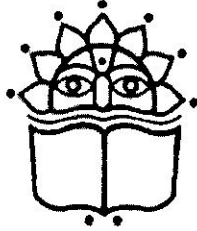


**Vidya Prathishthan's  
Kamalnayan Bajaj Institute of Engineering and  
Technology, Baramati.**



**Faculty of Science and Technology**

**Board of Studies**

**Civil Engineering**

**Syllabus**

**Open Electives (OE) Courses**

S.Y. B. Tech.

Civil Engineering

**(w.e.f. AY: 2024 - 2025)**


Open Electives (OE) Subjects			
OE2301	Digital Marketing	OE2311	Biotechnology
OE2302	Professional Leadership	OE2312	International Relations
OE2303	Organizational Behavior	OE2313	Universal Human Values
OE2304	Industrial Management	OE2314	Education Technology
OE2305	Disaster Management	OE2315	Design Thinking
OE2306	Energy Economic & Management	OE2316	Financial Literacy for Bharat#
OE2307	Operation Research	OE2317	Sustainability & Climate Change
OE2308	Intellectual Property Rights	OE2318	Agriculture Technology
OE2309	Cyber Laws	OE2319	Architectural Technology
OE2310	Bioinformatics		

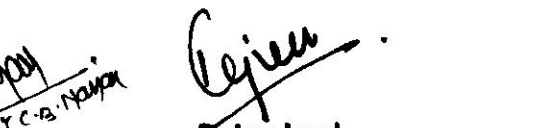
  
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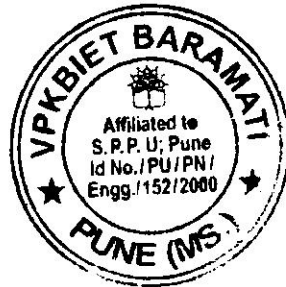
Civil Engineering  
Head

Department of Civil Engineering  
VPKBIET, Baramati-413133

  
DEAN  
Academics

  
DEAN  
Autonomy

  
Principal  
Vidya Pratishthan's  
VPKBIET, Baramati  
Kamalnayan Bajaj Institute of  
Engineering & Technology, Baramati  
Vidyanagari, Baramati-413133



**Course Name with Code: Disaster Management (OE2305)**

**Teaching Scheme:**

**TH: 2 Hrs./week**

**Credits**

**2**

**Examination Scheme:**

**End semester : 50 Marks**

**Prerequisite:**

Basic Geography and Environmental Science

**Course Objectives:**

1. To provide basic conceptual understanding of disasters
2. To study approaches of Disaster Management
3. To build skills to respond to disaster
4. To enhance disaster preparedness through training, awareness, GIS techniques, and risk assessment

**Course Outcomes: students will be able**

CO1: To remember disaster types, risks, vulnerabilities, and management of natural and man-made events

CO2: To understand the various types of natural disasters, their management strategies, and the socio-economic and environmental impacts, with a focus on case studies from Sikkim

CO3: To summarize disaster mitigation, management techniques, policies, and construction in seismic zones

CO4: To apply skills in disaster preparedness, awareness, GIS usage, and risk assessment projects

**Course Contents**

**Unit I: Disasters Risks & Vulnerabilities**

**(6 Hours)**

Definition and types of disaster Hazards and Disasters, Risk and Vulnerability in Disasters, Natural and Man-made disasters, earthquakes, floods drought, landside, land subsidence, cyclones, volcanoes, tsunami, avalanches, global climate extremes. Man-made disasters: Terrorism, gas and radiations leaks, toxic waste disposal, oil spills, forest fires.

**Unit II: Major Disasters: Types, Management, and Impacts**

**(6 Hours)**

Study of important disasters, Earthquakes and its types, magnitude and intensity, seismic zones of India, major fault systems of Indian plate, flood types and its management, drought types and its management, landside and its managements, case studies of disasters in Sikkim (e.g.) Earthquakes, Landside). Social Economics and Environmental impact of disasters.

**Unit III: Disaster Mitigation and Management Techniques**

**(6 Hours)**

Mitigation and Management techniques of Disaster, Basic principles of disasters management, Disaster Management cycle, Disaster management policy, National and State Bodies for Disaster Management, Early Warning Systems, Building design and construction in highly seismic zones, retrofitting of buildings.

**Unit IV: Disaster Preparedness: Training & Awareness**

**(6 Hours)**

Training, awareness program and project on disaster management, Training and drills for disaster preparedness, Awareness generation program, Usages of GIS and Remote sensing techniques in disaster management, Disaster risk assessment and preparedness for disasters with reference to disasters in Sikkim and its surrounding areas.

**Textbooks:**

1. Disaster Management Guidelines, GOI-UND Disaster Risk Program (2009-2012)
2. Damon, P. Copola, (2006) Introduction to International Disaster Management, Butterworth Heineman.
3. Gupta A.K., Niar S.S and Chatterjee S. (2013).
4. Disaster management and Risk Reduction, Role of Environmental Knowledge, Narosa Publishing House, Delhi.
5. Murthy D.B.N. (2012) Disaster Management, Deep and Deep Publication PVT. Ltd. New Delhi.
6. Modh S. (2010) Managing Natural Disasters, Mac Millan publishers India LTD.

**Course Name with Code: Sustainability and Climate Change (OE 2317)**

**Teaching Scheme:**

**TH: 2 Hrs./week**

**Credits**

**2**

**Examination Scheme:**

**End Semester- 50 Marks**

**Prerequisite:**

1. Fundamentals of Environmental Studies, Engineering Chemistry

**Course Objectives:**

1. To Understand the scientific basis of climate change
2. To analyze the environmental, social, and economic impacts of climate change.

**Course Outcomes:** After Completion of course students will be able to

CO1: Understand the scientific basis of climate change.

CO2: Analyze the environmental, social, and economic impacts of climate change.

CO3: Understand policies and strategies for mitigating climate change and explore sustainable practices and their implementation.

CO4: Develop critical thinking skills to address sustainability challenges

**Course Contents**

**UNIT 1:**

**(6 Hours)**

**Introduction to Sustainability and Climate Change**

Definitions and key concepts, History of climate science, Overview of sustainability principles  
Climate Change Science: Greenhouse gases and the greenhouse effect, Climate models and predictions  
Evidence of climate change  
Impacts of Climate Change: Environmental impacts (e.g., sea level rise, extreme weather events), Social impacts (e.g., health, displacement), Economic impacts (e.g., agriculture, industry)

**UNIT 2:**

**(6 Hours)**

**Mitigation Strategies**

Renewable energy sources, Energy efficiency and conservation, Carbon capture and storage  
Adaptation Strategies: Resilient infrastructure, Disaster risk reduction, Climate-smart agriculture

**UNIT 3:**

**(6 Hours)**

**Sustainable Practices:**

Sustainable transportation, Waste management and recycling, Water conservation, Policy and Governance: International climate agreements (e.g., Paris Agreement), National and local climate policies, Role of non-governmental organizations

**UNIT 4:**

**(6 Hours)**

**Future Directions and Innovations:**

Emerging technologies for sustainability, Role of education and awareness, Interdisciplinary approaches to climate change

**Books & Other Resources:**

**Textbooks**

1. The Great Derangement: Climate Change and the Unthinkable, Amitav Ghosh
2. Global Warming in India by R. N. Singh
3. Climate Change and India: Vulnerability Assessment and Adaptation edited by P. R. Shukla, S. K. Sharma, and P. V. Ramana
4. Sustainable Development and Climate Change by Neeraj Prasad, Shyamal Sarkar, and others
5. Climate Change: Perspectives from India edited by Navroz K. Dubash

### **Reference Books**

1. The Sixth Extinction: An Unnatural History by Elizabeth Kolbert
- 2. This Changes Everything: Capitalism vs. The Climate by Naomi Klein
3. Sustainability: A Comprehensive Foundation by Tom Theis and Jonathan Tomkin

**Course Name with Code: Architectural Technology (OE2319)**

**Teaching Scheme:**  
**TH:2 Hrs /week**

**Credits**  
**2**

**Examination Scheme:**  
**End Semester :50 Marks**

**Prerequisite:**

Basics of Civil Engineering, Building Planning

**Course Objectives:**

1. To understand architectural design concepts
2. To Practice Architectural Graphics tools
3. To justify Use of software's for preparation of statutory drawings
4. To explain Building codes and regulations for development control

**Course Outcomes: Students will be able to**

1. Understand architectural design concepts
2. Practice Architectural Graphics tools
3. Justify Use of software's for preparation of statutory drawings
4. Explain Building codes and regulations for development control

**Course Contents**

**Unit I: Architectural Design**

**(6 Hours)**

Study of anthropometry and its association with built environment, understanding space and its volumetric sense through various configurations, exploring form alternatives with a sense of visual appeal, Interrelationships of form and function, Expressing design idea/s through presentation drawings

**Unit II: Architectural Graphics**

**(6 Hours)**

Introduction: Basic terminology of perspective drawing - Vanishing Point, Horizon, Picture Plane, Point of View, Projection Plane, Reference Plane, Perspectives: One Point Perspective, Two Point Perspective, Three Point Perspective, Sociography: Study of shades and shadows cast by building surfaces or a combination of objects on each other in perspective

**Unit III: Use of software's**

**(6 Hours)**

AutoCAD: Creation of files, tools, commands, layers, blocks and symbols in AutoCAD; Creation of Orthographic Projections, Isometric Views and 2-D drawing of solids through AutoCAD, Google Sketch up: Development of a set of architectural drawings through Google sketch up

**Unit IV: Building codes and regulations**

**(6 Hours)**

Historical background and need for codes and bye laws for buildings and land use development in urban context, National Building Code and provisions related to general building requirements, fire and life safety, lighting and ventilation, MEP, acoustics, vertical circulation, sustainability etc.; Energy Conservation Building Code. Overview of various development regulations, building bye laws, architectural controls; Study of Building Bye laws/regulations of selected cities with emphasis on zoning, architectural controls, frame controls etc. Requirements of statutory drawings- submission drawings, as built drawings, completion drawings

## **Books & Other Resources:**

### **Text books:**

1. Ching, F.D.K., "Design Drawing", Van Nostrand Reinhold.
2. Doorley, Scott, Witthoft, Scott, "Make Space – How to set the stage for creative collaboration", John Wiley & Sons.
3. Bhatt, N.D. and Panchal, V.M., "Engineering Drawing – Plane and Solid Geometry", 48th Ed., Charotar Publishing House.
4. Griffin, A.W. and Brunnicardi, V.A., "Introduction to Architectural Presentation Graphics", Prentice Hall.

### **Reference books:**

1. Watson, D. (Editor), "Time-saver Standards for Architectural Design: Technical Data for Professional Practice", 8th 2003 2005 Ed., McGraw-Hill.
2. Mike Tardos, "Google Sketch Up", Peachpit Press
3. Ellen Finkelstein, "AutoCAD 2012 and AutoCAD LT 2012 Bible", Wiley Publishing Inc.
4. National Building Code
5. ECBC
6. Building Byelaws of different cities of India