



## Course Descriptor

### CVEN553 WATER RESOURCES ENGINEERING

<b>Proposed Academic Year</b>	2020-2021	<b>Last Reviewed Academic Year</b>	Fall 2020
<b>Course Code</b>	CVEN553	<b>Course Title</b>	Water Resources Engineering
<b>Credit hours</b>	3	<b>Level of study</b>	4 <sup>th</sup> Year
<b>College / Centre</b>	COE	<b>Department</b>	Civil and Environmental
<b>Co-requisites</b>	None	<b>Pre-requisites</b>	None

#### 1. COURSE OUTLINE

Introduction to water quality, rivers and streams, lakes and reservoirs, estuaries, bays, harbours. Modeling the processes and parameters that determine the fate of man-made discharges on surface water quality. Understand the major technical and non-technical considerations required in providing adequate planning and management of water resources projects.

#### 2. AIMS

[The course provides students with understanding of the different water resources, their quality and models applied in engineering

#### 3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS

<b>Learning Outcomes (Definitive)</b>	<b>Teaching and Learning methods (Indicative)</b>	<b>Assessment (Indicative)</b>
Upon successful completion of this course, students will be able to:		
1. Model the processes and parameters that determine the fate of man-made discharges on surface water quality	Lectures	Assignments and in-class tests
2. Understand the major technical and non-technical considerations required in providing adequate planning and management of water resources projects	Lectures	Assignments and in-class tests
3. Modeling groundwater flow in consideration of regional flow descriptions and water resource development	Lectures and Lab	
4. Modeling groundwater contamination sources and strategies to prevent and mitigate them	Lectures and Lab	

#### 4. ASSESSMENT WEIGHTING



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Assessment	Percentage of final mark (%)
Assignments + project	20%
Mid-term Examination, First Midterm	20%
Second Midterm	20%
Final Examination	40%
<b>TOTAL</b>	<b>100%</b>

#### 5. ACHIEVING A PASS

Students will achieve **3** credit hours for this course by passing **ALL** of the course assessments and achieving a **minimum overall score of 50%**

***NB \*Ensure that ALL learning outcomes are taken into account***

#### 6. COURSE CONTENT (Indicative)

Introduction to water quality and engineering	
Introduction, definition and terminology of water resources	
Types of Water resources: Rivers and Streams & Lakes and Reservoir	
Estuaries, Bays, and Harbours	
Water resources management and sustainability	
Hydrologic and water Budget	
Engineering economy & Decision analysis applied to Water Resources	
Water pricing and Tariff	
Supply and demand management	
Water resources development and policy	
Planning and management of water resources projects	
Case studies	
WRE software	
<b>TOTAL HOURS</b>	<b>45</b>
<b>Plus RECOMMENDED INDEPENDENT STUDY HOURS</b>	<b>90</b>
<b>TOTAL COURSE HOURS</b>	<b>135</b>



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#### 7. RECOMMENDED READING

##### Core text/s:

1. Cech, T. V. (2009). Principles of Water Resources: History, Development, Management, and Policy, 3rd Ed, John Wiley and Sons, Inc., New York, NY.
2. Fetter, C. W. (2001). Applied Hydrogeology, 4th Ed, Prentice Hall, Englewood Cliffs, NJ

The two books are available on the moodel in pdf format.

##### Library + online resources:

Lambert, R. (2017). *Water Resources: Systems, Management and Investigations*, Nova Science Publishers, Inc. NY, <https://www.masader.om/eds/detail?db=e000xww&an=1512175>

Vedula, S. and Prasad, R. (2002). *Research Perspectives in Hydraulics and Water Resources Engineering*, World Scientific, River Edge, NJ. [masader.om/eds/detail?db=e000xww&an=210583&isbn=9789812777614](https://www.masader.om/eds/detail?db=e000xww&an=210583&isbn=9789812777614)