CE102: Environmental Studies

By

Dr. Subrata Hait, Dept. of CEE

Objective of the Course

- The objective of Environmental Studies course is *to sensitize and create awareness about the environmental pollution, degradation, issues and protection*

Course Website:
http://172.16.1.3/~shait

Syllabus

- **1. Introduction to the Course (*No. of contact hours: 01*);**
- **2. Environmental Issues and Systems: Local, regional, continental and global environmental issues including greenhouse gases and global warming, acid rain, ozone layer depletion, climate change - Extent of impact, scientific responses and regulatory actions ; Environmental systems (*No. of contact hour: 02*)**
- **3. Ecology and Sustainable Development – Ecosystems, Natural cycles, Biodiversity, Man and environment (*No. of contact hours: 02*);**
- **4. Water Resources – Hydrologic cycle and its components, Groundwater and surface water, Water quality (*No. of contact hours: 03*);**
- **5. Environmental Legislations and Standards (*No. of contact hours: 01*);**
- **6. Environmental Sanitation: Conventional and ecological sanitation (*No. of contact hours: 02*);**
- **7. Environmental Pollution and Control – Air, Water, Soil, Noise Pollution, Solid and Hazardous Waste, Biomedical Waste, E-waste: Sources, effect, treatment and control (*No. of contact hours: 10*)**

[*Total No. of Contact Hours: 21*]

Books

- **Text Books / Materials:**
  - Gaur, R.C., *Basic Environmental Engineering*, New Age International, 2008.
  - Kaushik, A. and Kaushik, C.P., *Perspectives in Environmental Studies,* 4th Edition, New Age International, 2014.
  - Manahan, S.E., *Environmental Chemistry*, 7th Edition, CRC Press, 2000.
  - Sawyer, C.N., McCarty, P.L. and Parkin, G.F., *Chemistry for Environmental Engineering and Science*, 5th Edition, McGraw-Hill, 2003.

- **Reference Books:**
  - Botkin, D.B. and Keller, E.A., *Environmental Science*, 8th Edition, Wiley, 2012.
  - Cunningham, W.P. and Cunningham, M.A., *Environmental Science: A Global Concern*, 13th Edition, McGraw-Hill, 2015.
  - Davis, M.L. and Masten, S.J., *Principles of Environmental Engineering and Science,* 2nd Edition, McGraw-Hill, 2013.

Lecture Schedule

- ***Lecture Schedule:*** Mon 10:00 – 10:55 h R102/Block 09
  Tue 09:00 – 09:55 h R102/Block 09
  Thu 10:00 – 10:55 h R102/Block 09
- ***Visiting Hour for Consultation:***
  Thu 17:15 – 18:15 h R215/Block 06
- ***Contact:***

  Dr. Subrata Hait

  Dept. of Civil & Environmental Engineering

  Room: 215, Block 06

  Tel.: 8195

  Email: shait@iitp.ac.in
- ***Course Website:*** **http://172.16.1.3/~shait**

Teaching Assistant (TA)

Mr Amber Trivedi, ***Research Scholar***

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Attendance Policy!

- Attendance is compulsory!
- If you have less than 75% attendance, you will NOT be allowed to sit in the course examination as per the Institute norms
- Attendance will be linked to your Final Grading!

Grading Policy!

- Relative Grading!

Distributions:

- Home Assignments (Problem Sets for Solving): 0% (*Not to be graded*)
- Quiz (One - Announced on any Saturday): 40%
- Final Examination (during MSE): 60%

Emergence of Environmental Science / Engineering / Management Discipline

- Public Health Engineering
  - Water Supply → Civil Engineering
- Sanitary Engineering
  - Water Supply and Sanitation →Civil Engineering
- Environmental Engineering and Management → Inter-disciplinary → Infrastructural Engineering

Environmental Science / Engineering / Management Discipline

- Multidisciplinary or Interdisciplinary
  - Various disciplines of Science, Engineering and Management
- Several Professions and Sectors
  - Industry, Business, Academics and Research, Policy Making, Planning, Judiciary, Implementation/Administration, Journalism; Government/Semi government or Public/ Private Sector/NGOs
- Preventive Activities, Control Activities, Remedial Activities → Resource Conservation, Sustainable Development; "End of the Pipe" Solutions; Regeneration

Some Key Terms……..

Environment,

Systems,

Environmental Systems / Ecosystems

Environment

**Aggregate of surrounding things,
conditions or influences,
especially as affecting or that affects
the existence or development of
someone or something
[LIVING (*Biotic*)] or [NON LIVING (*Abiotic*)]**

Hardware/ Software →Physical/Nonphysical

Systems

Collection of objects bonded together in some way so that the collection is more than an independent assemblage of parts

Micro → Macro → Mega Levels (Depending Upon the Boundaries Chosen in a Particular Context)

Ecosystems

Objects consisting of Living (*Biotic Component*) as well as Non-living (*Abiotic Component*) entities