



Indiana State University
College of Technology
Department of Applied Engineering
and Technology Management

ENGR 441 – Hydrology for Engineers

I. Credits: 3

II. Lead Faculty for course: Dr. Michael R. Williamson

III. Course Instructor: Dr. Michael R. Williamson

Name: Dr. Michael R. Williamson

Office Hours: 1:30 pm - 2:30 pm T,R, or by appointment.

Office Phone: 812-237-8416

Office Location: 201H Myers Tech Bldg.

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IV. Course Materials:

Textbook: None required: This is an Open Educational Resource (OER) course no textbook is required. Instructor will provide all necessary materials via blackboard.

Material Needed:

Calculator recommended Casio FX-115 ES Plus Scientific Calculator and engineering pad for assignments.

Software:

Access to the Internet is essential

Microsoft Office 2010 or newer (free to ISU students)

V. Catalog Description: This course will cover the basic principles of hydrology related to civil engineering design; precipitation, evaporation, depression storage, infiltration, groundwater and streamflow.

VI. Prerequisite: MATH 129 or MATH 131, ENGR 303 or MET 329

VII. Student Learning Outcomes

Upon satisfactory completion of this course, students will be able to:

- Be able to undertake advanced work in the area of hydrology related to engineering
- Begin to develop an appreciation for real-world hydrological practice

- Begin to acquire the tools needed to enter the workforce or undertake graduate studies in hydrology related to civil engineering
- To command basic and applied knowledge of hydrology
- To demonstrate the mastery of the theory and application of hydrology beyond the fundamental knowledge gained in undergraduate courses
- To have the ability to critique and synthesize literature in the field
- To present scientific results in both written and oral format

VIII. ABET related Program Objectives with Course Outcomes:

An engineering technology program must demonstrate that graduates have:

- a) an appropriate mastery of the knowledge, techniques, skills, and modern tools of their disciplines,
- b) an ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology,
- c) an ability to conduct, analyze, and interpret experiments and apply results to improve processes,
- d) an ability to apply creativity in the design of systems, components, or processes appropriate to program objectives,
- e) an ability to function effectively on teams,
- f) an ability to identify, analyze, and solve technical problems,
- g) an ability to communicate effectively,
- h) a recognition of the need for, and an ability to engage in lifelong learning,
- i) an ability to understand professional, ethical, and social responsibilities,
- j) respect for diversity and a knowledge of contemporary professional, societal, and global issues,
- k) a commitment to quality, timeliness and continuous improvement.

IX. Brief list of topics:

1. SYSTEM PLANNING
2. URBAN HYDROLOGIC PROCEDURES
3. PAVEMENT DRAINAGE
4. ROADSIDE AND MEDIAN CHANNELS
5. STRUCTURES
6. STORM DRAINS
7. DETENTION AND RETENTION FACILITIES
8. PUMP STATIONS
9. URBAN WATER QUALITY PRACTICES
10. VARIOUS DESIGN MANUALS

X. Course Assignments:

Assignments including homework will be announced in class and/or via blackboard with the due dates listed. Typically one week will be allowed to complete the assignments unless announced otherwise.

A. Project:

Each student will work on an assigned project. A report must be typed and free of spelling mistakes. It may consist of the following: title page, summary, problem statement, calculations, drawings, results & discussion, conclusion, list of references, etc. The references must be cited in the text. The title page should include the topic, course #, instructor name, and student name. Details of the writing project will be announced in class and/or via blackboard.

B. Quizzes

Most quizzes will be available through blackboard and are all due before finals week.

C. Exams

Exam questions will strongly reflect the content of the homework assignments and problems worked in class.

D. Final Exam

The class project will serve as the final exam.

XI. Course Evaluation Methods:

Course grades will be based on selectively graded homework, three midterm examinations, one design project, and a final examination.

Homework	100
Quiz	50
Midterm Exams	3@150
<u>Project</u>	<u>300</u>
Total	900 (tentative points)

The scale below will be used to assign letter grades. These percentages may be lowered, depending upon the class score distribution. Plus/minus grades may be used at the discretion of the instructor.

Course grade determination. Course grade determination is based on the following table.

Percent Range			Letter Grade
98%	Up Through	100%	A+
93%	Less Than	98%	A
90%	Less Than	93%	A-
87%	Less Than	90%	B+
83%	Less Than	87%	B
80%	Less Than	83%	B-
77%	Less Than	80%	C+
73%	Less Than	77%	C
70%	Less Than	73%	C-
67%	Less Than	70%	D+
63%	Less Than	67%	D
60%	Less Than	63%	D-
0%	Less Than	60%	F

Note: graduate students cannot earn a C- or any D grade; less than a C (less than 73%) is failing for a graduate student.

Evaluation scheme. Course elements, e.g., assignments, exams, participation, etc., that are used in determining the course grade will each be worth a certain number of points. The course total of points is converted to a course percentage for the purpose of assigning the course grade. (There will be no “weighting” of grades in blackboard.)

XII. Criteria for Evaluating the Homework/Projects

(1) Completeness

- Show all steps of a problem-solving process
- Fulfill all required works (e.g. specification, analysis, diagrams)

(2) Correctness

- Every step in the problem solving process must be correctly done (procedure) and only valid procedures are used
- Solution values should be correct

(3) Reasoning/Effectiveness

- Logical reasoning and justification of your solution method should be clearly shown

(4) Neatness

- All works must be done clearly and cleanly on the required type of paper Box your final answers

XIII. RIGHT OF REVISION:

The instructor reserves the right to amend the course syllabus. Students will be notified in **advance** of any changes to the syllabus.

XIV. ATTENDANCE:

Participation, daily attendance and preparations are essential. You are responsible for all content and assignments (or changes to assignments) presented in class. If you miss a lecture it is your responsibility to obtain notes from fellow students. Students who repeatedly miss/skip class may not be given a passing grade.

XV. CELL PHONE POLICY

The use of mobile phones during class time will not be permitted. Students with cell phones out during an exam will be given a zero. Use of a cellular phone in class will result in a grade reduction.

XVI. ACADEMIC INTEGRITY STATEMENT:

The national Center for Academic Integrity defines academic integrity as commitment to five fundamental values: honesty, trust, fairness, respect, and responsibility. Indiana State University is a learning community committed to the highest ethical principles in academic life. The Policy on Academic Integrity, developed by faculty, students, and administrators, outlines the expectations for ethical conduct in all academic endeavors. It is critical that faculty share these expectations with students, and that all members of the community affirm ethical conduct. A copy of the policy appears in the Faculty guide for Academic Integrity at <https://www.indstate.edu/sites/default/files/media/Documents/PDF/academic-integrity-2012-FacultyGuide-AcademicIntegrity.pdf> and also is posted at the Cunningham Memorial Library academic integrity Web site and in the Code of Student Conduct, posted at the Office of Student Conduct and Integrity Web site. Failure to assert this core value diminishes the reputation of an institution and lessens the value of the degrees earned by its graduates

The University is committed to academic integrity in all its practices. The faculty value intellectual integrity and a high standard of academic conduct. Activities that violate academic integrity undermine the quality and diminish the value of educational achievement.

Cheating (**or copying**) on papers, tests or other academic works is a violation of University rules. No student shall engage in behavior that, in the judgment of the instructor of the class, may be construed as cheating. This may include, but is not limited to, plagiarism or other forms of academic dishonesty such as the acquisition without permission of tests or other academic materials and/or distribution of these materials and other academic work. This includes students who aid and abet as well as those who attempt such behavior. Such violations **will result in grade reduction** and may lead to expulsion from the class.

XVII. AMERICANS WITH DISABILITIES ACT:

Indiana State University seeks to provide effective services and accommodation for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, you are required to register with Disabled Student Services within the Center for Student Success - <http://www.indstate.edu/cfss/programs/dss/index.htm>.

You can contact the Center at 237-2301, 2nd floor Gillum Hall.

Students who experience a circumstance or condition that may affect their ability to complete assignments or otherwise satisfy course criteria are encouraged to meet with me to identify, discuss, and document any feasible instructional modifications or accommodations. Please inform me of such circumstances no later than the second week of the semester or as soon as possible after a disability or condition is diagnosed.

XVIII. LAPTOP USAGE

Laptop Not Required for Course: Usage Permitted

While there will no assignments or examinations for which the laptop will be used; your use of a laptop is generally permitted as long as usage remains within the bounds of Code of Student Conduct and it conforms to the provisions of this course as laid out in this syllabus. There may be periods where laptop usage is forbidden and if that occurs, failure to comply with this direction will be viewed as a violation of the Code of Student Conduct.

XIX. STUDY WEEK POLICY

Study Week is intended to encourage student preparation for final examinations given during the final examination week. Class attendance, however, is still expected. No examination of any kind, including quizzes that count over four percent of the grade, can be given during Study Week. Papers due during Study Week must be specified in the class syllabus handed out to students at the beginning of each semester. Examinations for laboratory; intensive, mini-courses; or summer sessions are permitted.

The student is responsible for notifying the Student Government Association of a violation of any of the above terms. The Student Government Association will take the correct procedures for informing the faculty member and the academic department chairperson of the failure to comply with the terms of the Study Week policy. The student's name will be confidential to the Student Government Association.

XX. STUDENT DISCLOSURES OF SEXUAL MISCONDUCT

*Indiana State University fosters a campus free of sexual misconduct including sexual harassment, sexual violence, intimate partner violence, and stalking and/or any form of sex or gender discrimination. If you disclose a potential violation of the sexual misconduct policy I will need to notify the Title IX Coordinator. Students who have experienced sexual misconduct are encouraged to contact confidential resources listed below. To make a report to the Title IX Coordinator, visit the Equal Opportunity and Title IX website:
<http://www.indstate.edu/equalopportunity-titleix/titleix>.*

Confidential Resources:

*The ISU Student Counseling Center – HMSU 7th Floor; 812-237-3939;
www.indstate.edu/cns*

The ISU Victim Advocate – Leah Reynolds; HMSU Room 813; 812-237-3829(office); 812-243-7272; leah.reynolds@indstate.edu

Campus Ministries - <http://www2.indstate.edu/sao/campusministries.htm>;

*For more information on your rights and available resources:
<http://www.indstate.edu/equalopportunity-titleix/titleix>*

XXI. STATEMENT REGARDING IT'S ON BLUE ONLINE EDUCATION PROGRAM

ISU is committed to the prevention of sexual harassment, sexual violence, and intimate partner violence and stalking. Degree-seeking graduate and undergraduate students must complete the It's On Blue online education program in order to register for classes. For additional information about the It's On Blue go to www.indstate.edu/itsonblue.

Questions about the It's On Blue initiative should be directed to itsonblue@mail.indstate.edu.

XXII. DUE DATES EXPLAINED – LATE WORK POLICIES

Late submissions of homework or projects will be accepted, but will automatically receive a 25% deduction for every day late. Problem solutions must be neat, complete, and organized. Highlight answers, and use proper units. Part of the homework assignment will be graded for content, the remainder for completeness.

No completed examination or quiz may be retaken. Requests to miss an examination or quiz must be submitted by email at least 24 hours before the scheduled date with a vailed excuse.

XXIII. FINAL EXAM EVENT. YOU MUST BE IN CLASS TO TAKE THE FINAL EXAM. The date and time will be announced in class during or before study week and is also available on the university website.