



NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503

SUSTAINABLE DEVELOPMENT GOALS – 12

RESPONSIBLE CONSUMPTION AND PRODUCTION





NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503

12.1 Ethical Sourcing of Food Supplies

National Engineering College (Autonomous), Kovilpatti is committed to promoting sustainable and ethical food procurement practices within the campus. The institution ensures that food served in the hostels and canteens is sourced from reliable suppliers who comply with food safety and quality standards. These initiatives include:

1. **Quality Food Procurement:** Food grains, vegetables, fruits, dairy products, and other essential commodities are procured from authorized vendors ensuring quality and hygiene.
2. **Fresh and Nutritious Food:** The institution emphasizes the use of fresh ingredients and balanced meals to promote the health and well-being of students and staff.
3. **Food Safety Standards:** The college canteen and hostel kitchens follow hygienic food preparation, storage, and handling practices in accordance with food safety regulations.
4. **Support for Local Suppliers:** Preference is given to locally available food products and suppliers wherever feasible, promoting the local economy and reducing transportation-related environmental impacts.
5. **Reduction of Food Wastage:** Awareness is created among students and staff to minimize food wastage through responsible consumption practices.



Institutional Cafeteria with Quality Food Services



NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503



Hostel Mess Ensuring Quality Food Services

12.2 Waste Management Including Hazardous Materials

National Engineering College (Autonomous), Kovilpatti implements effective waste management practices to ensure the safe handling, segregation, and disposal of hazardous and non-hazardous waste generated on campus. These initiatives include:

1. **Waste Segregation:** Separate collection bins are provided for biodegradable, recyclable, and non-recyclable waste across the campus.
2. **Hazardous Waste Handling:** Laboratory chemicals, electronic waste, batteries, printer cartridges, and other hazardous materials are collected and disposed of through authorized agencies following statutory regulations.
3. **Laboratory Safety:** Laboratories follow standard operating procedures for the storage, handling, and disposal of chemicals and hazardous materials.
4. **Environmental Awareness:** Awareness programmes are organized to educate students and staff about responsible waste management practices.
5. **Compliance:** Waste management practices comply with environmental regulations and institutional safety guidelines.



NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503

12.3 Waste Disposal – Recycled

National Engineering College (Autonomous), Kovilpatti promotes recycling as an essential component of sustainable campus management. Recyclable waste generated on campus is systematically collected and transferred to authorized recycling agencies.

1. Paper waste is collected and sent for recycling.
2. Plastic, metal, and glass waste are segregated and recycled through approved vendors.



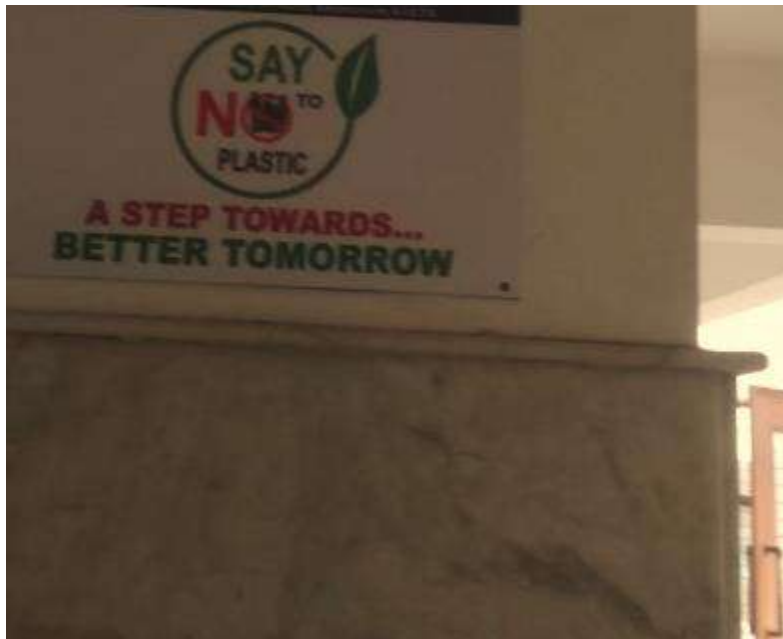
NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503

3. Electronic waste is disposed of through certified e-waste recyclers.
4. Reusable materials are recovered wherever possible to minimize landfill disposal.
5. Students are encouraged to participate in recycling initiatives through awareness campaigns.

12.4 Minimization of Plastic in Campus

National Engineering College (Autonomous), Kovilpatti promotes a plastic-conscious campus by encouraging the reduction of single-use plastics and adopting environmentally friendly alternatives.

1. The institution discourages the use of single-use plastic items during campus events.
2. Students and staff are encouraged to use reusable water bottles, lunch boxes, and cloth bags.
3. Awareness programmes promote plastic-free practices among the campus community.
4. Dustbins are provided to prevent littering and improve waste collection.
5. Environmental campaigns encourage responsible plastic consumption.



Plastic-Free Campus Initiative



NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503

12.5 Minimization of Disposable Items

National Engineering College (Autonomous), Kovilpatti encourages the use of reusable materials to minimize disposable products across the campus.

1. Steel or reusable utensils are used in hostel dining facilities wherever possible.
2. Digital communication minimizes paper-based notices and printed materials.
3. Refillable pens, reusable stationery, and durable materials are encouraged.
4. Online submissions and digital documentation reduce paper consumption.
5. Sustainable alternatives are promoted during institutional events.

12.6: Waste Generated and Recycled

National Engineering College (Autonomous), Kovilpatti continuously monitors the waste generated on campus and adopts recycling practices to reduce environmental impact.

1. Waste generated from academic, administrative, and residential areas is segregated.
2. Organic waste is processed through composting wherever applicable.
3. Recyclable materials are periodically transferred to recycling agencies.
4. E-waste is disposed of following environmental guidelines.
5. Waste reduction practices are reviewed periodically to improve sustainability.

12.7 Sustainable Procurement (Outsourced Suppliers)

National Engineering College (Autonomous), Kovilpatti encourages responsible procurement by engaging suppliers who comply with quality, safety, and environmental standards.

1. Procurement follows transparent institutional procedures.
2. Preference is given to suppliers providing quality-certified products.
3. Locally available products are procured wherever feasible.
4. Vendors are expected to comply with environmental and safety regulations.
5. Sustainable procurement practices support responsible institutional operations.



NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503

12.8 Waste Management and Recycling Policy

National Engineering College (Autonomous), Kovilpatti has established systematic waste management practices to minimize waste generation and maximize recycling across the campus.

1. Waste segregation is practiced at the source.
2. Recyclable waste is periodically collected by authorized agencies.
3. Hazardous laboratory waste is handled following safety protocols.
4. Awareness programmes encourage responsible waste disposal.
5. Continuous monitoring ensures effective implementation of waste management practices.

23CE06L

E-WASTE MANAGEMENT

L	T	P	E	C
1	0	0	0	1

COURSE OUTCOMES

Upon Successful completion of this course, the students will be able to

CO1: Apply the suitable technology for recycling the E-waste in accordance with the standards of CPCB

CO1: Apply the suitable technology for recycling the E-waste in accordance with the standards of CPCB

15

Introduction to E-Waste- E-waste generation rate in India and developed countries- Environmental and Health Impacts of E-Waste- E-Waste Recycling Technologies- Legal and Regulatory Framework- Sustainable Practices in E-Waste Management-Extended producer responsibility (EPR) - LCA for E-waste management- E-Waste Disposal and Landfill Considerations-E-waste management rules by CPCB

L: 15; TOTAL: 15 PERIODS

TEXT BOOK

1. Rakesh Jhori, E-waste: implications, regulations, and management in India and current global best practices, The Energy and Resources Institute, 2015

REFERENCES

1. Patrick Schorder, The Circular Economy and the Global South: Sustainable Lifestyles, Decent Work and the Green Economy, Routledge, 2019.
2. E-waste management rules, 2011 & 2016



NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503

23CE11E

INDUSTRIAL WASTE MANAGEMENT

L	T	P	E	C
3	0	0	0	3

COURSE OUTCOMES

Upon completion of this course, the students will be able to

COURSE OUTCOMES

Upon completion of this course, the students will be able to

CO1: Identify the types, characteristics and effects of industrial waste in environment

CO2: Evaluate the concepts of Pollution prevention

CO3: Employ the various treatment technologies of waste from major industries

CO4: Apply the options for wastewater reuse & residue management

CO5: Execute the technologies for managing Industrial waste

CO1: Identify the types, characteristics and effects of industrial waste in environment L:9

Types of industries and industrial pollution – Industrial scenario in India – Regulatory requirements for treatment of industrial wastewater, industrial waste survey, industrial wastewater generation rates, population equivalent, Bioassay studies – effects of industrial effluents on streams, land, sewage treatment plants and human health.

CO2: Evaluate the concepts of Pollution prevention L: 8

Prevention Vs Control of industrial pollution – benefits and barriers. Source reduction techniques – waste audit, evaluation of pollution prevention options, environmental statement as a tool for pollution prevention, waste minimization circles.

CO3: Employ the various treatment technologies of waste from major industries L:10

Equalization – neutralization, Removal of organic and inorganic solids-oil separation, flotation, precipitation, Aerobic and anaerobic biological treatment – Advanced Chemical oxidation - Electro chemical oxidation, wet air oxidation, ozonation, photocatalysis – Heavy metal removal, Refractory organics separation by adsorption – Individual and common effluent treatment plants



NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503

CO4: Apply the options for wastewater reuse & residue management L: 9

Evaporation – Evaporators types and classification – Zero Liquid discharge systems – Quality requirements for wastewater reuse, industrial reuse, disposal on water and land – Residuals from industrial wastewater treatment units - quantification and characteristics of sludge – thickening, digestion, conditioning, dewatering and disposal of sludge, Management of RO rejects.

CO5: Execute the technologies for managing Industrial waste L: 9

Industrial manufacturing process description, waste water characteristics, source reduction options and waste treatment flow sheet for textiles, tanneries, pulp and paper, metal finishing, sugar and distilleries.

TEXT BOOKS

1. Eckenfelder, W. W., Industrial Water Pollution Control, McGraw Hill, 2014.

Passed in the Board of studies meeting held on 21.11.2025 & Approved in the 24th Academic Council meeting dated 13.12.2025
B.E. – Civil Engineering R-2023 Curriculum and Syllabus

Page 83 of 119

NATIONAL ENGINEERING COLLEGE, K.R. NAGAR, KOVILPATTI
(An Autonomous Institution, Affiliated to Anna University, Chennai)

2. Industrial wastewater management, Treatment & disposal, Water Environment "Federation Alexandria Virginia, Third Edition, 2008

REFERENCES

1. Nelson Leonard Nemerow, "Industrial waste Treatment", Elsevier, 2007.
2. Lawrence K. Wang, Yung Tse Hung, Howard H. Lo and Constantine Yapijakis "Handbook of Industrial and Hazardous waste Treatment", Second Edition, 2004.
3. Paul L. Bishop—Pollution Prevention:-Fundamentals and Practice, McGraw–Hill International, 2000.
4. Pfeffer, J.T., "Solid Waste Management Engineering", Prentice Hall, 1992.

12.9 Sustainability Report

National Engineering College (Autonomous), Kovilpatti demonstrates its commitment to sustainable development by documenting and reporting environmental, social, and institutional sustainability initiatives.

1. The institution regularly publishes information on sustainability initiatives through annual reports, newsletters, websites, and departmental reports.



NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503

2. Environmental activities such as tree plantation, waste management, energy conservation, water conservation, and awareness programmes are documented.
3. Student participation in sustainability-related activities is encouraged and recognized.
4. Institutional policies and green campus initiatives are periodically reviewed to improve sustainability performance.
5. The sustainability report serves as a reference for continuous improvement and institutional accountability towards the Sustainable Development Goals.



Campus Tree Plantation Initiative

12.10 Renewable Energy for Sustainable Resource Consumption

As part of its commitment to responsible resource management and sustainable campus operations, the institution has adopted renewable energy systems to reduce dependence on conventional energy sources and minimize its environmental footprint. Solar photovoltaic (PV) power plants with a total installed capacity of **360 kW** have been installed across the campus. Additionally, a



NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503

90 kW solar power plant at the Mechanical Engineering Block is currently under progress, further strengthening the institution's renewable energy capacity. The use of clean energy contributes to reduced electricity consumption from conventional sources, lower greenhouse gas emissions, improved energy efficiency, and long-term environmental sustainability, thereby supporting responsible consumption and production practices.

Environmental Benefits Earned as on 15.06.2026





NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503



Solar Photovoltaic Power Plant on Campus

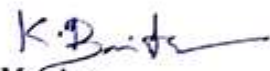




NATIONAL ENGINEERING COLLEGE
(An Autonomous Institution – Affiliated to Anna University Chennai)
K.R. NAGAR, KOVILPATTI – 628 503



Rooftop Solar PV System Supporting Sustainable Campus Operations


Member


SDG Coordinator


Principal
2/12