclear Energy

Cost-benefit analysis of nuclear power

Financing and investment challenges

Economic competitiveness with other energy sources

Week 5: Emerging Technologies and Future Outlook

Session 11 (3 hours): Advanced Nuclear Technologies

Overview of advanced reactor designs

Small modular reactors (SMRs) and their potential

Fusion energy developments

Session 12 (3 hours): Future Trends and Challenges

Technological advancements in nuclear energy

Anticipated challenges and opportunities

Strategies for continued improvement and innovation

Assessment and Certification

Assignment: Research paper or case study on a specific cross-cutting issue

Final Exam: Comprehensive examination covering all topics

Certificate: Awarded upon successful completion of the course

MODEL PAPER FOR CERTIFICATE COURSE

DEPARTMENT OF PHYSICS

COURSE CODE: GDCMPHY02

(CROSS CUTTING ISSUES IN NUCLEAR ENERGY)

MAX.MARKS:75 TIME: 03 HOURS

	<u>SECTION –I</u>	
	Answer any five of the following	5x5=25 Marks
1.		
2.		
3.		
4.5.		
6.		
7.		
8.		
9.		
10.		
	<u>SECTION –II</u>	
	Answer all the five questions.	5x10=50 Marks
11. (a)		
or		
(b)		
12. (a)		
or (b)		
13. (a)		
or		
(b)		
14. (a)		
or		
(b)		
15. (a) or		
(b)		
(3)		

GOVT.DEGREE COLLEGE (MEN)-SRIKAKULAM **CERTIFICATE COURSE EXAM PAPER**

(Cross-Cutting Issues in Nuclear Energy)

MAX.MARKS:75 TIME: 3 Hrs

SECTION-I

5x**5**=**2**5marks Note: Answer any five of the following

- 1. Define the term "cross-cutting issues" in the context of nuclear energy and provide examples.
- 2. Explain how an interdisciplinary approach can enhance the understanding and management of cross-cutting issues in the nuclear energy sector.
- 3. Discuss the key regulatory frameworks governing nuclear energy. How do these frameworks address cross-cutting issues such as safety and environmental concerns?
- 4. Describe the importance of international collaboration in addressing cross-cutting issues in nuclear energy. Provide examples of successful collaborative initiatives.
- 5. How do technological advancements impact cross-cutting issues in nuclear energy? Provide specific examples and discuss their implications.
- 6. Identify and discuss ethical considerations related to nuclear energy, specifically in the context of cross-cutting issues. How can ethical practices be integrated into decision-making?
- 7. Outline the safety measures that should be implemented to address cross-cutting issues in nuclear energy. Provide examples and discuss their significance.
- 8. Analyze the environmental impact of nuclear energy, considering cross-cutting issues. How can the industry mitigate negative effects and promote sustainability?
- 9. Explain the importance of stakeholder engagement in managing cross-cutting issues in nuclear energy. Provide strategies for effective communication with various stakeholders.
- 10. Identify and discuss two current challenges in the nuclear energy sector that involve crosscutting issues. How can these challenges be addressed from a theoretical standpoint?

<u>SECTION –II</u> Answer all the five questions.

5x10=50 marks

11.

a. Discuss the importance of adopting an interdisciplinary approach in understanding and addressing cross-cutting issues in the field of nuclear energy. Provide examples to illustrate your points.

(Or)

b. Explore the ethical dilemmas associated with cross-cutting issues in nuclear energy. Discuss the principles and frameworks that can guide ethical decisionmaking in the industry.

12.

13.

- a) Analyze the role of international collaboration in managing cross-cutting issues in the nuclear energy sector. Discuss challenges and opportunities for global cooperation. (Or)
- b) Examine the regulatory frameworks that govern nuclear energy. How do these regulations address cross-cutting issues, and what improvements could be made to enhance safety and sustainability?
- a) Explore the impact of technological advancements on cross-cutting issues in nuclear energy. Discuss specific innovations and their potential implications for the industry.

(Or)

- b) Assess the environmental impact of nuclear energy and discuss strategies for achieving sustainability. How can the industry balance energy production with environmental conservation?
- 14.
- a) Discuss the principles of risk management in the context of cross-cutting issues in nuclear energy. Provide examples and evaluate the effectiveness of current risk mitigation strategies. (Or)
- b) Analyze the role of effective communication in managing public perception of nuclear energy. How can the industry address concerns and build public trust regarding cross-cutting issues?
- a) Explore the social and cultural factors that influence the management of crosscutting issues in nuclear energy. How can these factors be taken into account in decision-making processes? (Or)
 - b) Identify and discuss two significant challenges and opportunities that the nuclear energy sector may face in the future regarding cross-cutting issues. Propose strategies for navigating these challenges and leveraging opportunities.

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Feedback

Name of the Certificate Course	Cross-Cutting issues in Nuclear Energy
Department	Physics
Date	25.02.2023
Name of the participant	S Bhorathi
Group	III - MPCS

1. Did the event fulfil it's objectives?



2. How useful was the event for you? (0 being Not useful and 5 Most useful)

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3. Rate the overall success of the course (0 being Not useful and 5 Most useful)

-						
	0	1	2	3	4	5

- 4. List the key takeaway points from the events.
- 5. Suggestions if any

Signature of the Participant





Feedback

Course	he Certificate	Cross-Cutting issues in Nuclear Energy							
Departmer	it	Physics			NA PARTIES				
Date		25.02.2023	,						
Name of the	he participant	TN		-					
Group		TIL	Suna Siectives?	ankar Re	10				
2. 1	low useful wa	is the event f	or you? (0 bein	g Not useful an	nd 5 Most useful)				
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0	1	2	3	4	5 /				
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4. List the key takeaway points from the events.

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Signature of the Participant





Feedback

Name of the Certificate Course	Cross-Cutting issues in Nuclear Energy				
Department	Physics				
Date	25.02.2023				
Name of the participant	SAVARA SOMESWA KARAO				
Group	TILB SC MPC				

Did the event fulfil it's objectives?

Yes/No

2. How useful was the event for you? (0 being Not useful and 5 Most useful)

-					
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		2	2		3

3. Rate the overall success of the course (0 being Not useful and 5 Most useful)

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4. List the key takeaway points from the events.

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S. Some Swelco.
Signature of the Participant





Feedback

Name of the Certificate Course	Cross-Cutting issues in Nuclear Energy
Department	Physics
Date	25.02.2023
Name of the participant	K. GAYATRI - MPCS
Group	MPCS-III B.Sc

1.	Did	the	ev	ent	ful	fil	it	S	obje	ctiv	es?

V Yes/No

2. How useful was the event for you? (0 being Not useful and 5 Most useful)

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3. Rate the overall success of the course (0 being Not useful and 5 Most useful)

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4. List the key takeaway points from the events.

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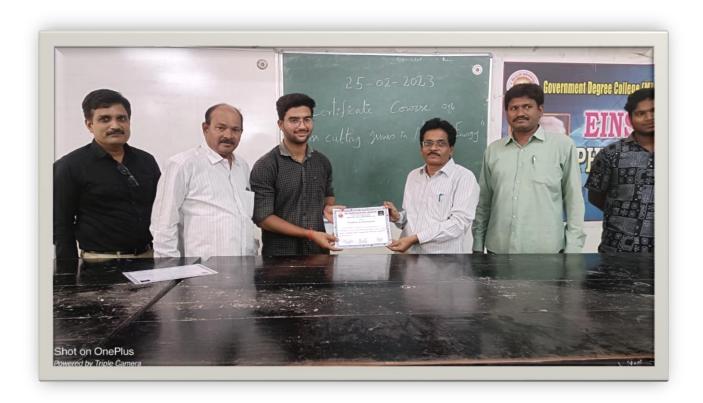
$\underline{ConsolidatedFeedback}$

Totalno.ofParticipants =30

No.ofparticipantsfromwhomfeedbackiscollected=18

S.No		No.ofparticipantsgraded" Yes"		No.ofparticipantsgraded"No"				
1	Didtheeventf ulfilit'sobject ives	1	8	00				
2		No. ofparticipa ntsgraded -	No. ofparticipa ntsgraded – 2	No. ofparticipa ntsgraded - 3	No. ofparticipa ntsgraded -	No. ofparticipa ntsgraded - 5		
3	Howusefulwast heeventforyou	-				18		
4	Ratetheoveralls uccessoftheeve nt			Perel		18		
5		All the students cleared their speculations on nuclear energy issues and safety of its utilization						
6	Suggestions if any	They suggested to continue this course to the upcoming batches						

Coordinator











Neutron

Srikakulam, Andhra Pradesh, India-532001

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Certificate Course

Cross-cutting Issues in Nuclear Energy

This is to certify that Kum. Paidi Amrutha, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. Her performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

TO T

Sri M.V. Satyanarayana



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Certificate Course

Cross-cutting Issues in Nuclear Energy

This is to certify that Mr. Bukka Appala Naidu , III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the **Department of Physics** and completed the course programme during from January 2023 to February 2023. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

Sri M.V. Satyanarayana







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This is to certify that Mr. Arika Rajesh Kumar, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

To The

Sri M.V. Satyanarayana





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This is to certify that Mr. Ch. Kranthi Kumar, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

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Sri M.V. Satyanarayana







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Certificate Course

Cross-cutting Issues in Nuclear Energy

This is to certify that Mr. Ch. Raja Sekhar, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

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Sri M.V. Satyanarayana





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Certificate Course

Cross-cutting Issues in Nuclear Energy

This is to certify that Mr. Donkana Jeevan Maheshment B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Crosscutting Issues in Nuclear Energy, organized by the **Department of** Physics and completed the course programme during from January 2023 to February 2023. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

Sri M.V. Satyanarayana



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This is to certify that Kum. **Gedela Gayathri**, **III B.Sc.** (MPCs), **Govt. Degree College** (Men), **Srikakulam** got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the **Department of Physics** and completed the course programme during from **January 2023 to February 2023**. Her performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

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Certificate Course

NeutroCross-cutting Issues in Nuclear Energy

This is to certify that Mr. Goudo Sagaro, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the **Department of Physics** and completed the course programme during from January 2023 to February **2023**. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

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This is to certify that Mr. **Guvvada Hari Kiran**, **III B.Sc.** (MPCs), **Govt. Degree College** (Men), **Srikakulam** got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the **Department of Physics** and completed the course programme during from **January 2023 to February 2023**. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

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This is to certify that Kum. Kallepalli Gayathri, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. Her performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

Note:

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Certificate Course on

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This is to certify that Mr. Metta Mahesh Babu, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

7

Sri M.V. Satyanarayana





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Certificate Course

NeutroCross-cutting Issues in Nuclear Energy

This is to certify that Mr. Nagavamsapu Gopal, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

907

Sri M.V. Satyanarayana





Neutron

Srikakulam, Andhra Pradesh, India-532001

(Accredited by NAAC B++ (CGPA:2.90)) (Affiliated to Dr.BRAU, Srikakulam)

Certificate Course

Cross-cutting Issues in Nuclear Energy

This is to certify that Mr. Savara Karthik, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the **Department of Physics** and completed the course programme during from January 2023 to February 2023. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

Sri M.V. Satyanarayana





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Certificate Course

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This is to certify that Mr. Savara Suresh, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. His performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

707

Sri M.V. Satyanarayana





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Certificate Course on

Cross-cutting Issues in Nuclear Energy

This is to certify that Kum. Suru Bharathi, III B.Sc. (MPCs), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. Her performance is credited with "A" Grade.

Sri Mohanarao Barri

Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

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Sri M.V. Satyanarayana







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This is to certify that Mr./Kum. Burru Vamsi, III B.Sc. (MPC), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. His/Her performance is credited with "A" Grade.

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Course Coordinator

Dr. G. V. S. Jayapala Rao

Incharge Dept. of Physics

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This is to certify that Mr. Sadi Barikayya, III B.Sc. (MPC), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. His/Her performance is credited with "A" Grade.

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This is to certify that Mr. Savara Someswara Rao, III B.Sc. (MPC), Govt. Degree College (Men), Srikakulam got registered himself/herself for the Certificate Course on Cross-cutting Issues in Nuclear Energy, organized by the Department of Physics and completed the course programme during from January 2023 to February 2023. His performance is credited with "A" Grade.

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