

## CEEN 5879 - Water Quality Modeling

Fall 2026 Syllabus, Section 01, CRN 44133,

Credit hours: 3

### Instructor

Suresh Sharma

Email: ssharma06@ysu.edu

### Public Instructor Information

Instructor Title: Dr. Suresh Sharma

Instructor Professional Qualifications: PhD in Civil Engineering, Auburn University, Alabama

Instructor Office Location: Moser 2413

Instructor Office Phone: (330) 941- 1741

### Course Description

5879. Water Quality Modeling. Mathematical modeling of physical, chemical, and biological processes in natural systems; development of computer models to simulate the fate and transport of pollutants in lakes, streams, and estuaries; application of models to evaluate water resource management options. Prereq.: C or better in CEEN 3736. 3 s.h.

### Course Readings

| Group    | Title                          | Author                                         | ISBN |
|----------|--------------------------------|------------------------------------------------|------|
| Required | Surface Water-Quality Modeling | By Steven C. Chapra, 1997 or 2008, McGraw-Hill |      |

The course readings are subject to change in the event of extenuating circumstances, research developments, current events, and/or to ensure better learning.

### Schedule of Topics and Assignments

| Day | Date  | Reading(s)   | Proposed Topic           | Due/To Prepare for Class |
|-----|-------|--------------|--------------------------|--------------------------|
| Mon | 8/24  | Page 1-20    | Lecture 1 from Textbook  | Class exercise           |
| Wed | 8/26  | Page 24-42   | Lecture 2 from Textbook  | HW due                   |
| Mon | 8/31  | Page 52-62   | Lecture 3 from Textbook  |                          |
| Wed | 9/2   | Page 65-85   | Lecture 4 from Textbook  | HW due                   |
| Mon | 9/7   | No Class     |                          |                          |
| Wed | 9/9   | Page 86-99   | Lecture 5 from Textbook  | HW due                   |
| Mon | 9/14  | Page 101-115 | Lecture 6 from Textbook  |                          |
| Wed | 9/16  | Page 137-155 | Lecture 8 from Textbook  | HW due                   |
| Mon | 9/21  | Page 156-170 | Lecture 9 from Textbook  |                          |
| Wed | 9/23  | Page 173-189 | Lecture 10 from Textbook | HW due                   |
| Mon | 9/28  | Page 235-255 | Lecture 14 from Textbook |                          |
| Wed | 9/30  | Exam I       |                          | Exam I                   |
| Mon | 10/5  | Page 347-364 | Lecture 19 from Textbook |                          |
| Wed | 10/7  | Page 367-385 | Lecture 20 from Textbook | HW due                   |
| Mon | 10/12 | Page 389-403 | Lecture 21 from Textbook |                          |
| Wed | 10/14 | Page 405-417 | Lecture 22 from Textbook | HW due                   |
| Mon | 10/19 | Page 419-431 | Lecture 23 from Textbook |                          |
| Wed | 10/21 | Exam II      | Lecture 24 from Textbook | Exam II                  |



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|-----|-------|-------------------------------------------------------------------------------|--------------------------|-----------------|
| Mon | 10/26 | Page 450-478                                                                  | Lecture 25 from Textbook |                 |
| Wed | 10/28 | Computer models                                                               | Lecture 26               | HW due          |
| Mon | 11/2  | Page 521-558                                                                  | Lecture 27 from Textbook |                 |
| Wed | 11/4  | Page 561-574                                                                  | Lecture 28 from Textbook | HW due          |
| Mon | 11/9  | Page 571-588                                                                  | Lecture 29 from Textbook |                 |
| Wed | 11/11 | No Class                                                                      |                          |                 |
| Mon | 11/16 | Temperature Modeling using Handouts                                           | Handout                  |                 |
| Wed | 11/18 | Lake & Heat Budgets                                                           | Lecture 30               | HW due          |
| Mon | 11/23 | Mid Term Exam                                                                 | Mid Term Exam            | Mid Term Exam   |
| Wed | 11/25 | No Class                                                                      |                          |                 |
| Mon | 11/30 | Handout for Thermal Stratification                                            | Lecture 31               |                 |
| Wed | 12/2  | Handout for Algal Bloom in Ohio Lake, Tappan, Buckeye and Mosquito Lake Study | Lecture 32               | Project Due     |
| Mon | 12/7  | Final Exam Week                                                               | Final Exam Week          | Final Exam Week |

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