To, The Principal SSES Amt's Science College, Congress Nagar, Nagpur-12

Subject: Permission to conduct the add on courses in the Physics department (2022-2023)

Respected Sir,

This is to request you that, we wish to conduct the add on courses in Physics department these are the certificate courses of thirty hours' time duration.

The details of the courses are submitted here with.

Hence please permit to run the same and oblige me.

Thanking you

2/07/2022

Yours sincerely

Dr. S. W. Anwane
Professor and Head
Department of Physics
Shi Shivaji Education Society Amravati's
SCIENCE COLLEGE
Congress Nagar, Nagpur.

Pervisted represent



# Science College, Nagpur



Certificate Course in Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy







# Science College, Congress Nagar, Nagpur

#### DEPARTMENT OF PHYSICS

## 2022-2023

# Course Module and Syllabus

Course Title: Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy

Course Coordinator: Dr. G. L. Jadhav

Course Overview: Environmental Physics explores the application of fundamental physics principles to understand and address critical environmental challenges. This Add-On Course provides students with a comprehensive understanding of climate change, atmospheric dynamics, and renewable energy technologies from a physics perspective. Through theoretical concepts, practical applications, and case studies, students will gain insights into the physics behind environmental phenomena and solutions.

Course Duration: [10 Week] 30 Hour: (16 August 2022 to 22 October 2022)

#### **Course Objectives:**

- Understand the fundamental principles of environmental physics and their applications.
- Analyse the physics of climate change, including greenhouse gas dynamics and climate feedback mechanisms.
- Explore atmospheric physics concepts, such as atmospheric circulation, weather patterns, and air pollution.
- Examine renewable energy technologies, including solar, wind, hydroelectric, and geothermal energy, from a physics perspective.
- Critically evaluate the role of physics in addressing environmental challenges and developing sustainable solutions.

#### Course Structure:

# Unit I: Introduction to Environmental Physics, Climate Change Physics

- Overview of environmental physics
- · Importance of physics in understanding environmental phenomena
- Historical perspectives and current trends
- · Greenhouse effect and radiative forcing
- Climate feedback mechanisms
- Modelling climate dynamics using physics-based approaches.

#### Unit II: Atmospheric Physics

Atmospheric composition and structure

- Atmospheric circulation patterns
- · Dynamics of weather systems and extreme events

# Unit III: Air Pollution and Aerosol Physics

- Sources and effects of air pollutants
- Aerosol formation and dynamics
- · Physics of atmospheric chemistry and pollution mitigation strategies

# **Unit IV: Renewable Energy Physics**

- · Principles of solar energy conversion
- Wind energy dynamics and turbine technology.
- · Hydroelectric and geothermal energy generation
- Physics-based analysis of renewable energy systems

Assessment: Final Exam will be taken using MCQ type questions.

# Prerequisites

- Basic understanding of physics principles (e.g., mechanics, thermodynamics)
- Recommended for students with an interest in environmental science, sustainability, or energy studies.

# **Course Materials:**

- Textbooks on environmental physics, climate science, and renewable energy
- Scientific papers, reports, and online resources

### **Course Outcomes:**

- Understand the Fundamentals of Climate Change: Explain the scientific principles underlying climate change, including the greenhouse effect, radiative forcing, and the role of greenhouse gases.
- Evaluate Human Impact on Climate: Assess the impact of human activities on climate, including emissions of greenhouse gases, deforestation, and land use changes.
- Understand Renewable Energy Technologies: Explain the principles and applications of various renewable energy technologies, such as solar, wind, hydro, and bioenergy.

By achieving these outcomes, students will be equipped with the knowledge and skills necessary to understand and address the challenges of climate change, atmospheric dynamics, and renewable energy.

# **Actions Taken Report**

The Add-on course on was successful in meeting its objectives. The theoretical knowledge gained by the participants will benefit them in future. Future iterations of the course will build upon the feedback received to ensure continued improvement. The course syllabus was developed to include topics such as the curriculum was designed to provide theoretical knowledge. Necessary resources were procured.

# \* The Structure of Syllabus and system of evaluation: -

Course	Theory Paper	Marks
Certificate Course in Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy	Theory paper- Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy	Theory
	*Theory examination will be of MCQ pattern having 50 questions each with equal marks.	100

Internal Quality Assurance Cell (IQAC)

S. S. E. S. A. Science College Congress Nagar, Nagpur. SEAL SEAL

Principal
S. S. E. S. Amravati's
Science College, Nagpur

# Science College, Congress Nagar, Nagpur

**Session 2022-23** 

# Certificate course (10 weeks)

(Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy)

# **Timetable**

Sr. No.	Day	Theory
1	Friday	GLJ (C8) Theory 4.00 PM - 5.00 PM
		GLJ (C8) Theory, 4.00 PM – 5:00 PM
2	Saturday	GLJ (C8) Theory, 5.00 PM - 6:00 PM

# Science College, Congress Nagar, Nagpur

Certificate Course on Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy (10 Week)

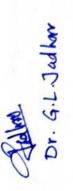
# Theory Class Attendance Sheet

2022-2023

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# Shri Shivaji Education Society Amaravati's Science College Congress Nagar, Nagpur Department of Physics

(2022-2023)

# Add-on Certificate Corse on Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy

#### THEORY EXAM

Date: 29/10/2022 Max. Marks: 100	Max. Time: 2 Hour Marks Obtained:
Student Name:	
Note: i) All questions are compulsory and car ii) Tick the correct option	ry equal marks  Sign. Of Invigilator:
Which of the following gases is primarily atmosphere?     Oxygen	responsible for trapping heat in the Earth!

- - a) Oxygen
  - b) Nitrogen
  - c) Carbon dioxide
  - d) Hydrogen
- 2. The greenhouse effect is primarily caused by:
  - a) Ozone depletion
  - b) Deforestation
  - c) Industrial pollution
  - d) Greenhouse gases
- 3. Which of the following is a major greenhouse gas released by agricultural activities?
  - a) Methane
  - b) Carbon monoxide
  - c) Sulfur dioxide
  - d) Nitrous oxide
- 4. The term "albedo" refers to:
  - a) Earth's rotation on its axis
  - b) Earth's magnetic field
  - c) Earth's reflection of sunlight
  - d) Earth's atmospheric pressure

- 5. Which of the following is a positive feedback mechanism contributing to global warming? a) Increased cloud cover b) Expansion of sea ice c) Melting of permafrost d) Increased volcanic activity The phenomenon known as "El Niño" is characterized by: a) Warmer-than-average sea surface temperatures in the Pacific Ocean b) Cooler-than-average sea surface temperatures in the Pacific Ocean c) Increased rainfall in South America
  - d) Decreased hurricane activity
- 7. Which renewable energy source relies on the gravitational pull of the moon?
  - a) Solar power
  - b) Wind power
  - c) Tidal power
  - d) Geothermal power
- 8. The conversion of sunlight into electricity is achieved through:
  - a) Photovoltaic cells
  - b) Wind turbines
  - c) Hydroelectric dams
  - d) Nuclear reactors
- 9. Which of the following is NOT a greenhouse gas?
  - a) Water vapor
  - b) Methane
  - c) Ozone
  - d) Nitrogen
- 10. The primary source of energy for the Earth's climate system is:
  - a) Geothermal energy
  - b) Solar energy
  - c) Wind energy
  - d) Nuclear energy
- 11. The ozone layer is found in which layer of the Earth's atmosphere?
  - a) Troposphere
  - b) Stratosphere
  - c) Mesosphere
  - d) Thermosphere
- 12. Which of the following is a consequence of ocean acidification?
  - a) Increased coral reef growth
  - b) Enhanced fish population
  - c) Weakened shells of marine organisms
  - d) Decreased sea level
- 13. The Intergovernmental Panel on Climate Change (IPCC) was established by:

- a) United Nations Environment Programme (UNEP)
  b) World Health Organization (WHO)
  c) World Meteorological Organization (WMO)
  d) European Space Agency (ESA)
- 14. The term "climate" refers to:
  - a) Short-term variations in weather patterns
  - b) Long-term average weather conditions
  - c) Daily changes in atmospheric pressure
  - d) Seasonal changes in temperature
- 15. Which of the following is NOT a renewable energy source?
  - a) Solar energy
  - b) Nuclear energy
  - c) Wind energy
  - d) Biomass energy
- 16. The process by which carbon is transferred from the atmosphere to the lithosphere is known as:
  - a) Photosynthesis
  - b) Respiration
  - c) Sedimentation
  - d) Erosion
- 17. The "Kyoto Protocol" aimed to:
  - a) Reduce greenhouse gas emissions
  - b) Increase deforestation rates
  - c) Promote fossil fuel consumption
  - d) Expand nuclear power generation
- 18. Which of the following is a consequence of deforestation?
  - a) Increased carbon sequestration
  - b) Enhanced biodiversity
  - c) Soil erosion
  - d) Reduced greenhouse gas emissions
- 19. The primary source of anthropogenic methane emissions is:
  - a) Agricultural activities
  - b) Industrial processes
  - c) Transportation
  - d) Energy production
- 20. The phenomenon of "acid rain" is caused by the emission of:
  - a) Carbon dioxide
  - b) Sulfur dioxide and nitrogen oxides
  - c) Methane
  - d) Ozone
- 21. The Paris Agreement aims to:
  - a) Limit global warming to well below 2 degrees Celsius

- b) Increase global deforestation
  c) Reduce renewable energy investments
  d) Encourage fossil fuel subsidies
  22. The process of water evaporating from the surface of plants is called:
  a) Precipitation
  b) Transpiration
  c) Condensation
  d) Infiltration
- 23. Which of the following is a natural cause of climate change?
  - a) Volcanic eruptions
  - b) Deforestation
  - c) Industrial pollution
  - d) Urbanization
- 24. The "ozone hole" is most prominent over:
  - a) North America
  - b) Europe
  - c) Antarctica
  - d) Asia
- 25. The term "carbon footprint" refers to:
  - a) Total amount of carbon stored in an ecosystem
  - b) Total amount of carbon dioxide emitted by human activities
  - c) Total amount of carbon sequestered by forests
  - d) Total amount of carbon found in fossil fuels
- 26. The term "albedo" refers to:
  - a) The rate of deforestation
  - b) The reflectivity of a surface
  - c) The amount of precipitation in a region
  - d) The pH level of ocean water
- 27. What is the main cause of the depletion of the ozone layer in the stratosphere?
  - a) Carbon emissions
  - b) Chlorofluorocarbons (CFCs)
  - c) Nitrous oxide emissions
  - d) Methane emissions
- 28. Which of the following is NOT a greenhouse gas?
  - a) Water vapor
  - b) Carbon monoxide
  - c) Methane
  - d) Nitrous oxide
- 29. The Intergovernmental Panel on Climate Change (IPCC) was established by:
  - a) United Nations Environment Programme (UNEP)
  - b) World Meteorological Organization (WMO)
  - c) United Nations Development Programme (UNDP)

- d) United Nations Educational, Scientific and Cultural Organization (UNESCO)30. The term "global dimming" refers to:
  - a) Increase in global temperatures
  - b) Decrease in global temperatures
  - c) Decrease in solar radiation reaching the Earth's surface
  - d) Increase in solar radiation reaching the Earth's surface
- 31. Which of the following is NOT a natural factor influencing climate change?
  - a) Solar variability
  - b) Volcanic eruptions
  - c) Orbital variations
  - d) Human activities
- 32. The Keeling Curve is a graph that shows the:
  - a) Concentration of ozone in the atmosphere
  - b) Concentration of carbon dioxide in the atmosphere
  - c) Temperature variation in the troposphere
  - d) Sea level rise over time
- 33. The Milankovitch cycles are associated with changes in:
  - a) Solar radiation
  - b) Earth's magnetic field
  - c) Atmospheric pressure
  - d) Earth's orbital parameters
- 34. Which of the following is a positive feedback mechanism contributing to climate change?
  - a) Increased cloud cover reflecting more sunlight
  - b) Melting of sea ice decreasing albedo
  - c) Increased vegetation absorbing more carbon dioxide
  - d) Enhanced ocean circulation transporting heat
- 35. The process of evapotranspiration involves:
  - a) Conversion of water vapor into liquid water
  - b) Conversion of liquid water into water vapor by plants
  - c) Formation of clouds from water vapor
  - d) Precipitation of water from clouds
- 36. The phenomenon known as "urban heat island effect" is primarily caused by:
  - a) Increased greenhouse gas emissions in cities.
  - b) Concrete and asphalt surfaces absorbing heat
  - c) Higher population density in urban areas
  - d) Industrial activities concentrated in cities
- 37. Which of the following is NOT a primary greenhouse gas?
  - a) Methane
  - b) Water vapor
  - c) Ozone
  - d) Nitrous oxide

38. The primary mechanism responsible for the transfer of heat from the Earth's surface to
the atmosphere is:
a) Conduction
b) Convection
c) Radiation
d) Latent heat transfer
39. Which of the following is a consequence of ocean acidification?
a) Increased coral reef growth
b) Decreased shellfish populations
c) Expansion of mangrove forests
d) Enhanced fishery productivity
40. The Montreal Protocol is an international agreement aimed at reducing the emissions of:
a) Carbon dioxide
b) Methane
c) Ozone-depleting substances
d) Sulfur dioxide
41. What is the primary greenhouse gas responsible for global warming?
a) Oxygen (O <sub>2</sub> )
b) Nitrogen (N <sub>2</sub> )
c) Carbon dioxide (CO <sub>2</sub> )
d) Hydrogen (H <sub>2</sub> )
42. Which layer of the Earth's atmosphere contains the ozone layer?
a) Troposphere
b) Stratosphere
c) Mesosphere
d) Thermosphere
43. What is the main cause of the enhanced greenhouse effect?
a) Natural variations in the Earth's orbit
b) Volcanic eruptions
c) Increased levels of greenhouse gases from human activities
d) Solar flares
44. Which renewable energy source uses the heat from within the Earth?
a) Solar energy
b) Wind energy
c) Hydroelectric energy
d) Geothermal energy

45. What is the term for the long-term average of weather patterns in a particular area?a) Weather

b) Climate
c) Atmosphere

# **Answer Key**

- c) Carbon dioxide
- 2. d) Greenhouse gases
- 3. a) Methane
- 4. c) Earth's reflection of sunlight
- 5. c) Melting of permafrost
- 6. a) Warmer-than-average sea surface temperatures in the Pacific Ocean
- 7. c) Tidal power
- 8. a) Photovoltaic cells
- 9. d) Nitrogen
- 10. b) Solar energy
- 11. b) Stratosphere
- 12. c) Weakened shells of marine organisms
- 13. c) World Meteorological Organization (WMO)
- 14. b) Long-term average weather conditions
- 15. b) Nuclear energy
- 16. c) Sedimentation
- 17. a) Reduce greenhouse gas emissions
- 18. c) Soil erosion
- 19. a) Agricultural activities
- 20. b) Sulfur dioxide and nitrogen oxides
- 21. a) Limit global warming to well below 2 degrees Celsius
- 22. b) Transpiration
- 23. a) Volcanic eruptions
- 24. c) Antarctica
- 25. b) Total amount of carbon dioxide emitted by human activities.
- 26. b) The reflectivity of a surface
- 27. b) Chlorofluorocarbons (CFCs)
- 28. b) Carbon monoxide
- 29. a) United Nations Environment Programme (UNEP)
- 30. c) Decrease in solar radiation reaching the Earth's surface
- 31. d) Human activities
- 32. b) Concentration of carbon dioxide in the atmosphere
- 33. d) Earth's orbital parameters
- 34. b) Melting of sea ice decreasing albedo
- 35. b) Conversion of liquid water into water vapor by plants
- 36. b) Concrete and asphalt surfaces absorbing heat
- 37. c) Ozone
- 38. c) Radiation
- 39. b) Decreased shellfish populations
- 40. c) Ozone-depleting substances
- 41. c) Carbon dioxide (CO2)
- 42. b) Stratosphere
- 43. c) Increased levels of greenhouse gases from human activities

- 44. d) Geothermal energy 45. b) Climate
- 46. d) Nitrogen fixation 47. b) Barometer

- 48. b) Infrared (IR) radiation
  49. d) It is a clean and renewable energy source
  50. c) Increase in soil erosion



# SCIENCE COLLEGE





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Add-on Course

	Course Exam				manufacture tall and a control of	Understanding Cl enewable Energy	imate Change,
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# Science College

Congress Nagar, Nagpur

# **Department of Physics**

# Add-on Certificate Course (2022-2023)

Certificate Course: Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy

# **NOTICE**

Date: 22/10/2022

All the registered students of add-on Course on Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy under Department of Physics for the session 2022-23 are hereby informed that the theory examination is to be scheduled on 29/10/2022 (Saturday) at 10:30 am to 12:30 am in Physics Laboratory at our college center. All Students should be present in the laboratory before 10 mins. of scheduled time of examination.

Dr. G. L. Jadhav Course Coordinator Department of Physics

# Shri Shivaji Education Society Amaravati's Science College Congress Nagar, Nagpur

(2022-2023)

Certificate Course on Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy (10 Week)

# **MARKSHEET**

Sr. No.	Full Name of Student	Total Marks (100)	Grade obtained
1	BAGDE SAKSHI SATISH	68	В
2	BHALAVI SIDDHESH RAMESHWAR	52	С
3	CHOUDHARY DHANSHREE NARENDRA	42	С
4	DHOLE ISHA ANIL	58	С
5	GEDAM ROHIT DIPAK	68	В
6	GEDAM DIKSHA RAVINDRA	50	С
7	GHUTKE SHWETA CHARAN	52	С
8	JANGADE SANJANA SADANAND	58	С
9	JOSHI SANCHIT MADHUSUDAN	62	В
10	MESHRAM AYUSH BHARAT	62	В
11	BALAPURE PARI GAJANAN	66	В
12	BANSOD NIKHIL MILIND	44	С
13	BEDEKAR TUSHAR VAIBHAV	72	В
14	BHIWGADE SHRINAY YOGESH	62	В
15	DHADSE VAISHNAVI VIJAY	50	С
16	DHAKATE SAKSHI PRAMOD	92	A+
17	JADHAV AASTHA SANJU	60	В
18	JOSHI ARTI SUBHASH	62	В
19	KHAPRE MUSKAN PRAKASH	68	В
20	KUKDE ABHINAV BHUPENDRA	64	В
21	MEENA RUCHI MAHENDRA	84	Α
22	MESHRAM NIKHITA RAVIKANT	80	Α
23	MOHOD SAKSHI SADASHIVRAO	80	А
24	MOTWANI VARUN DOLAT	74	В
25	MOUNDEKAR VINKU MANIK	56	С
26	NARWADE SARTHAK ARUNRAO	62	В
27	PATLE SONALI SURESH	64	В
28	PAROCHE PALAK SATISH	66	В
29	PAUNIKAR YASHWANT RAJU	68	В
30	PIMPLE MANYA GANESH	70	В

31	PITALE SHRIVATSA PRASHANT	96	A+
32	POPERE GARGI VINAYAK	60	В
33	RAMAPURE ANUSHKA GANESH	52	C
34	RAUT DISHA VIJAY	70	В
35	SAMARTH SHRIHARI AJAY	72	В
36	AGARKAR PRANJAL VIJAY	70	В
37	AMBEKAR ATHARV RAMBHAU	71	В
38	BAGDE SHRADDHA BABAN		В
39		60	
40	BALODIYA RITIKA VISHNU	76	A
	BHAGAT KRUNAL GAJANAN	56	
41	BHAGAT SANJIVANI SAGAR	60	В
42	BILKAR AMISHA SITARAM	74	B
43	CHANDANKHEDE RACHANA VINESH	68	В
44	CHAUDHARY MUNESH RAVINDRASINGH	94	A+
45	DAF PRADNYA CHANDRAKANT	90	A+
46	BHOYAR SHRUTIKA ANRENDRA	62	В
47	BOKARE ADITI ANAND	70	В
48	DHOMANE TWINKLE RAJESH	72	В
49	DONGRE SAKSHI SUNIL	88	Α
50	JOSHI RENUKA PRAVIN	64	В
51	KADU KHUSHI KAMALAKAR	80	Α
52	KAMBLE PARITOSH SARNATH	66	В
53	KOHAD DEVANSHU FIROJ	84	Α
54	KURVE ATHARVA RAJESH	62	В
55	MANDAOKAR MRUNMAYEE DILIP	84	Α
56	ALONE YASH ANIL	72	В
57	BANGDE ANSH PURUSHOTTAM	76	Α
58	BASOPURKAR SARAS PRAKASH	80	Α
59	BODKHE PRATIKSHA DILIP	78	Α
60	BOMLE TANMAY VIJAY	74	В
61	BOTHLIKAR MUNISH SADASHIV	82	Α
62	CHATAP DIPTI NILKANTH	66	В
63	DATAR MITALI SUNIL	64	В
64	DINESHWAR PUNAM BHOLRAM	66	В
65	DESHMUKH SOHAM PRASHANT	76	Α
66	DESHPANDE MIUKTA RAVINDRA	74	В
67	DURGE RUPALI RAJU	82	Α
68	GADGE ANIKET PARSHURAM	78	Α
69	GEETEY PRATHA RAJESH	68	В
70	KALE NISHANT UMRAO	50	С
71	MADAVI GAURAV FANDULAL	48	С
72	MAHEVASH ZAMANI ATAUR	56	C
73	MANIKWAR PRATIKSHA KAILAS	76	A
74	MARAVI YOGESH RAMNATH	44	c
75	MEHETRE SANKET VISHNU	76	A
76	MESHRAM LIPAKSHI RAJANAND	74	В

77	NAGPURE SIDDHSHWAR MOHAN	76	Α
78	NAGRALE MOUSAM MAHENDRA	68	В
79	NAMIRA KAUSAR WASEEM	74	В
80	NAVGHARE DIKSHA RAJENDRRA	84	А
81	TAJNE VAIBHAVI DEVENDRA	96	A+
82	THAKRE MRUNMAYI SUBHASH	76	Α

A+ Grade => Marks=90 and above,

A Grade =>Marks=75 and <90

B Grade =>Marks=60 and <75,

C Grade =>Marks=40 and <60,

Fail Grade =>Marks<40

Dr. G. L. Jadhav Course Coordinator

# Shri Shivaji Education Society Amaravati's Science College, Congress Nagar Nagpur Department of Physics 2022-2023

# Certificate Course on Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy (10 Week)

# **Attendance Sheet**

# Theory/Practical

Sr. No.	Name of Student	Signature
1	BAGDE SAKSHI SATISH	Bau- 18.
2	BHALAVI SIDDHESH RAMESHWAR	Boline
3	CHOUDHARY DHANSHREE NARENDRA	-PranshREE
4	DHOLE ISHA ANIL	Dopol
5	GEDAM ROHIT DIPAK	ROHIT.
6	GEDAM DIKSHA RAVINDRA	120 ed a -
7	GHUTKE SHWETA CHARAN	Sew.
8	JANGADE SANJANA SADANAND	Esympe_
9	JOSHI SANCHIT MADHUSUDAN	Sura
10	MESHRAM AYUSH BHARAT	MBesh In.
11	BALAPURE PARI GAJANAN	PaR\
12	BANSOD NIKHIL MILIND	Merica
13	BEDEKAR TUSHAR VAIBHAV	Be de kar
14	BHIWGADE SHRINAY YOGESH	Shum
15	DHADSE VAISHNAVI VIJAY	Qhads E.

16	DHAKATE SAKSHI PRAMOD	Bareh
17	JADHAV AASTHA SANJU	Sagdhay
18	JOSHI ARTI SUBHASH	AIRTI
19	KHAPRE MUSKAN PRAKASH	inplane.
20	KUKDE ABHINAV BHUPENDRA	de
21	MEENA RUCHI MAHENDRA	Reana.
22	MESHRAM NIKHITA RAVIKANT	MANTE
23	MOHOD SAKSHI SADASHIVRAO	Mesi
24	MOTWANI VARUN DOLAT	Metrani
25	MOUNDEKAR VINKU MANIK	- sunch
26	NARWADE SARTHAK ARUNRAO	Harvade
27	PATLE SONALI SURESH	Sonahl
28	PAROCHE PALAK SATISH	Psaroche.
29	PAUNIKAR YASHWANT RAJU	Yoshure
30	PIMPLE MANYA GANESH	FAGinple
31	PITALE SHRIVATSA PRASHANT	ShRIVISauce
32	POPERE GARGI VINAYAK	Pavers
33	RAMAPURE ANUSHKA GANESH	Ram.
34	RAUT DISHA VIJAY	Dism
35	SAMARTH SHRIHARI AJAY	Samaith.
36	AGARKAR PRANJAL VIJAY	Abagarkon
37	AMBEKAR ATHARV RAMBHAU	Dun
38	BAGDE SHRADDHA BABAN	Bharde
39	BALODIYA RITIKA VISHNU	Du

40	numerical	
40	BHAGAT KRUNAL GAJANAN	Kom
41	BHAGAT SANJIVANI SAGAR	13 hagar
42	BILKAR AMISHA SITARAM	Della
43	CHANDANKHEDE RACHANA VINESH	Am.
44	CHAUDHARY MUNESH RAVINDRASINGH	(Are and hay
45	DAF PRADNYA CHANDRAKANT	PORDANA
46	BHOYAR SHRUTIKA ANRENDRA	Broyer
47	BOKARE ADITI ANAND	ADITI
48	DHOMANE TWINKLE RAJESH	Thomas
49	DONGRE SAKSHI SUNIL	-Quis
50	JOSHI RENUKA PRAVIN	Feli
51	KADU KHUSHI KAMALAKAR	Rus
52	KAMBLE PARITOSH SARNATH	De mile.
53	KOHAD DEVANSHU FIROJ	Achae
54	KURVE ATHARVA RAJESH	DEVARAN
55	MANDAOKAR MRUNMAYEE DILIP	DEVareho De Janandaska
56	ALONE YASH ANIL	Sylone
57	BANGDE ANSH PURUSHOTTAM	AVSh
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59	BODKHE PRATIKSHA DILIP	Power
60	BOMLE TANMAY VIJAY	Bomble
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63	DATAR MITALI SUNIL	morali

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78	NAGRALE MOUSAM MAHENDRA	mes
79	NAMIRA KAUSAR WASEEM	81.
80	NAVGHARE DIKSHA RAJENDRRA	Diksha
81	TAJNE VAIBHAVI DEVENDRA	Jayne
82	THAKRE MRUNMAYI SUBHASH	game.

# Shir Shivaji EducationSociety Amaravati's Science College,Congress Nagar, Nagpur

Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy (10 Week)

# Certificate Course 2022-2023

# **Registration Sheet**

Sr. No. Full Name of Student			
1	BAGDE SAKSHI SATISH		
2	BHALAVI SIDDHESH RAMESHWAR		
3	CHOUDHARY DHANSHREE NARENDRA		
4	DHOLE ISHA ANIL		
5	GEDAM ROHIT DIPAK		
6	GEDAM DIKSHA RAVINDRA		
7	GHUTKE SHWETA CHARAN		
8	JANGADE SANJANA SADANAND		
9	JOSHI SANCHIT MADHUSUDAN		
10	MESHRAM AYUSH BHARAT		
11	BALAPURE PARI GAJANAN		
12	BANSOD NIKHIL MILIND		
13	BEDEKAR TUSHAR VAIBHAV		
14	BHIWGADE SHRINAY YOGESH		
15	DHADSE VAISHNAVI VIJAY		
16	DHAKATE SAKSHI PRAMOD		
17	JADHAV AASTHA SANJU		
18	JOSHI ARTI SUBHASH		
19	KHAPRE MUSKAN PRAKASH		
20	KUKDE ABHINAV BHUPENDRA		
21	MEENA RUCHI MAHENDRA		
22	MESHRAM NIKHITA RAVIKANT		
23	MOHOD SAKSHI SADASHIVRAO		
24	MOTWANI VARUN DOLAT		
25	MOUNDEKAR VINKU MANIK		
26	NARWADE SARTHAK ARUNRAO		
27	PATLE SONALI SURESH		
28	PAROCHE PALAK SATISH		
29	PAUNIKAR YASHWANT RAJU		
30	PIMPLE MANYA GANESH		
31	PITALE SHRIVATSA PRASHANT		
32	POPERE GARGI VINAYAK		
33	RAMAPURE ANUSHKA GANESH		
34	RAUT DISHA VIJAY		
35	SAMARTH SHRIHARI AJAY		
36	AGARKAR PRANJAL VIJAY		
37	AMBEKAR ATHARV RAMBHAU		
38	BAGDE SHRADDHA BABAN		

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	82	THAKRE MRUNMAYI SUBHASH	

# Shri Shivaji Education Society Amaravati's Science College Congress Nagar, Nagpur Department of Physics

# **Undergraduate Course for Physics Students**

#### REPORT

"Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy"

Duration: [10 Week] 30 Hour: (16 August 2022 to 22 October 2022)

**Total Students: 82** 

This 10-week add-on course provided B.Sc. Physics students with a comprehensive understanding of the "Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy." The course was conducted by Dr. G. L. Jadhav, Assistant Professor, Department of Physics SSES Amt's Science College Congress Nagar, Nagpur. Total 82 Students of B.Sc. I, II and III, year Physics were enrolled for the course.

The course covered theoretical principles and real-world applications. The students were evaluated through MCQ based final exam of 100 marks. All 82 students successfully completed the course.

The 10-week of "Environmental Physics: Understanding Climate Change, Atmospheric Dynamics, and Renewable Energy." course was a valuable addition to the undergraduate physics curriculum, equipping students with essential knowledge in environmental physics. The course successfully combined theoretical foundations with, preparing the students for further studies and careers in Environmental Physics and related fields.

# Feedback Report

# 1. How would you rate the overall quality of the course?

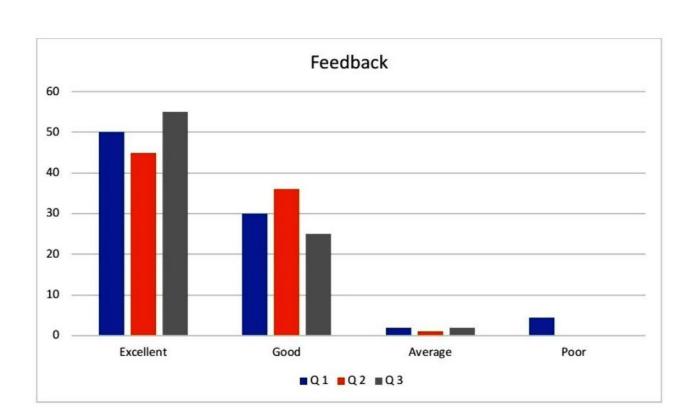
- a) Excellent
- b) Good
- c) Average
- d) Poor

# 2. How effective were the instructors in delivering the course content?

- a) Excellent
- b) Good
- c) Average
- d) Poor

# 3. How would you rate the course's ability to meet your expectations?

- a) Excellent
- b) Good
- c) Average
- d) Poor





# SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR





# CERTIFICATE

Mr./Ku. Dhakate Sakshi Pramod is awarded with certificate on successful completion of the course entitled, Certificate course in "Environmental Physics: Understanding Climate change, Atmospheric Dynamics and Renewable Energy".

Session 2022-23 under Add-on course conducted for 30 hours from 16/08/2022 to 22/10/2022 by Department of Physics, SSESA's, Science College, congress Nagar, Nagpur 440012.

He/She has passed the Examination with 'A+' Grade.

Carre

Dr. G. L. Jadhav Coordinator, Department of Physics Prof. M. P. Dhore Principal, Science College, Nage

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