Item returned by Faculty Senate December 2009

SCSC 658. Watershed and Water Quality Management. (3-0). Credit 3. Land use impact on surface and ground water chemistry; legislation impacting water quality; surface and groundwater impairment and restoration; case studies in best management practices. Prerequisite: Graduate classification.
Texas A&M University
Departmental Request for a New Course
Undergraduate ♦ Graduate ♦ Professional
• Submit original form and attach a course syllabus.

1. This request is submitted by the Department of [Soil and Crop Sciences]

2. Course prefix, number and complete title of course: [SCSC 658] [Watershed & Water Quality Management]

3. Catalog Course description (not to exceed 50 words): Land use impact on surface and ground water chemistry; legislation impacting water quality; surface and groundwater impairment and restoration; case studies in best management practices.

4. Prerequisite(s): [Graduate classification]

Cross-listed with:

Cross-listed courses require the signature of both department heads.

5. Is this a variable credit course? [☐ Yes] [☒ No] If yes, from ________ to ________

6. Is this a repeatable course? [☐ Yes] [☒ No] If yes, this course may be taken ________ times.

Will this course be repeated within the same semester? [☐ Yes] [☒ No]

7. Has this course been taught as 489/689? [,Yes] [☐ No] If yes, how many times? ________

07A - 6 students [2UG+4G]
09A - 13 students [2UG+11G]

Indicate the number of students enrolled for each academic period it was taught.

8. This course will be:
   a. required for students enrolled in the following degree programs(s) (e.g., B.A. in history)

   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)

   MS or PhD: Soil Science; Water Management & Hydrologic Science; Agricultural Engineering; Ecosystem Science & Management and Soil Science

9. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

10. Prefix       Course #        Title (excluding punctuation)
    SCSC         658          WATER SHED & WTR QUAL
    Lect. Lab    SCH CIP and Fund Code  Admin. Unit  Acad. Year  FICE Code
    0 3 0 0 0 3 0 1 1 2 0 0 0 5 2 6 2 0 1 0 - 1 1 0 3 6 3 2

Approval recommended by: [Level 6]

Wayne Smith
Department Head - Type Name & Sign Date

Chair, College Review Committee Date

Dean of College Date

Dean of College Date

Submitted to Coordinating Board by:

Associate Director, Curricular Services Date

Effective Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra-williams@tamu.edu.
Curricular Services – 12/08

2 of 8 G
Texas A&M University
Departmental Request for a New Course
Undergraduate / Graduate / Professional
* Submit original form and attach a course syllabus.*

1. This request is submitted by the Department of Soil and Crop Sciences.

2. Course prefix, number and complete title of course: SCSC 658 Watershed and Water Quality Management

3. Catalog Course description (not to exceed 50 words): Land use impact on surface and ground water chemistry; legislation impacting water quality; surface and groundwater impairment and restoration; case studies in best management practices.

4. Prerequisite(s): Graduate classification

5. Is this a variable credit course? ☐ Yes ☒ No If yes, from ____ to ____

6. Is this a repeatable course? ☐ Yes ☒ No If yes, this course may be taken ____ times.
Will this course be repeated within the same semester? ☐ Yes ☒ No

7. Has this course been taught as a 489/689? ☒ Yes ☐ No If yes, how many times? 2
Indicate the number of students enrolled for each academic period it was taught.
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10. 

| Prefix | Course # | Title (excluding pronunciation) | Effort | Area | E & W | A T | Q U A L | M G | M T |
|--------|----------|--------------------------------||--------|------|------|-----|-------|-----|-----|
| SCSC   | 658      | LAND USE & WAT QUAL MGMT       | 0 3    | 0 3  | 0 1  | 2 0 | 0 1  | 0 0 | 5 2 |

Approval recommended by:
Wayne Smith
Department Head - Type Name & Sign
Date

Department Head - Type Name & Sign
(if cross-listed course)
Date

Submitted to Coordinating Board by:
Associate Director, Curricular Services
Date

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
SYLLABUS - Graduate
SCSC 658 - Watershed and Water Quality Management
Spring Semester
3 cr hr
Syllabus is subject to change

Aggie code of honor: "Aggies do not lie, cheat or steal, nor do they tolerate those who do".

Professor: Dr. Jacqueline Aitkenhead-Peterson, 620 Heep Center Phone 5-3682
Schedule: Lectures: Tuesdays and Thursdays – 11.10 – 12.25 am Heep 124
Office Hours:
620 Heep Center: Tuesdays and Thursdays 1 – 3 pm. Additional times by appointment.

Prerequisite: Graduate classification

Course Description: Land use impact on surface and ground water chemistry; legislation impacting water quality; surface and groundwater impairment and restoration; case studies in best management practices.

Goals of Course:
- To acquaint students with the basic principles of water quality management, with particular emphasis on nutrients and the watershed-level approach.
- To introduce state and national policies on water quality
- To promote discussion within the group on nutrient and water management.

Specific Objectives:
- Understand the basic principles of watershed science relevant to water quality management.
- Become familiar with the basic nutrient biogeochemical cycles which have an effect on water quality.
- Understand the impacts that land management practices have on water quality.
- Examine best management practices and their results in terms of surface water quality.

Course Structure:
The course will consist of lectures and discussions. Although many examples will involve local and national water quality problems, global issues in water quality management will also be addressed throughout the course.

Graduate students will be required to write a review essay on a topic relating to land use and water quality.

Text:
There is no text book for this course, peer reviewed published papers and Government agency reports will be used. The readings are intended as a background reading in the most part, to strengthen concepts taught in class. Certain papers will be selected for further discussion in
class. Readings, lecture notes and presentations are available at:
https://lms.tamu.edu/webct/logon/2315862144091

Tests
Review Sessions: We will cover past exam questions and answers and clarify any concepts that
you are not sure of one week before each exam.

Grading SCSC 658:
   Test I: 25%
   Test II: 25%
   Final exam (cumulative): 25%
   Review Essay 15%
   Presentation 10%

Grading Scale
A: 90 – 100
B: 80 – 89
C: 70 – 79
D: 60 – 69
F:  <60

Additional Requirements for Graduate Credit
A 10 page (double line spaced) review essay is required for this course. Each student will choose
a topic and ‘reserve’ it with the course professor.  Examples might include:
1. Chemical and Physical Indicators of Water Quality
2. Nitrogen in Surface Waters
3. Phosphorous in Surface Waters
4. Carbon in Surface Waters
5. Eutrophication of Surface Waters
6. Land Management – Agriculture and surface water quality
7. Land Management – Urbanization and surface water quality
8. Land Management – The Riparian Zone and Ecosystem Restoration
9. Anthropogenic Effects on Surface water quality – Sewage Treatment
10. Anthropogenic Effects on Surface water quality – Septic Systems
11. Anthropogenic Effects on Surface water quality – Landfill
12. Global and Regional Impacts on surface water quality – Atmospheric Deposition
13. Global and Regional Impacts on water supply – Water Wars or Climate Change
14. Water in the 21st Century

This review essay may be handed in for grading at anytime during the semester – It is
advised that you start early so that course pressures in the latter part of the semester do not interfer with your effort.
<table>
<thead>
<tr>
<th>Lecture No.</th>
<th>Lecture</th>
<th>Reading and Reference Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction: logistics, goals and overview of the course</td>
<td>EPA 2000; Perry and Vanderklein 1996</td>
</tr>
<tr>
<td>3</td>
<td>Water Quality: Chemical and Physical Indicators</td>
<td>Cole 1994; EPA_DW-Standards 1999; Goldman and Horne 1983; EPA 2002</td>
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<tr>
<td>4</td>
<td>Biological Indicators – Terry Gentry</td>
<td></td>
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<tr>
<td>5</td>
<td>History of the Clean Water Act and TMDL</td>
<td>TCEQ 2005; Texas 303d lists; CWA 2002; Draft TMDL; TMDL-Hunt River</td>
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<tr>
<td>7</td>
<td>Watershed Change – Natural and Anthropogenic alterations</td>
<td>No Reading</td>
</tr>
<tr>
<td>8</td>
<td>Nitrogen: Source, Transformation and Fate</td>
<td>Atlas and Bartha 1987; Malakoff 1998</td>
</tr>
<tr>
<td>9</td>
<td>Phosphorous: Source, Transformation and Fate</td>
<td>Montana State University Extension 2000; Correll 1998; Gleick 1993; Carpenter et al. 1998</td>
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<tr>
<td>10</td>
<td>Case Study: DISCUSSION</td>
<td></td>
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<tr>
<td>11</td>
<td>Carbon: Source, Transformation and Fate</td>
<td>Aitkenhead-Peterson et al. 2007; Lavesque and Ayotte 2002</td>
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<tr>
<td>12</td>
<td>Carbon: Source, Transformation and Fate continued. Exam Review</td>
<td></td>
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<tr>
<td>13</td>
<td>Test 1</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Urbanization: Construction, Golf Courses/parks, Neighborhoods</td>
<td>Winter and Dillon 2006; Dietz and Clausen 2005</td>
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<tr>
<td>15</td>
<td>MID_SEMESTER – NO CLASSES</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Urbanization - Waste Management</td>
<td>Lisk 1991; Breen 1991; Beeby 1993; Teal and Peterson 1993; Glass 2000;</td>
</tr>
</tbody>
</table>
|   | Land Management – Agriculture | Block 2000  
| 19 | Land Management - Mining |   |
| 20 | Land Management- Forestry |   |
| 21 | Exam Review |   |
| 22 | Land Management: Riparian Zones and Buffer Strips | Lowrance et al 1984; TC-31 |
| 23 | Test 2. |   |
| 24 | Land Management: Ecosystem Restoration | Case Studies |
| 25 | Watershed Management: Drinking waters supplies: Treatment vs Management | Lamb 1988; EPA 1999; EPA_MCL; |
| 26 | Regional/Global Impacts on water quality - Atmospheric Deposition and Acid Rain, Climate Change | NAPD 2000; Schindler et al. 1996; USGS 2002; USGS 1999; NAPD 2000 |
| 27 | Regional/Global Impacts on water supply – Water Wars, Global Change and the 21st Century | Giodano et al., 2002; Uitto and Wolf 2002 |
| 28 | Watershed models of nutrient loads | Alexander et al., 2004; Smith et al., 1997; Alexander et al., 2000 |
| 29 | Emerging WQ Problems: Hormones, Pharmaceuticals and PCP’s | Student Presentations |
| 30 | Course Evaluation and Final Exam Review Session |   |

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe that you have a disability requiring an accommodation, please contact the Department of Disability Services in Cain Hall Room B118 or call 979-845-1637.
Excused Absences

7.1 The student is responsible for providing satisfactory evidence to the instructor to substantiate the reason for absence. Among the reasons absences are considered excused by the university are the following:

7.1.6 Injury or illness that is too severe or contagious for the student to attend class.

7.1.6.1 Injury or illness of three or more days. For injury or illness that requires a student to be absent from classes for three or more university business days (to include classes on Saturday), the student should obtain a medical confirmation note from his or her medical provider. The Student Health Center or an off-campus medical professional can provide a medical confirmation note only if medical professionals are involved in the medical care of the student. The medical confirmation note must contain the date and time of the illness and medical professional’s confirmation of needed absence.

7.1.6.2 Injury or illness less than three days. Faculty members may require confirmation of student injury or illness that is serious enough for a student to be absent from class for a period less than three university business days (to include classes on Saturday). At the discretion of the faculty member and/or academic department standard, as outlined in the course syllabus, illness confirmation may be obtained by one or both of the following methods:

a. Texas A&M University Explanatory Statement for Absence from Class form available at http://attendance.tamu.edu
b. Confirmation of visit to a health care professional affirming date and time of visit.

7.1.6.3 An absence for a non acute medical service does not constitute an excused absence.

To view all Student Rules, please go to: http://student-rules.tamu.edu/

To view Rule 7 of the Student Rules please go to: http://student-rules.tamu.edu/rule7.htm

On all course work, assignments, and examinations at Texas A&M University, the following Honor Pledge shall be preprinted and signed by the student:

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."