Syllabus
Spring 2016

CE 419
Advanced Water and Wastewater Treatment

Instructor: Dr. Jia Liu  
Classroom: EGRB 042  
Class: 9:35 – 10:50 pm, T, R  
Office: ENGR B116  
Phone: 618-453-7006 (office)  
Email: jialiu@siu.edu  
Office hours: 9:00 am -12:00 pm, M, W or by appointment

Course Description:  
Advanced concepts in the analysis and design of water and wastewater treatment plants are discussed. Main topics include aerobic and anaerobic biological treatment processes, nitrogen and phosphorous removal, physical, chemical and other separation techniques used for advanced water and wastewater treatment. Prerequisite: CE 418. 3 credits.

Required Textbook:  

Grading:  
<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework</td>
<td>30%</td>
</tr>
<tr>
<td>Mid terms (2)</td>
<td>20% (each)</td>
</tr>
<tr>
<td>Final</td>
<td>30%</td>
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</tbody>
</table>

Class Policy:  
Class participation and discussion will be solicited and are strongly encouraged. Regular attendance is required. Up to two times of missing classes without notice the instructor in advance is allowed, which does not include involuntary leave such as military service or other unforeseeable or uncontrollable reasons.

Homework Policy:  
It is expected that each student will complete their own homework assignments including thinking about the solution approach, completing all calculations and preparing the write-up for submission. It is also recognized and appreciated that consulting with your peers
can be a valuable learning experience when all parties concerned actively participate. However, the work you submit is expected to represent your independent effort. Homework will be due two weeks after each assignment and will be returned one week after your submission. Late homework will **NOT** be accepted.

**Exam Policy:**
Exams are to be completed independently. No communication with others is permitted. Computers, databases, devices with wireless communication and internet access capabilities are not permitted. The use of calculators is permitted.

If you miss taking an exam, you need to notify your instructor no later than 48 hours after the scheduled exam and take to your instructor a written explanation (eg: doctor's note) describing the event beyond your control that prevented you from taking the exam. For students with a legitimate, acceptable excuse, a make-up exam will be scheduled on an individual basis.
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<thead>
<tr>
<th>Dates</th>
<th>Topics</th>
<th>Readings</th>
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<td>Jan 19, 21</td>
<td>Physical Processes</td>
<td>5-8, 5-9, 5-10</td>
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<tr>
<td>Jan 26, 28</td>
<td>Physical Processes</td>
<td>5-10, 5-11</td>
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<tr>
<td>Feb 2, 4</td>
<td>Chemical Processes</td>
<td>6-7, 6-8</td>
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<tr>
<td>Feb 9, 11</td>
<td>Chemical Processes</td>
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<tr>
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<td>Biological Processes – Suspended Growth</td>
<td>8-6, 8-7</td>
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<td>Biological Processes – Suspended Growth</td>
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<td>Feb 23, 25</td>
<td><strong>Midterm 1</strong></td>
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<td>Mar 1, 3</td>
<td>Biological Processes – Attached Growth</td>
<td>9-2, 9-3</td>
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<tr>
<td>Mar 8, 10</td>
<td>Biological Processes – Attached Growth</td>
<td>9-4, 9-5</td>
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<td>Mar 15, 17</td>
<td>Spring Vacation</td>
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<td>Mar 22, 24</td>
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<td>Mar 29, 31</td>
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<td>10-3, 10-4</td>
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<td>Biological Processes – Anaerobic</td>
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<tr>
<td>Apr 5, 7</td>
<td><strong>Midterm 2</strong>, Depth Filtration</td>
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<td>Apr 12, 14</td>
<td>Depth Filtration, Membrane Filtration</td>
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<td>Apr 19, 21</td>
<td>Electrodialysis, Adsorption</td>
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<td>May 3, 5</td>
<td>Ion Exchange, Review</td>
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<td>May 9-13</td>
<td><strong>Final examination</strong></td>
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IMPORTANT DATES *
Semester Class Begins ................................................................. 01/19/2016
Last day to add a class (without instructor permission) ............ 01/24/2016
Last day to withdraw completely and receive a 100% refund ...... 01/31/2016
Last day to drop a course using SalukiNet ............................... 04/03/2016
Last day to file diploma application (for name to appear in Commencement program) .................................................. 02/12/2016
Final examinations: ................................................................. 05/09–05/13/2016

Note: For outreach, internet, and short course drop add dates, visit Registrar’s Academic webpage: http://Registrar.siu.edu/

SPRING SEMESTER HOLIDAYS
Martin Luther King, Jr.'s Birthday Holiday 01/18/2016
Spring Break 03/12–03/20/2016

WITHDRAWAL POLICY ~ Undergraduate only
Students who officially register for a session may not withdraw merely by the stopping of attendance. An official withdrawal form needs to be initialed by the student and processed by the University. For the proper procedures to follow when dropping courses and when withdrawing from the University, please visit http://Registrar.siu.edu/catalog/undergraduatecatalog.html

INCOMPLETE POLICY ~ Undergraduate only
An INC is assigned when, for reasons beyond the student’s control, students engaged in passing work are unable to complete all class assignments. An INC must be changed to a completed grade within one semester following the term in which the course was taken, or graduation, whichever occurs first. Should the student fail to complete the course within the time period designated, that is, by no later than the end of the semester following the term in which the course was taken, or graduation, whichever occurs first, the incomplete will be converted to a grade of F and the grade will be computed in the student’s grade point average. For more information please visit: http://Registrar.siu.edu/grades/incomplete.html

REPEAT POLICY
An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit no more than two times (two total enrollments) unless otherwise noted in the course description. For students receiving a letter grade of A,B,C,D, or F, the course repetition must occur at Southern Illinois University Carbondale. Only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. See full policy at http://Registrar.siu.edu/catalog/undergraduatecatalog.html

GRADUATE POLICIES
Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please visit http://gradschool.siu.edu/about-us/grad-catalog/index.html

DISABILITY POLICY
Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must come to the DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements.
http://disabilityservices.siu.edu/

PLAGIARISM
Student Conduct Code: http://srr.siu.edu/student_conduct_code/
MORRIS LIBRARY HOURS
http://library.siu.edu/about

SAFETY AWARENESS FACTS AND EDUCATION
Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: http://safe.siu.edu

SALUKI CURES
The purpose of Saluki Cures is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. For information on Saluki Cures: 618-453-5714, or salukiCares@siu.edu, or http://salukicares.siu.edu/index.html

EMERGENCY PROCEDURES
Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. We ask that you become familiar with the SIU Emergency Response Plan and Building Emergency Response Team (BERT) programs. Emergency response information is available on posters in buildings on campus, available on BERT’s website at www.bert.siu.edu. Department of Safety’s website at www.dps.siu.edu (disaster drop down) and the Emergency Response Guidelines pamphlet. Instructors will provide guidance and directions to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.

INCLUSIVE EXCELLENCE
SIU contains people from all walks of life, from many different cultures and sub-cultures, and representing all strata of society, nationalities, ethnicities, lifestyles, and affiliations. Learning from and working with people who differ is an important part of education as well as an essential preparation for any career. For more information please visit: http://www.inclusiveexcellence.siu.edu/

LEARNING AND SUPPORT SERVICES
Help is within reach. Learning support services offers free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website:
Tutoring: http://tutorial.siu.edu/
Math Labs: http://math.siu.edu/courses/course-help.php

WRITING CENTER
The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit http://write.siu.edu/

AFFIRMATIVE ACTION & EQUAL OPPORTUNITY
Our office’s main focus is to ensure that the university complies with federal and state equity policies and handles reporting and investigating of discrimination cases. For more information visit: http://diversity.siu.edu/

Additional Resources Available:
SALUKINET: https://salukinet.siu.edu/cp/home/displaylogin
ADVICEMENT: http://advicement.siu.edu/
PROVOST & VICE CHANCELLOR: http://pvcaa.siu.edu/
SIU ONLINE: http://online.siu.edu/

Spring 2016 R O'Rourke