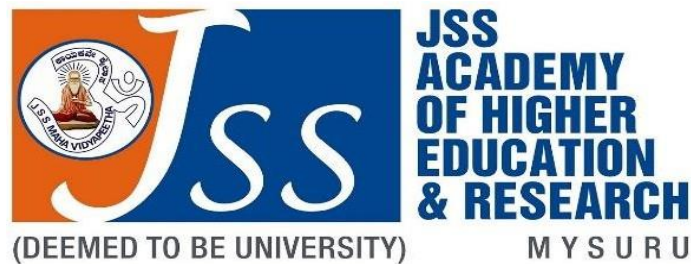




Education for



Sustainable Development Goals



JSS ACADEMY OF HIGHER EDUCATION & RESEARCH
Teaching & Learning of Activities in Achieving UN
Sustainable Development Goals

Teaching & Learning Objective Handbook
SDG-13- Climate Action

2024

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PREFACE

The United Nations' 2030 Agenda for Sustainable Development was adopted Globally in September 2015. It is underpinned by 17 Sustainable Development Goals (SDGs) and 169 targets and applies to every country. It helps people from various countries to work together to promote sustained and inclusive economic growth, social development and environmental protection and to benefit all, including future generations. The 2030 Agenda for Sustainable Development sets forth “a plan of action for people, planet and prosperity” and “seeks to strengthen universal peace in larger freedom”.

This universal agenda requires an integrated approach to sustainable development and collective action, at all levels, to address the challenges of our time, with an overarching imperative of ‘leaving no one behind’ and addressing inequalities and discrimination as the central defining feature. Many countries, institutions and organisations have already started to translate the new agenda into their development plans, strategies and visions.

JSSAHER'S Social Responsibility is an approach of ethical and intelligent management, which involves both its impact on its human, social and natural context and its active role on the promotion of Sustainable Human Development of the country. Within this approach, “Sustainable Campus” is a strategy that strives to reduce the ecological footprint of the Institution via a rational use of resources and to educate the JSSAHER community on the ethics of sustainability.

Supporting the JSSAHER'S Social Responsibility, the SDG Hand Book explains the SDGs and their connection between the various goals and targets of JSSAHER. It provides a blueprint to help, identify, implement and achieve the Sustainable Development Goals (SDGs) at JSSAHER.

As the process moves towards implementation, there is a need to address the scope and systemic nature of the 2030 Agenda and the urgency of the challenges. This requires a wide range of tools and science-based analysis to navigate that complexity and to realise the ambition. JSSAHER having in place effective governance systems, institutions, partnerships, and intellectual and financial resources favouring effective, efficient and coherent approach for implementation of SDGs.

Dr.B.Suresh
Pro Chancellor
JSS Academy of Higher Education & Research, Mysuru &
President, Pharmacy Council of India
New Delhi

<https://www.jssuni.edu.in/JSSWeb/WebShowFromDB.aspx?MID=11011&CID=0&PID=10001>

PREAMBLE



Education for

Sustainable Development Goals

By 2030, ensure that all learners acquire knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

Source: [The Sustainable Development Goals Report 2022](#)

<http://www.un.org/sustainabledevelopment/sustainable-development-goals>

[Access to Learning objectives for SDG-13](#)

[Education for Sustainable Development Goals: learning objectives - UNESCO Digital Library](#)

[United Nations, n.d.](#)

OBJECTIVE OF JSS ACADEMY OF HIGHER EDUCATION & RESEARCH TO PROMOTE EDUCATION FOR SUSTAINABLE DEVELOPMENT GOALS OF THE UNITED NATION IS TO MATCH THE TEACHING & LEARNING ACTIVITIES WITH SUSTAINABLE DEVELOPMENT GOALS THROUGH CURRICULUM DEVELOPMENT, ENHANCED RESEARCH AND EXTENDED OUTREACH ACTIVITIES.

INTRODUCTION

The Sustainable Development Goals – an ambitious and universal agenda to transform our world

On 25 September 2015, the UN General Assembly adopted the 2030 Agenda for Sustainable Development (UN, 2015). This new global framework to redirect humanity towards a sustainable path was developed following the United Nations Conference on Sustainable Development (Rio+20) in Rio de Janeiro, Brazil in June 2012, in a three-year process involving UN Member States, national surveys engaging millions of people and thousands of actors from all over the world.

At the core of the 2030 Agenda are 17 Sustainable Development Goals (SDGs). The universal, transformational and inclusive SDGs describe major development challenges for humanity. The aim of the 17 SDGs is to secure a sustainable, peaceful, prosperous, and equitable life on earth for everyone now and in the future. The goals cover global challenges that are crucial for the survival of humanity. They set environmental limits and set critical thresholds for the use of natural resources. The goals recognize that ending poverty must go together with strategies that build economic development. They address a range of social needs including education, health, social protection, and job opportunities while tackling climate change and environmental protection. The SDGs address key systemic barriers to sustainable development such as inequality, unsustainable consumption patterns, weak institutional capacity, and environmental degradation.

For the goals to be reached, everyone needs to do their part: governments, the private sector, civil society and every human being across the world. Governments are expected to take ownership and establish national frameworks, policies, and measures for the implementation of the 2030 Agenda.

A key feature of the 2030 Agenda for Sustainable Development is its universality and indivisibility. It addresses all countries – from the Global South and the Global North – as target countries. All countries subscribing to the 2030 Agenda are to align their own development efforts with the aim of promoting prosperity while protecting the planet to achieve sustainable development. Thus, with respect to the SDGs, all countries can be considered as developing and all countries need to take urgent action.

The 17 Sustainable Development Goals (SDGs)

No Poverty – End poverty in all its forms everywhere

Zero Hunger – End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Good Health and Well-Being – Ensure healthy lives and promote well-being for all at all ages

Quality Education – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Gender Equality – Achieve gender equality and empower all women and girls

Clean Water and Sanitation – Ensure availability and sustainable management of water and sanitation for all

Affordable and Clean Energy – Ensure access to affordable, reliable, sustainable, and clean energy for all

Decent Work and Economic Growth – Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all

Industry, Innovation and Infrastructure – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Reduced Inequalities – Reduce inequality within and among countries

Sustainable Cities and Communities – Make cities and human settlements inclusive, safe, resilient and sustainable

Responsible Consumption and Production – Ensure sustainable consumption and production patterns

Climate Action – Take urgent action to combat climate change and its impacts

Life below Water – Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Life on Land – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Peace, Justice and Strong Institutions – Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Partnerships for the Goals – Strengthen the means of implementation and revitalize the global partnership for sustainable development

Source: <http://www.un.org/sustainabledevelopment/sustainable-development-goals>





TEACHING & LEARNING OBJECTIVES FOR SDG 13 JSS MEDICAL COLLEGE & HOSPITAL

SDG 13 - Climate Action



Take urgent action to combat climate change and its impacts
Teaching & Learning objectives for SDG 13 “Climate Action”

Subject/ topic/ course in regular curriculum relating to SDG -13	Pharmacology, Forensic medicine, Community Medicine, ENT, General Medicine
Cognitive Teaching & learning objectives	<p>At the end of 3rd Professional year part -1, the learner should be able to,</p> <ul style="list-style-type: none"> • Describe causes and effects of climate change • Describe health effects of climate change and their prevention • Define and describe the concept of Disaster management • Describe the details of the National Disaster management Authority • Describe the health hazards of air, water, noise, radiation and pollution as a result of climate change • Describe concepts of safe and wholesome water, sanitary sources of water, water purification processes, water quality standards, concepts of water conservation and rainwater harvesting • Describe toxic pollution of environment, its medico-legal

	<p>aspects & toxic hazards of occupation and industry</p> <ul style="list-style-type: none"> • Describe the clinical features, post-mortem finding and medico-legal aspects of injuries due to physical agents like heat (heat-hyper-pyrexia, heat stroke, sun stroke, heat exhaustion/prostration, heat cramps [miner's cramp] or cold (systemic and localized hypothermia, frostbite, trench foot, immersion foot)
Socio-emotional Teaching & learning objectives	<p>At the end of final year, the learner should be able to,</p> <ul style="list-style-type: none"> • Communicate to the school children on the impact of climate change on health • Counsel the families on utilizing renewable sources of energy to prevent the impact of climate change • Appreciate the consequence of climate change on health and social status of people
Behavioural Teaching & learning objectives	<p>At the end of final year, the learner should be able to,</p> <ul style="list-style-type: none"> • Demonstrate ability to use local resources whenever required like in mass disaster situations • Conduct sessions at community setting on causes, consequences and prevention of climate hazards • Conduct awareness sessions on climate change and health for school children and youth

Topics for SDG-13 Climate Action

- Greenhouse gases and their emission.
- Climate change and its health impact
- Social and economic impact within households, communities and countries and be countries due to climate change related hazards.
- Adaptation of strategies for prevention and mitigation related to disaster risk
- Strategies to protect climate at local, National and global level.
- International efforts to address climate change and health (Paris agreement, Jakarta declaration etc.)
- Environmental pollution and its role in climate change

- Role-play to estimate the impact of climate change on health.
- Case based discussion on hazards of poisonous gases
- Project on actions towards climate protection

- Poster competition, essay writing competition on climate change and risk of disasters in community.
- Active participation in celebration of World Environment Day celebration.
- Tree plantation activities at campus
- Visits to meteorology departments to understand the climate changes and actions
- Mock drill sessions for the disaster management

TEACHING & LEARNING OBJECTIVES FOR SDG 13

JSS DENTAL COLLEGE & HOSPITAL

Subject/ topic/ course in regular curriculum relating to SDG 13	<ul style="list-style-type: none"> ● Disaster Management ● Global Warming ● Environment and health – Air, Water & Soil pollution control 	<ul style="list-style-type: none"> ● Public health Dentistry ● Forensic Odontology ● All undergraduate and post graduate students
Cognitive Teaching & learning objectives	<ul style="list-style-type: none"> ● The learner understands the greenhouse effect as a natural phenomenon caused by an insulating layer of greenhouse gases. ● The learner understands the current climate change as an anthropogenic phenomenon resulting from the increased greenhouse gas emissions. ● The learner knows which human activities – on a global, national, local and individual level – contribute most to climate change. ● The learner knows about the main ecological, social, cultural and economic consequences of climate change locally, nationally and globally and understands how these can themselves become catalyzing, reinforcing factors for climate change. ● The learner knows about prevention, mitigation and adaptation strategies at different levels (global to individual) and for different contexts and their connections with disaster response and disaster risk reduction. 	
Socio-emotional Teaching & learning objectives	<ul style="list-style-type: none"> ● The learner can explain ecosystem dynamics and the environmental, social, economic and ethical impact of climate change. ● The learner can encourage others to protect the climate. ● The learner can collaborate with others and to develop commonly agreed-upon strategies to deal with climate change. ● The learner can understand their personal impact on the world’s climate, from a local to a global perspective. ● The learner can recognize that the protection of the global climate is an essential task for everyone and that we need to completely re-evaluate our worldview and everyday behaviours in light of this. 	
Behavioural Teaching & learning objectives	<ul style="list-style-type: none"> ● The learner can evaluate whether their private and job activities are climate friendly and – where not – to revise them. ● The learner can act in favour of people threatened by climate change. ● The learner can anticipate, estimate and assess the impact of personal, local and national decisions or activities on other people and world regions. ● The learner can promote climate-protecting public policies. ● The learner can support climate-friendly economic activities. 	

Suggested topics for SDG 13 “Climate Action”

Greenhouse gases and their emission

Energy, agriculture and industry-related greenhouse gas emissions

Climate change-related hazards leading to disasters like drought, weather extremes, etc. and their unequal social and economic impact within households, communities and countries and between countries

Sea-level rise and its consequences for countries (e.g. small island states) Migration and flight related to climate change

Prevention, mitigation and adaptation strategies and their connections with disaster response and disaster risk reduction

Local, national and global institutions addressing issues of climate change Local, national and global policy strategies to protect the climate

Future scenarios (including alternative explanations for the global temperature rise) Effects of and impacts on big eco-systems like forests, oceans, glaciers and biodiversity

Ethics and climate change

Examples of learning approaches and methods for SDG 13 “Climate Action”

Perform a role-play to estimate and feel the impact of climate change related phenomena from different perspectives

Analyse different climate change scenarios concerning their assumptions, consequences and their preceding development paths

Develop and run an action project or campaign related to climate protection Develop

a web page or blog for group contributions related to climate change issues Develop

climate friendly biographies

Develop a study case about how climate change could increase the risk of disasters in a local community

Develop an enquiry-based project investigating the statement “Those who caused the most damage to the atmosphere should pay for it”

TEACHING & LEARNING OBJECTIVES FOR SDG 13

JSS COLLEGE OF PHARMACY, MYSORE

Subject/ topic/ course in regular curriculum relating to SDG 13	Pharmacognosy, Pharmacology, Jurisprudence, Community Pharmacy, Pharmacotherapeutics
Cognitive Teaching & learning objectives	<p>At the end of final year, the learner should be able to,</p> <ul style="list-style-type: none"> • List out the various causes and effects of climate change • Explain the health effects of climate change and their prevention • Able to explain the importance of disaster management • List out the effects of air, water, noise pollution and its impact on climate change. • Explain the importance of water conservation. • Explain the advantages of using non carbon polluting vehicles • Explain the importance of sanitary cleaning and safety • Explain the importance of vehicle pooling while transit to working places • Explain the importance of using solar energy • Describe the minimum use of electricity and make use of renewable energy
Socio-emotional Teaching & learning objectives	<p>At the end of final year, the learner should be able to,</p> <ul style="list-style-type: none"> • Involve in educating the common people about climate changes • Counsel the families on utilizing renewable sources of energy to prevent the impact of climate change • Appreciate the consequence of climate change on health and social status of people • Voluntarily involve in any activity which contribute to save the earth • Actively organize the mass plantation, save earth, making plastic free environment
Behavioural Teaching & learning objectives	<p>At the end of final year, the learner should be able to,</p> <ul style="list-style-type: none"> • Demonstrate the ability to actively involved in any program which contributes to prevent climate changes. • Conduct some seminars or any programs which educate the society about climate change • Create awareness in the society about the impact of climate changes

Suggested topics for SDG 13 "Climate Action"

- Mass plantation.
- Awareness rally about climate change.
- Awareness jatha to educate the people about use of renewable energy.
- Actively involve in disaster management.
- Guest lecture to create awareness about vehicle pooling, use of public transport to minimize energy consumption

Examples of learning approaches and methods for SDG 13 "Climate Action"

- Case based studies about impact of climate change
- Attending workshops, seminars or conferences held on theme of climate changes
- Group discussion on hazardous effect of climate changes
- Project on actions towards climate protection
- Poster competition, essay writing competition on climate change and risk of disasters in community.
- Participation in various activities on world environment day
- Seed ball sowing and plantation camping activities

TEACHING & LEARNING OBJECTIVES FOR SDG 13

JSS COLLEGE OF PHARMACY, OOTY

<p>Subject/ topic/ course in regular curriculum relating to SDG 13</p>	<p>• II Pharm D Subject: Pathophysiology Topic: Air pollution and smoking - SO₂, NO, NO₂ and CO</p> <p>Cognitive Teaching & learning objectives:</p> <ul style="list-style-type: none"> • The learner understands the current climate change as an anthropogenic phenomenon resulting from the increased greenhouse gas emissions. • The learner knows about the main ecological, social, cultural and economic consequences of climate change locally, nationally and globally and understands how these can themselves become catalysing, reinforcing factors for climate change. <p>M.Pharm, First Year, I Sem, Advanced Pharmaceutical Biotechnology, Biodegradation of xenobiotics, chemical and industrial wastes M.Pharm, First Year, I Sem, Advanced Pharmaceutical Biotechnology, Biodegradation of xenobiotics, chemical and industrial wastes</p> <p>Socio-emotional Teaching & learning objectives</p> <ul style="list-style-type: none"> • The learner can explain ecosystem dynamics and the environmental, social, economic and ethical impact of climate change. • The learner can encourage others to protect the climate. • The learner can collaborate with others and to develop commonly agreed-upon strategies to deal with climate change. • The learner can understand their personal impact on the world's climate, from local to a global perspective. • The learner can recognize that the protection of the global climate is an essential task for everyone and that we need to completely re-evaluate our worldview and everyday behaviours in light of this. <p>Behavioural Teaching & learning objectives</p> <ul style="list-style-type: none"> • The learner can evaluate whether their private and job activities are climate friendly and – where not – to revise them. • The learner can act in favour of people threatened by climate change. • The learner can anticipate, estimate and assess the impact of personal, local and national decisions or activities on other people and world regions. • The learner can promote climate-protecting public policies. <p>The learner can support climate-friendly economic activities.</p>
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TEACHING & LEARNING OBJECTIVES FOR SDG 4

FACULTY OF HEALTH SYSTEM MANAGEMENT STUDIES

<p>Subject/ topic/ course in regular curriculum relating to SDG 13</p>	<ul style="list-style-type: none"> • Environmental studies- BBA- Ist Semester • Business Law- Environmental Protection Act 1986-Unit 05-III Semester
<p>Cognitive Teaching & learning objectives</p>	<ul style="list-style-type: none"> • The learner understands the current climate change as an anthropogenic phenomenon resulting from the increased greenhouse gas emissions. • The learner knows which human activities – on a global, national, local and individual level – contribute most to climate change. • The learner knows about the main ecological, social, cultural and economic consequences of climate change locally, nationally and globally and understands how these can themselves become catalysing, reinforcing factors for climate change. • The learner understands the role of corporates in reduce the exploitation on environment
<p>Socio-emotional Teaching & learning objectives</p>	<ul style="list-style-type: none"> • The learner can explain ecosystem dynamics and the environmental, social, economic and ethical impact of climate change. • The learner can encourage others to protect the climate. • The learner can collaborate with others and to develop commonly agreed-upon strategies to deal with climate change. • The learner can understand their personal impact on the world’s climate, from a local to a global perspective. <div data-bbox="602 1203 1482 1535" data-label="Image"> </div>
<p>Behavioural Teaching & learning objectives</p>	<ul style="list-style-type: none"> • The learner can evaluate whether their private and job activities are climate friendly and – where not – to revise them. • The learner can act in favour of people threatened by climate change. • The learner can anticipate, estimate and assess the impact of personal, local and national decisions or activities on other people and world regions. • The learner can promote climate-protecting public policies. • The learner can support climate-friendly economic activities.

Cleaning Drive and awareness program



National Integration Camp 2020



TEACHING & LEARNING OBJECTIVES FOR SDG 13

JSS SCHOOL OF LIFE SCIENCES, OOTY

<p>Cognitive Teaching & learning objectives</p>	<ul style="list-style-type: none"> • The learner understands the greenhouse effect as a natural phenomenon caused by an insulating layer of greenhouse gases. • The learner understands the current climate change as an anthropogenic phenomenon resulting from the increased greenhouse gas emissions. • The learner knows which human activities – on a global, national, local and individual level – contribute most to climate change. • The learner knows about the main ecological, social, cultural and economic consequences of climate change locally, nationally and globally and understands how these can themselves become catalysing, reinforcing factors for climate change. • The learner knows about prevention, mitigation and adaptation strategies at different levels (global to individual) and for different contexts and their connections with disaster response and disaster risk reduction.
<p>Socio-emotional Teaching & learning objectives</p>	<ul style="list-style-type: none"> • The learner can explain ecosystem dynamics and the environmental, social, economic and ethical impact of climate change. • The learner can encourage others to protect the climate. • The learner can collaborate with others and to develop commonly agreed-upon strategies to deal with climate change. • The learner can understand their personal impact on the world's climate, from a local to a global perspective. • The learner can recognize that the protection of the global climate is an essential task for everyone and that we need to completely re-evaluate our worldview and everyday behaviours in light of this.
<p>Behavioural Teaching & learning objectives</p>	<ul style="list-style-type: none"> • The learner can evaluate whether their private and job activities are climate friendly and – where not – to revise them. • The learner can act in favour of people threatened by climate change. • The learner can anticipate, estimate and assess the impact of personal, local and national decisions or activities on other people and world regions. • The learner can promote climate-protecting public policies. • The learner can support climate-friendly economic activities.

Suggested topics for SDG 13 “Climate Action”

Greenhouse gases and their emission

Energy, agriculture and industry-related greenhouse gas emissions

Climate change-related hazards leading to disasters like drought, weather extremes, etc. and their unequal social and economic impact within households, communities and countries and between countries

Sea-level rise and its consequences for countries (e.g. small island states)

Migration and flight related to climate change

Prevention, mitigation and adaptation strategies and their connections with disaster response and disaster risk reduction

Local, national and global institutions addressing issues of climate change

Local, national and global policy strategies to protect the climate

Future scenarios (including alternative explanations for the global temperature rise)

Effects of and impacts on big eco-systems like forests, oceans, glaciers and biodiversity

Ethics and climate change

Examples of learning approaches and methods for SDG 13 “Climate Action”

Perform a role-play to estimate and feel the impact of climate change related phenomena from different perspectives

Analyse different climate change scenarios concerning their assumptions, consequences and their preceding development paths

Develop and run an action project or campaign related to climate protection

Develop a web page or blog for group contributions related to climate change issues

Develop climate friendly biographies

Develop a study case about how climate change could increase the risk of disasters in a local community

Develop an enquiry-based project investigating the statement “Those who caused the most damage to the atmosphere should pay for it”

DEPARTMENT OF YOGA

Subject/ topic/ course in regular curriculum relating to SDG 13	<ul style="list-style-type: none"> • Lifestyle Disorder& Yoga Management • The course topics indirectly addresses the climate action.
Cognitive Teaching & learning objectives	<p>At the end of 2nd year and course the learner should be able to,</p> <ul style="list-style-type: none"> • Describe the health hazards of air, water, noise, radiation and pollution as a result of climate change.
Socio-emotional Teaching & learning objectives	<p>At the end of 2nd year and course the learner should be able to,</p> <ul style="list-style-type: none"> • Collaborate with educational institutions, communities, local bodies to develop commonly agreed-upon strategies to deal with climate change. • Communicate to the school children on the impact of climate change on health.
Behavioural Teaching & learning objectives	<p>At the end of 2nd year and course the learner should be able to,</p> <ul style="list-style-type: none"> • Collaborate with environment pro organizations, local bodies promoting climate-protecting public policies and support climate-friendly economic activities.

Topics for SDG 13 “Climate Action”

- Climate change and its impact on health & managing with Yoga

Examples of learning approaches and methods for SDG 13 “Climate Action”

- Poster competition, essay writing competition on climate change and risk of disasters in community.
- Active participation in celebration of World Environment Day.

BSC Yoga

Subject/ topic/ course in regular curriculum relating to SDG 13	<ul style="list-style-type: none"> • Environmental Studies, Environmental Psychology
Cognitive Teaching & learning objectives	<p>At the end of 1st and 2nd year learner should be able to</p> <ul style="list-style-type: none"> • Understand that greenhouse emission has a major impact on the climate change • Understand climate change as an anthropogenic phenomenon resulting from increased greenhouse gas emissions. <p>At the end of 3rd year learner should be able to</p> <ul style="list-style-type: none"> • Understands food sector contributes to 22% of greenhouse gas emissions. • Understand appropriate waste management practices will help in reducing the greenhouse emissions • Knows the environment laws given by the policy makers
Socio-emotional Teaching & learning objectives	<p>At the end of final year course learner should be able to</p> <ul style="list-style-type: none"> • Explain the effect of greenhouse on climate change. • Encourage others to reduce the climate change by following sustainable practices. • Collaborate with NGOs to develop mutual strategies to deal with climate change. • Create awareness on the climate change and help community to identify and mitigate the causative factor
Behavioural Teaching & learning objectives	<p>At the end of the course learner should be able to</p> <ul style="list-style-type: none"> • Demonstrate appropriate waste disposal practices and help community to follow the same • Help implement changes at the community level by corresponding with the environmental protection agencies. • Make community understand about the environmental protection act and act upon it. • Promote climate-protecting public policies.

Suggested topics for SDG 13 “Climate Action”

- Food waste on green house emissions
- Conservation of biodiversity
- Climate change and global warming
- Climate change-related hazards leading to disasters like drought, weather extremes, etc. and their unequal social and economic impact within households, communities and countries and between countries
- Environmental pollution: types, causes, effects and prevention
- Prevention, mitigation and adaptation strategies and their connections with disaster response and disaster risk reduction
- Local, national and global institutions addressing issues of climate change
- Local, national and global policy strategies to protect the climate

Examples of learning approaches and methods for SDG 13 “Climate Action”

- Demonstration of the adverse effects of climate change using visual aids like videos, films etc
- Analyse different climate change scenarios concerning their assumptions, consequences and their preceding development paths
- Develop and run a campaign related to climate protection
- Awareness programs and campaigns to reduce plastic waste and its impact on climate change
- Develop a study case about how climate change could increase the risk of disasters in a local community
- Develop an enquiry-based project investigating the statement “Those who caused the most damage to the atmosphere should pay for it”

DEPARTMENT OF MICROBIOLOGY

Subject/ topic/ course in regular curriculum relating to SDG 13

- Environmental Microbiology (BSc V Sem); Bioremediation & Microbial Technology (BSc VI Sem); Soil Microbiology & Plant Health (BSc VI Sem); Soil Microbiology & Plant Health (MSc II Sem); Biofertilizers, Biomanure & Biopesticides (MSc IISem); Advances in Bioremediation & Microbial Technology (MSc II Sem)

Cognitive Teaching & learning objectives

- The learner understands the role of microorganisms in climate change; understands the current climate change depends on microbial response; knows the beneficial microbes are required for achieving an environmentally sustainable future; use of microbes to prevent and mitigate disasters due to climate change.

Socio-emotional Teaching & learning objectives

- The learner can explain the role of microbes in ecosystem dynamics and its impact on climate change at socio-economic level; encourage others to use themicrobes for sustainable agricultural and industrial production to reduce CO₂ emission; recognize unsustainable development patterns that increaseclimate hazards and how to mitigate it as microbiologists with domain expertise.

Behaviorial Teaching & Learning objectives

- The learner can evaluate whether the experiments and microbial activities are climate friendly; train people about microbes and their activities in global warming; educate public about prominent role of microbes in climatechange; promote microbial mediated recycling; supportand assist in preparing policies on avoiding consequences of climate change on microbial life in environment.



**Learning approaches
and methods for
SDG 13**

- Role of microbes both users and producers of greenhouse gases
- Role of microbes in climate change and recycling.
- Importance of microbiomes and nutrient cycling, and their impact on climate change and food security.
- Methods for reduction of microbial greenhouse gases and control the detrimental impacts of microbes



**Suggested topics for
students workshop**

- Experiments on the controlled studies related to climate change on microbial processes.
- Training on interventions using microbes and their biotransformations for production of recyclable and biodegradable products.
- Workshop on using microbial process data for modeling climate change.
- Using One Health approach to understand microbes and their role in climate change.
- Conduct lab experiments on microbes adapt to climate change

DEPARTMENT OF ENVIRONMENTAL SCIENCES

<p>Course Name in curriculum relating to SDG 13</p>	<ul style="list-style-type: none"> • Introduction to Environmental Science (DSC 01) • Environmental Issues (OEC 01) • Atmospheric Science (DSE 01b) • Carbon Sequestration and Management (DSE 02b) • Climate Change and Management (DSE 04b)
<p>Cognitive Teaching & learning objectives</p>	<ul style="list-style-type: none"> • The learner understands the greenhouse effect as a natural phenomenon caused by an insulating layer of greenhouse gases. • The learner understands the current climate change as an anthropogenic phenomenon resulting from the increased greenhouse gas emissions. • The learner knows which human activities – on a global, national, local, and individual level – contribute most to climate change. • The learner knows about the main ecological, social, cultural, and economic consequences of climate change locally, nationally and globally and understands how these can themselves become catalyzing, reinforcing factors for climate change. • The learner knows about prevention, mitigation, and adaptation strategies at different levels (global to individual) and for different contexts and their connections with disaster response and disaster risk reduction.
<p>Socio-emotional Teaching & learning objectives</p>	<ul style="list-style-type: none"> • The learner can explain ecosystem dynamics and the environmental, social, economic, and ethical impact of climate change. • The learner can encourage others to protect the climate. • The learner can collaborate with others and to develop commonly agreed-upon strategies to deal with climate change. • The learner can understand their personal impact on the world’s climate, from a local to a global perspective. • The learner can recognize that the protection of the global climate is an essential task for everyone and that we need to completely re-evaluate our worldview and everyday behaviors in light of this.

<p>Behavioral Teaching & learning objectives</p>	<ul style="list-style-type: none"> • The learner can evaluate whether their private and job activities are climate friendly and – where not – to revise them. • The learner can act in favor of people threatened by climate change. • The learner can anticipate, estimate, and assess the impact of personal, local and national decisions or activities on other people and world regions. • The learner can promote climate-protecting public policies. • The learner can support climate-friendly economic activities.
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Suggested topics for SDG 13 “Climate Action”

- Source of greenhouse gases and their emission
- Energy, agriculture, and industry-related greenhouse gas emissions
- Climate change-related hazards leading to disasters like drought, weather extremes, etc. and their unequal social and economic impact within households, communities, and countries and between countries
- Sea-level rise and its consequences for countries (e.g., small island states) Migration and flight related to climate change
- Prevention, mitigation and adaptation strategies and their connections with disaster response and disaster risk reduction
- Local, national, and global institutions addressing issues of climate change
- Local, national, and global policy strategies to protect the climate
- Future scenarios (including alternative explanations for the global temperature rise) Effects of and impacts on big eco-systems like forests, oceans, glaciers, and biodiversity
- Environmental ethics and climate change

Examples of learning approaches and methods for SDG 13 “Climate Action”

- Perform a role-play to estimate and feel the impact of climate change related phenomena from different perspectives
- Analyze different climate change scenarios concerning their assumptions, consequences, and their preceding development paths
- Develop and run an action project or campaign related to climate protection
- Develop a web page or blog for group contributions related to climate change issues
- Develop climate friendly biographies and technology
- Develop a study case about how climate change could increase the risk of disasters in a local community
- Develop an enquiry-based project investigating the statement “Those who caused the most damage to the atmosphere should pay for it”

DEPARTMENT OF NUTRITION & DIETETICS

Subject/ topic/ course in regular curriculum relating to SDG 13	<ul style="list-style-type: none"> • Topics – Community Nutrition, Introduction to Food Science. • The course topics indirectly addresses the food security as well as access to fresh water resources.
Cognitive Teaching & learning objectives	<p>At the end of 2nd year and course the learner should be able to,</p> <ul style="list-style-type: none"> • Understand the climate change affects on global food production food security, safe water availability and need for conservation. • Understand the relationship between changing climate and its influence of food nutrient quality and nutrition health for all age groups.
Socio-emotional Teaching & learning objectives	<p>At the end of 2nd year and course the learner should be able to,</p> <ul style="list-style-type: none"> • Collaborate with educational institutions, communities, local bodies to develop commonly agreed-upon strategies to deal with climate change. • Address the vulnerable population at nutritional / health risk for incorporating effective dietary, lifestyle and environmental friendly strategies for sustainable health status.
Behavioural Teaching & learning objectives	<p>At the end of 2nd year and course the learner should be able to,</p> <ul style="list-style-type: none"> • Collaborate with environment pro organizations, local bodies promoting climate-protecting public policies and support climate-friendly economic activities.

Suggested topics for SDG 13 “Climate Action”

- Climate change and its impact on agriculture and health.
- Social and economic impact within households, communities and countries and between countries due to climate change related hazards.
- Strategies for prevention and to address the vulnerable population at nutritional / health risk for incorporating effective dietary, lifestyle and environmental friendly strategies for sustainable health status.

Examples of learning approaches and methods for SDG 13 “Climate Action”

- Poster competition, essay writing competition on climate change and risk of disasters in community.
- Active participation in celebration of Nutrition week, Food Safety day, World Environment Day.
- Collaborative action with environment pro organizations, local bodies promoting climate-protecting public policies and support climate-friendly economic activities.

MSc Sports Nutrition & Management

Subject/ topic/ course in regular curriculum relating to SDG 13	<ul style="list-style-type: none"> Physiology & Hematology, Clinical Sports Nutrition, Sport Supplements and Ergogenic Aids, Dissertation
Cognitive Teaching & learning objectives	<p>At the end of 1st professional year, the student should be able to</p> <ul style="list-style-type: none"> be aware of good laboratory practices that minimize carbon footprints
Socio-emotional Teaching & learning objectives	<p>At the end of the program, the student should be able to</p> <ul style="list-style-type: none"> understand personal role and responsibilities in minimizing climate change by judiciously using the laboratory resources.
Behavioural Teaching & learning objectives	<p>At the end of the program, the student should be able to</p> <ul style="list-style-type: none"> analyze their personal impact/role and make others understand the importance of climate-friendly and climate protecting laboratory activities

Suggested topics for SDG 13 “Climate Action”

Greenhouse gases and their emission due to laboratory practices

Ethics and climate change due to laboratory practices

Examples of learning approaches and methods for SDG 13 “Climate Action”

Develop good laboratory practices

BSc Food, Nutrition & Dietetics

Subject/ topic/ course in regular curriculum relating to SDG 13	<ul style="list-style-type: none"> • Food and Nutrition Security, Environmental Science
Cognitive Teaching & learning objectives	<p>At the end of 1st and 2nd year learner should be able to</p> <ul style="list-style-type: none"> • Understand that greenhouse emission has a major impact on the climate change • Understand climate change as an anthropogenic phenomenon resulting from increased greenhouse gas emissions. <p>At the end of 3rd year learner should be able to</p> <ul style="list-style-type: none"> • Understands food sector contributes to 22% of greenhouse gas emissions. • Understand appropriate waste management practices will help in reducing the greenhouse emissions • Knows the environment laws given by the policy makers
Socio-emotional Teaching & learning objectives	<p>At the end of 4th year course learner should be able to</p> <ul style="list-style-type: none"> • Explain the effect of greenhouse on climate change. • Encourage others to reduce the climate change by following sustainable practices. • Collaborate with NGOs to develop mutual strategies to deal with climate change. • Create awareness on the climate change and help community to identify and mitigate the causative factor
Behavioural Teaching & learning objectives	<p>At the end of the course learner should be able to</p> <ul style="list-style-type: none"> • Demonstrate appropriate waste disposal practices and help community to follow the same • Help implement changes at the community level by corresponding with the environmental protection agencies. • Make community understand about the environmental protection act and act upon it. • Promote climate-protecting public policies.

Suggested topics for SDG 13 “Climate Action”

Food waste on green house emissions

Conservation of biodiversity

Climate change and global warming

Climate change-related hazards leading to disasters like drought, weather extremes, etc. and their unequal social and economic impact within households, communities and countries and between countries

Environmental pollution: types, causes, effects and prevention

Prevention, mitigation and adaptation strategies and their connections with disaster response and disaster risk reduction

Local, national and global institutions addressing issues of

climate change Local, national and global policy strategies to

protect the climate

Examples of learning approaches and methods for SDG 13 “Climate Action”

Demonstration of the adverse effects of climate change using visual aids like videos, films etc

Analyse different climate change scenarios concerning their assumptions, consequences and their preceding development paths

Develop and run a campaign related to climate protection

Awareness programs and campaigns to reduce plastic waste and its

impact on climate change

Develop a study case about how climate change could increase the risk of disasters in a local community

Develop an enquiry-based project investigating the statement “Those who caused the most damage to the atmosphere should pay for it”

NANOSCIENCE & TECHNOLOGY

The most significant concern to the environment, currently, is global warming and it is probably going to stay a concern for a long time. Carbon-associated gas emission that is made by man, usually causes Global warming, those are also referred to as greenhouse gases, leading to vast climate concern/change.

Fossil fuel combustion is the carbon emissions major source, fossil fuels are oil, coal, and gas in automobiles, power plants, industrial facilities, other transportation vehicles, and other artificial and natural sources. Nanotechnology is believed for lessening the requirement of fossil fuels, therefore being a positive impact when it comes to global warming.

Almost zero emissions are caused by applications of renewable energies (solar and hydrogen fuel cells) Nanotechnology and its products are primarily involved in renewable energy applications. Global warming can be stopped by increasing the efficiency and usage of renewable energy and lessening the fuel consumption alongside. This is one way to finally stop and slow down global warming. Global warming is negatively impacted by the process of manufacturing nanomaterials and nano-devices. Also, a great role is being played by nanotechnology in improving the efficiency of current technology. Green nanotechnology's latest concept has a way to lessen potential health and environmental hazards through the development of new clean technologies with the help of nanoproducts and nanomanufacturing. Also, there is a need to design and develop new nano products and replace the old ones with the new nano products which are environment- and human-friendly.

Mainly, two main aims are possessed by green nanotechnology: making such nanomaterials that end the environmental problems, and the other is to make engineered nanomaterials with no side-effect to human health or the environment. The principles of green engineering and green chemistry are used in this concept for producing non-toxic nanomaterials by using renewable resources, and less energy. During the production, one should keep in mind the product's or material's lifecycle thinking. The major aim of green nanotechnology is to make the process of nanomanufacturing more friendly to the environment.

Nanotechnology can make a significant difference in relation to climate change in fuel additives to increase the efficiency of diesel engines; photovoltaic technology for solar cells; the hydrogen economy and fuel cells; batteries and supercapacitors for energy storage; and improved insulation for houses and offices. However, the different nanotechnologies that will be brought to bear on this problem will only form part of a much larger technology-based solution, which, in turn, will also be at the mercy of politics, economics and market forces.

Cognitive Teaching & learning objectives	<ul style="list-style-type: none"> • The learner understands the greenhouse effect as a natural phenomenon caused by an insulating layer of greenhouse gases. • The learner knows which human activities – on a global, national, local and individual level – contribute most to climate change. • The learner knows about prevention, mitigation and adaptation strategies at different levels (global to individual) and for different contexts and their connections with disaster response and disaster risk reduction. • The learner knows about the application of nanotechnology to influence or control climate change
Socio-emotional Teaching & learning objectives	<ul style="list-style-type: none"> • The learner can explain ecosystem dynamics and the environmental, social, economic and ethical impact of climate change. • The learner can encourage others to protect the climate. • The learner can collaborate with others and to develop commonly agreed-upon strategies to deal with climate change. • The learner can understand their personal impact on the world’s climate, from a local to a global perspective. • The learner can recognize that the protection of the global climate is an essential task for everyone and that we need to completely re-evaluate our worldview and everyday behaviours in light of this.

Suggested topics for SDG 13: Climate Action

Greenhouse gases and their emission
 Energy, agriculture and industry-related greenhouse gas emissions
 Climate change-related hazards leading to disasters like drought, weather extremes, and their unequal social and economic impact within households, communities and countries and between countries
 Nanomaterials used in controlling greenhouse gases
 Nanocomposites and nano catalysts for pollution control
 Nano sensors for pollution detections

DIVISION OF MEDICAL STATISTICS

Subject/ topic/ course in regular curriculum relating to SDG 13	<ul style="list-style-type: none"> • Time Series Analysis
Cognitive Teaching & learning objectives	<ul style="list-style-type: none"> • The learner understands the greenhouse effect as a natural phenomenon caused by an insulating layer of greenhouse gases. • The learner understands the current climate change as an anthropogenic phenomenon resulting from the increased greenhouse gas emissions. • The learner knows which human activities – on a global, national, local and individual level – contribute most to climate change. • The learner knows about the main ecological, social, cultural and economic consequences of climate change locally, nationally and globally and understands how these can themselves become catalysing, reinforcing factors for climate change. • The learner knows about prevention, mitigation and adaptation strategies at different levels (global to individual) and for different contexts and their connections with disaster response and disaster risk reduction.
Socio-emotional Teaching & learning objectives	<ul style="list-style-type: none"> • The learner can explain ecosystem dynamics and the environmental, social, economic and ethical impact of climate change. • The learner can encourage others to protect the climate. • The learner can collaborate with others and to develop commonly agreed-upon strategies to deal with climate change. • The learner can understand their personal impact on the world's climate, from a local to a global perspective. • The learner can recognize that the protection of the global climate is an essential task for everyone and that we need to completely re-evaluate our worldview and everyday behaviours in light of this.
Behavioural Teaching & learning objectives	<ul style="list-style-type: none"> • The learner can evaluate whether their private and job activities are climate friendly and – where not – to revise them. • The learner can act in favour of people threatened by climate change. • The learner can anticipate, estimate and assess the impact of personal, local and national decisions or activities on other people and world regions. • The learner can promote climate-protecting public policies. • The learner can support climate-friendly economic activities.

Examples of learning approaches and methods for SDG 13“Climate Action”

- ✓ Time series analysis of climate variables using seasonal ARIMA approach
- ✓ Prediction of Global Monthly Absolute Temperature for Environmental Decision Making
- ✓ forecasting of temperature
- ✓ Trend analysis of climate time series

Suggested topics for SDG 13“Climate Action”

- ✓ Time Series Forecasting – Analyze Time Series Data
- ✓ ARIMA approach
- ✓ Classical statistical and bootstrap methods
- ✓ Modelling of climate change

DIVISION OF GEOINFORMATICS

<p>Subject/ topic/ course in regular curriculum relating to SDG 1</p>	<ul style="list-style-type: none"> • Subject: Geoinformatics for Natural Resource Management • Subject: Geoinformatics for Hydrology • Practical: Spatial-Temporal Analysis of the Climatechange, Land Surface Temperature and Urban Heartland. • Sea Surface temperature analysis using GIS & Remote Sensing. • Flood prediction, drought evaluation, snow cover mapping • Climate Indices using Geoinformatics • Climate Risk and Mitigation for sustainable development using
<p>Cognitive Teaching & learning objectives</p>	<p>At the end of 2nd year the learner should be able to</p> <ul style="list-style-type: none"> • understands the greenhouse effect as a natural phenomenon caused byan insulating layer of greenhousegases. • Knows about GIS application in prevention, mitigation and adaptationstrategies at different levels (global to individual) and for different contexts and their connections with disaster response and disaster riskreduction. • Perform climate mapping and prediction for future projected changesin climate by using GIS data • Apply the GIS decision support system to study spatial-temporal analysis of the climate elements
<p>Socio-emotional Teaching & learning objectives</p>	<p>At the end of final year the student should be able to</p> <ul style="list-style-type: none"> • explain ecosystem dynamics and the environmental, social, economic and ethical impact of climate change. • Encourage others to protect the climate. • Collaborate with others and develop agreed-upon strategies com-monly to deal with climatechange. • Understand their personal impact on the world’s climate, from a localto a global perspective.
<p>Behavioural Teaching & learning objectives</p>	<p>At the end of the program the learner should be able to</p> <ul style="list-style-type: none"> • act in favour of people threatened by climate change. • Anticipate, estimate and assess the impact of personal, local and national decisions or activities on other people and world re- gions. • Promote climate-protecting public policies. • Support climate-friendly economic activities.

Suggested topics for SDG 13 “Climate Action.”

- Uses of GIS & RS in Climate Change Detection
- Climate Wizard Delivers Climate Change Data and Models
- Assessing Economic Biomass Resources
- Automated GIS Process Is Creating a Snapshot of Biomass and Carbon in the forest.
- Mapping the Solar Potential of Rooftops
- Harvesting Efficiently Using Mobile GIS
- National Carbon Sequestration (NatCarb)
- GIS and the Science Behind Tapping Wind Power Offer Insight on the Resource’s Feasibility

Examples of learning approaches and methods for SDG 13 “Climate Action.”

- Climate change education (CCE)
- Analyze different climate change scenarios concerning their assumptions, consequences and their preceding development paths
- Develop and run an action project or campaign related to climate protection using GIS
- Develop a web page or blog for group contributions related to climate change issues
- Develop a study case about how climate change could increase the risk of disasters in a local community
- Develop an enquiry-based project investigating the statement “Those who caused the most damage to the atmosphere should pay for it.”



‘Touching the lives of Millions’

Focusing on a purpose as expansive and yet as specific as improving quality of life through Human Development, the JSS Mahavidyapeetha has grown from strength to strength. A long and healthy life, Education for all and a decent standard of living, the indicators of Human development, have been the underlying philosophy of Jagadguru Sri Veerasimhasana Mahasamsthana Math, Suttur Sriksheethra, for centuries. This is also the philosophy for which the Mahavidyapeetha today stands for.

Under the untiring efforts of Jagadguru Dr. Sri Shivarathri Rajendra Mahaswamiji, the Mahavidyapeetha has witnessed enormous growth in the field of education and today has over 300 institutions under its fold, from kindergartens to postgraduate centres and postdoctoral research catering to the educational needs of more than 1,00,000 students.

The Mahavidyapeetha continues to play an important role in expanding the scope of its activities to several branches of knowledge, welfare, and culture. Its educational efforts span crèches for toddlers of working rural women, schools to impart primary and secondary education in both Kannada and English medium, Colleges, Polytechnics, Technical, Medicine, etc. For realizing its mission, it has equipped itself with an extensive infrastructure and an army of dedicated and highly qualified human resource. These institutions, located in strategic areas, serve a broad spectrum of society, from virtually remote tribal villages to metropolitan cities such as Bengaluru, Noida, New Delhi, Ooty, and Coimbatore, besides their presence in United States, Mauritius, and Dubai.

Apart from formal education, the initiatives stretch to integrated rural development through training and empowering of rural folk, reaching out healthcare to people through modern and traditional Indian systems of medicine, patronizing literary activities, visual arts, performing arts, restoration of temples and historical monuments.

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