CEE 6343 A Syllabus

Membrane Processes, 3 credits

Fall 2026,

Instructor Information

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General Course Information

Description

CEE 6343-A is an introduction of the theories of membrane separation; membrane materials and characterization; transport in membranes; module and process design. Especially, membrane applications for water and wastewater treatment, water reuse including reverse osmosis, nanofiltration, ultrafiltration, and microfiltration, Ion exchange membrane.

Course Learning Outcomes

Upon completion of this course, students will be able to understand and critically evaluate state-of-the-art developments in membrane filtration technologies, including membrane materials, transport and separation mechanisms, fouling and cleaning strategies, system design and operation, and emerging applications in water treatment, resource recovery, and energy-efficient separations. Students will also be able to assess membrane process performance, identify current technical challenges, and apply fundamental concepts to analyze and design membrane-based systems.

Required Course Materials

There is no required textbook. However, the following books are good resources for this course:

1. Water treatment- membrane processes, American Water Works Association Research Foundation, Lyonnaise des Eaux, Water Research Commission of South Africa, McGraw-Hill, 1996
2. Basic Principles of membrane technology, Marcel Mulder, second edition, Kluwer Academic Publishers, 2003
3. Membrane technology and applications, Richard Baker, second edition, John Wiley & Sons, Ltd. 2004

Grading Policy:

The grading components for this class includes class participation, 2 homework, 1 mid-term project, and specific literature survey and presentation, and Final literature review report.

Description of Graded Components

Class Participation:	10 %
Homework:	20 %
Mid-Term Exam/project:	20 %
Specific Project Literature Survey – Presentation	20 %
Final Literature Review Report	30 %
Total:	100%

Grading Scale: A: 100-90%; B: 80-90%; C: 60-70%; D: 50-59%; F: <50%

Attendance and/or Participation

Class participant: 10%

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Core IMPACTS

Core IMPACTS is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated career competencies. This resource developed by the Center for Excellence in Teaching and Learning and Online Education at Georgia State University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.