| Year \& | Course | Course Name: Sustainable River | No. of | L | T\&PS | P |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Sem | Code: CE4604 | Development | Credits: 4 | 2 | 2 | 0 |

## Unit I : Concepts of sustainability:

Sustainability indicators, resources depletion, growth models, Planetary System Boundaries, footprints, prosperity, Globalization, inter-connected world, Stakeholders in sustainability

## Unit II : Natural water resources:

Anthropocene, Climate change, climate variability, Hydrological cycle, water balance, catchment terminology, River basin management, Water availability, surplus, deficit, Water scarcity, water crisis, Stream morphology and land use, Nutrient cycles

Unit III : Status and challenges regarding sustainability and river basin management:
Water and society, poverty, demography, Water governance, integrity, accountability, Pollution, water related diseases, source water protection, Water and land use, wetlands, desertification, Dams, diversions, artificial rainfall, Economic and financial instruments in water management, Hydrological change due to climate change

## Unit IV : Towards sustainability in river basin management - a holistic approach:

Protecting water resources / improving water quality, Living standards, equity, education and technology transfer, Water conservation and efficiency,

Unit V : Towards sustainability in river basin management - interdisciplinary approach: Improving monitoring and data management, decision support systems, Improving management and justice, Improving administrative (transnational) structures, Improving prediction and risk assessment

## Unit VI : How to evaluate sustainability in river basin management?

Sustainability criteria (ecological, economic, institutional, social), Multi-criteria decision support

## References/Text Books:

1. 
2. 
3. 
4. 

Lecture Plan: Unit-I \& -II syllabus for MID-I, Unit-III \& -IV syllabus for MID-II and Unit-V \& -VI syllabus for MID-III examinations.

Video Lectures (Web Links):

1. http://nptel.ac.in/courses/105106145/
