1. **Department, number, and title of course**

   Department of Civil Engineering, CENG5330, Water Resources Planning and Management

2. **Required Course**

3. **Course (catalog) description**

   The course provides students with the principles of analysis, decision-making, and problem solving required in managing a resource that is under relentless pressure from development, pollution, and climate change. It focuses on local and global problems, integrated water resources management, the water industry, water law, water security, natural systems protection, water use efficiency, and management tools.

4. **Prerequisite(s)**

   MENG 3310, Fluid Mechanics, or equivalent course in Open Channel Flow

5. **Textbook(s) and/or other required material**


6. **Course Objectives**

   - Describe the fundamentals of the water cycle, hydrology, and water use as they relate to water resources planning.
   - Provide an overview of the issues and principles of integrated water resources management.
   - Apply planning and management tools to real-world water resource problems.
   - Engage in critical thinking about issues in local and global water policy and resource management.
   - Identify planning and management strategies that facilitate stakeholder involvement.
   - Apply basic decision support systems to prioritize water resource decisions.
   - Identify emerging international issues in water resources management.

7. **Topics Covered**

   - Integrated Water Resources Management
   - Natural Water Systems and Sustainable Development
   - Water Management Infrastructure
   - Planning and Decision-Making Processes
   - Decision Support Systems and Models
   - Water and Environmental Laws
   - Financial Planning and Management
   - Water Industry Structure, Regulation, and Business Activity
   - International Issues in Water Management
   - Trans-Boundary issues, Hydro-Diplomacy, and Water Treaties
   - River Basin Planning and Coordination
   - Drought and Flood Water Management

8. **Class/laboratory schedule, i.e., number of sessions each week and duration of each session**

   LESSONS: 45 @ 50 min (3.0 Att/wk)                      LABS: None
9. **Contribution of course to meeting the professional component**

3.0 Credit Hours (ES=2.5, ED=0.5)

Water management in the twenty-first century requires managers with a comprehensive understanding of the numerous interconnected disciplines that make up the water industry. The focus of this course is to prepare students for these challenges by complementing their engineering and science skills with a variety of management topics including law, finance, and political science. Students completing this course will be prepared to deal with the complex and interdisciplinary world of water resources management.

10. **Relationship of course to program outcomes**

The course director’s assessment of how this course contributes to the civil engineering program outcomes is listed below. The following scale is used:

1=No Contribution; 2=Small Contribution; 3=Average Contribution; 4=Large Contribution; 5=Very Large Contribution

<table>
<thead>
<tr>
<th>CIVIL ENGINEERING PROGRAM OUTCOMES</th>
<th>Course Director Assessment</th>
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<tbody>
<tr>
<td>Students who qualify for graduation with a civil engineering masters will demonstrate:</td>
<td></td>
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<tr>
<td>Have specialized knowledge in an area of civil engineering beyond that normally expected at the undergraduate level.</td>
<td>5</td>
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<tr>
<td>Are adequately prepared for advanced professional practice.</td>
<td>4</td>
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<tr>
<td>Completing a thesis or design project address a civil engineering problem using sound engineering principles and techniques.</td>
<td>3</td>
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<tr>
<td>Solve an engineering problem of importance to the State, the Nation, or the Global community.</td>
<td>5</td>
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<tr>
<td>Demonstrate the ability for independent life-long learning.</td>
<td>4</td>
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<tr>
<td>Have effective oral, written, and graphical communication skills.</td>
<td>4</td>
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</tbody>
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11. **Person(s) who prepared this description and date of preparation**

Dr. Peter D. Rogers, PE, Assistant Professor, 9 June 2008.