

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: CIVL 410 Department: Civil Engineering Technology

Course Title: Reinforced Concrete Analysis Semester: Spring Year: 1999

Objectives/Competencies

Course Objective	Competencies
<ol style="list-style-type: none">1. Familiarize the student with standard ACI practices for bathing, placing, finishing, and curing quality reinforced concrete.2. Present analytical techniques for preparing batch quantities for a specified strength concrete.	<ol style="list-style-type: none">1. Learn the components of quality concrete including admixtures such as air entraining agents, retarding agents and accelerators.2. Understand the significance of proper curing in hot and cold weather, and related special curing techniques.3. Study the various factors that can influence the quality of concrete's components.4. Learn the three major types of joints used in concrete practice, and their influence on shrinkage and cracking. <ol style="list-style-type: none">1. Learn the absolute volume method for calculating batch quantities.2. Understand the significance of the water-cement ratio on compressive strength.3. Select the water-cement ratio based on exposure or strength requirements.4. Use appropriate methods to prepare a match of concrete and test cylinders.

Course Objective	Competencies
<p>3. Prepare the student for the Class "A" Concrete Field Technician's license.</p> <p>4. Present analytical techniques for evaluating reinforced concrete beams, slabs, and footings using the ACI design code.</p> <p>5. Present techniques for sizing isolated and wall spread footings based on load and soil conditions.</p> <p>6. Present analytical techniques to evaluate retaining wall stability.</p>	<p>5. Test the prepared cylinders and write a comprehensive test report.</p> <p>1. Learn to perform field tests for slump, air content, cylinder fabrication, and density.</p> <p>2. Take the written and field exams for certification.</p> <p>1. Evaluate load bearing capacity of beams and slabs.</p> <p>2. Design beams for bending and shear stresses.</p> <p>3. Design simply supported slabs under uniform loading conditions.</p> <p>4. Size temperature and shrinkage steel reinforcement.</p> <p>1. Design isolated footings.</p> <p>2. Design a steel column, base plate, and footing system for a multi story building.</p> <p>1. Analyze the stability of a retaining wall with regard to overturning, sliding and soil bearing capacity.</p>