Water Resources Engineering

SWAYAM Prabha Course Code: C9

PROFESSOR'S NAME	Prof. H.Prashanth Reddy
DEPARTMENT	Civil Engineering
INSTITUTE	IIT Kharagpur
COURSE OUTLINE	This course is a foundation level course on hydrology. Surface water hydrology is the focus of this course. The course describes hydrologic processes and their analysis. Finally deals with hydrologic design. **Objectives** Understanding precipitation, evaporation, evapotranspiration, subsurface water, surface water, unit hydrograph and frequency analysis towards practical applications of hydrology such as the design and operation of hydraulic structures, flood control, irrigation and storm water drainage **Learning Outcomes** 1) Student learns scientific principles governing hydrologic phenomena. 2) Application of continuity, momentum and energy to flow of atmospheric water, subsurface water and surface water. 3) Learning computational methods in hydrology for specific tasks such as rainfall, runoff modelling, flow routing, and analysis of extreme events. 4) Understanding selection of design storms including probable maximum precipitation, and the calculation of design flows for hydraulic structures. 5) Learning control volume approach for analytical solutions of hydrologic systems operation. **Course outline** Hydrologic Cycle; Hydrologic Processes; Atmospheric Water; Subsurface Water; Surface Water; Unit Hydrograph; Lumped Flow Routing; Hydrologic Statistics; Frequency Analysis; Design Storms; Irrigation requirement of crops

COURSE DETAILS			
Sl. No	**Module ID/ Lecture ID**	**Lecture Title/Topic**	**Duration**
1	C9-Mod1	Hydrologic processes	0:45:06
2	C9-Mod2	Hydrologic processes (continued..)	0:44:26
3	C9-Mod3	Hydrologic processes Part 1	0:56:26
4	C9-Mod4	Hydrologic processes Part 2	1:12:55
5	C9-Mod5	Hydrologic processes Part 3	0:28:01
6	C9-Mod6	Atmospheric water Part-1	0:20:53
7	C9-Mod7	Atmospheric water Part 2	1:06:33
8	C9-Mod8	Atmospheric water Part 3	0:40:58
9	C9-Mod9	Atmospheric water Part 4	0:51:13
10	C9-Mod10	Atmospheric water Part 5	0:54:49
11	C9-Mod11	Atmospheric water Part 6	0:46:10