



# SWARNANDHRA

## COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

### DEPARTMENT OF CIVIL ENGINEERING

### TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester	
20CE7003	Introduction to Watershed Management	VII	ME & ROBO	04	2025-26	09/06/2025	
COURSE OUTCOMES: Students are able to							
1	observe watershed parameters and analyze watershed characteristics to take appropriate management action (K1)						
2	differentiate soil erosion and design control measures (K2)						
3	summarize the suitable harvesting techniques for better watershed management (K2)						
4	apply land grading techniques for proper land management (K3)						
5	prepare appropriate models for watershed management (K3)						
UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity		Text Book / Reference	Contact Hour	Delivery Method
I	observe watershed parameters and analyze watershed characteristics to take appropriate management action (K1)	1.1	UNIT-I: Introduction Concept of watershed development		T1,R1	01	Lecture & Active Learning
		1.2	Objectives, need of watershed development		T1,R1	01	
		1.3	Characteristics of Watersheds: Size, shape		T2,R1	01	
		1.4	Characteristics of Watersheds: physiography, slope,		T2,R1	01	
		1.5	Characteristics of Watersheds: climate, drainage,		T1,R1	01	
		1.6	Characteristics of Watersheds: land use, vegetation, geology and soils		T1,R1	01	
		1.7	Characteristics of Watersheds: geology and soils		T2,R1	01	
		1.8	Characteristics of Watersheds: hydrology and hydrogeology		T1,R1	01	
		1.9	Characteristics of Watersheds: Socio-economic characteristics.		T2,R1	01	
			Class test-I			01	
Total						10	



# SWARNANDHRA

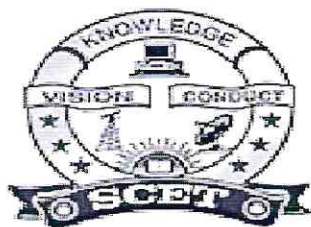
## COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

II	differentiate soil erosion and design control measures (K2)	2.1	UNIT-II: Principles of Erosion: Types and causes of erosion	T1,R1	01	Chalk & Talk, PPT, Active Learning & Tutorial
		2.2	factors affecting erosion	T1,R1	01	
		2.3	Estimation of soil loss due to erosion	T2,R1	01	
		2.4	Universal soil loss equation	T1,R1	01	
		2.5	Measures to Control Erosion: Contour techniques	T2,R1	01	
		2.6	Measures to Control Erosion: ploughing, furrowing,	T1,R1	01	
		2.7	Measures to Control Erosion: trenching, bunding,	T2,R1	01	
		2.8	Measures to Control Erosion: terracing, gully control,	T1,R1	01	
		2.9	Measures to Control Erosion: check dams, rock-fill dams,	T1,R1	01	
		2.10	Measures to Control Erosion: brushwood dam, Gabion	T1,R1	01	
			Video links for different erosion control methods		01	
			Class test-II		01	
		Content beyond Syllabus				
Total					12	
III	summarize the suitable harvesting techniques for better watershed management (K2)	3.1	UNIT-III: Water Harvesting: Techniques of rain water harvesting	T2,R1	01	Chalk & Talk, PPT, Active Learning & Tutorial
		3.2	rain water harvesting from roof top	T1,R1	01	
		3.3	surface flow harvesting	T1,R1	01	
		3.4	subsurface flow harvesting	T2,R1	01	
		3.5	stop dams	T1,R1	01	
		3.6	farm ponds	T1,R1	01	
		3.7	dugout ponds	T1,R1	01	
		3.8	percolation tanks	T1,R1	01	
			Videos on different rain water harvesting techniques		01	
			Class test-III		01	
Content beyond Syllabus						
Total					10	
IV	apply land grading techniques for proper land management	4.1	UNIT-IV: Land Management Land use	T1,R1	01	Chalk & Talk, PPT, Active
		4.2	Land capability classification	T1,R1	01	
		4.3	Management of forest	T2,R1	01	
		4.4	Agricultural land management	T1,R1	01	
		4.5	Grassland management	T2,R1	01	





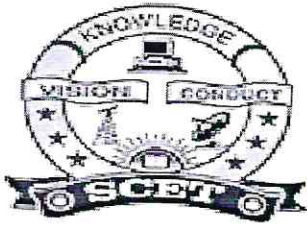
# SWARNANDHRA

## COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

Content beyond Syllabus	nt (K3)	4.6	Wild land management	T1,R1	01	Learning & Tutorial
		4.7	Reclamation of saline soils	T1,R1	01	
		4.8	Reclamation of alkaline soils	T1,R1	01	
			Videos on different reclamation of soil techniques		01	
			Class test-IV		01	
Total					10	
Content beyond Syllabus	V prepare appropriate models for watershed management (K3)	5.1	UNIT-V: Watershed Modeling Data of watershed for modeling	T1,R1	01	Chalk & Talk, PPT, Active Learning & Tutorial
		5.2	Application of watershed models	T1,R1	01	
		5.3	Watershed Model calibration	T2,R1	01	
		5.4	Watershed Model validation	T1,R1	01	
		5.5	Advantages of watershed models	T2,R1	01	
		5.6	Integrated approach for watershed management	T2,R1	01	
		5.7	Integrated approach for watershed management	T2,R1	01	
		5.8	multidisciplinary approach for watershed management	T1,R1	01	
		5.9	Integrated approach for watershed management	T2,R1	01	
			Videos of watershed modeling		01	
			Class test-V		01	
Total					11	
CUMULATIVE PROPOSED PERIODS					53	
Text Books:						
S.No	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION					
1	Abrar Yousuf and Manmohanjit Singh, ‘Watershed Hydrology, Management and Modeling’, Taylor & Francis Ltd; 1st edition, 2021					
2	Das MM and M.D Saikia, ‘Watershed Management’, PHI Learning Pvt. Ltd, 2013.					
3	Murthy J V S/ ‘Watershed Management’ / New Age International Publishers/ 2 <sup>nd</sup> edition/ 2013.					
Reference Books:						
S.No	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION					
1	Wurbs R A and James R A, / ‘Water Resource Engineering’/ Prentice Hall Publishers / 2002					
2	Black P E / ‘Watershed Hydrology’ / Prentice Hall pub,/ 1996.					
Web Details						
1	<a href="https://onlinecourses.swayam2.ac.in/cec22_ge39/course">https://onlinecourses.swayam2.ac.in/cec22_ge39/course</a>					
2	<a href="https://www.epa.gov/watershedacademy/online-training-watershed-management">https://www.epa.gov/watershedacademy/online-training-watershed-management</a>					
3	<a href="https://watershedmg.org/">https://watershedmg.org/</a>					

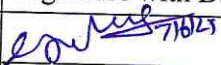
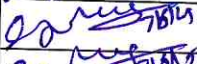
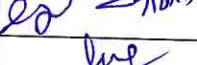



# SWARNANDHRA

## COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh).

	Name	Signature with Date
i. Faculty	Dr M.S.V.K.V. PRASAD	 7/10/23
ii. Course Coordinator	Dr M.S.V.K.V. PRASAD	 7/10/23
iii. Module Coordinator	Dr M.S.V.K.V. PRASAD	 7/10/23
iv. Programme Coordinator	Prof G.V.L.N. Murthy	

  
Principal