7/24/2025	DATE	TEC	DIVISION
☑	REQUIRED COURSE	☐	NEW COURSE
☑	ELECTIVE COURSE	☑	REVISION

Lake Land College

Course Information Form

COURSE NUMBER:	CET-087		**TITLE:** *(30 Characters Max)*	Hydraulics & Drainage							
SEM CR HRS:	3.0	**Lecture:**	3.0	**Lab:**	0.0	**ICCB Lab:**	0.0	**ECH:**	3.0		
Course Level:	☐ Gen Ed/IAI ☐ Baccalaureate/Non-IAI ☑ Career/Technical ☐ Dev Ed/Not in Degree Audit			**Clinical Practicum:**	0.0	**Work-based Learning:**	0.0	**WBL ECH:**	0.0		
Course PCS & CIP:	12 - 15.1103		**IAI Code:**	N/A				**Contact Hours (Minutes/Week)**			
Repeatable (Y/N):	N	**Pass/Fail (Y/N):**	N	**Variable Credit (Y/N):**	N	**Min:**		**Max:**		**16 Wks**	150	**8 Wks**	300
Prerequisites:	TEC-052										
Corequisites:	None										
Catalog Description: (40 Word Limit)	Fundamentals of statics, kinematics and dynamic flow as well as drainage area and volume of flow calculations.										

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Work-based Learning
Surface runoff	10			
Fluid mechanics fundamentals	7			
Pressure	4			
Buoyancy	8			
Flow of fluids	11			
Energy loss and closed system	5			
TOTAL	45	0	0	0

EVALUATION							
QUIZZES	☑	**EXAMS**	☑	**ORAL PRES**	☐	**PAPERS**	☐
LAB WORK	☐	**PROJECTS**	☐	**COMP FINAL**	☑	**OTHER**	☐

COURSE MATERIALS		
TITLE:	*Applied Fluid Mechanics*	
AUTHOR:	Mott	
PUBLISHER:	Pearson/Prentice Hall	
VOLUME/EDITION/URL:	7th edition	
COPYRIGHT DATE:	2014	

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		The student will be able to:
Surface runoff	10	1. Interpret contour maps and lines. 2. Compute drainage areas. 3. Describe the hydrologic cycle. 4. Compute runoff for large drainage areas (USGS runoff calculations). 5. Compute runoff for small drainage areas (rational runoff calculations). 6. Compute Talbot's runoff calculations for drainage structure openings. 7. Compute ditch capacity for investigation.
Fluid mechanics fundamentals	7	1. Summarize units of measurement in metric and US systems. 2. Illustrate cancellation of units in an equation (consistent units). 3. Compute force and mass. 4. Compute pressure. 5. Calculate density, specific weight and specific gravity. 6. Interpret SAE viscosity chart.

Pressure	4	1. Compute pressure measurement -- P(abs) = P(gage) + P(atm). 2. Discuss pressure measurements with a manometer. 3. Summarize the relationship of force, pressure and area.
Buoyancy	8	1. Calculate buoyant forces. 2. Describe forces of equilibrium. 3. Calculate volume and specific weight.
Flow of fluids	11	1. Calculate fluid flow rates. 2. Apply continuity equation -- A1 V1 = A2 V2. 3. Apply Bernoulli's applications. 4. Apply Torricelli's applications.
Energy loss and closed system	5	1. Calculate minor losses due to friction.
	45	

Outcomes*	Outcome Title	At the successful completion of this course, students will be able to:
Course Outcome 1	Calc Drainage Runoff	Calculate runoff for various sizes of drainage areas.
Course Outcome 2	Equation Consistency	Solve equations to ensure consistency of units.
Course Outcome 3	Relat Elevat Pressur	Illustrate the relationship between a change in elevation and the change in pressure in a fluid.
Course Outcome 4	Static Equil Buoy	Demonstrate the principle of static equilibrium to solve for the forces involved in buoyancy problems.
Course Outcome 5	Dyn Fluid Flow Prob	Apply equations used in solving dynamic fluid flow problems.
Primary Laker Learning Competency	Professional Skills & Ethics: Students demonstrate professional skills and ethical accountability.	
Secondary Laker Learning Competency	Creative Thinking & Problem Solving: Students think creatively to solve problems.	

**Course and program outcomes will be used in the software for outcomes assessment and should include at least 1 primary and 1 secondary Laker Learning Competency. Limit to 3-5.*