What is CIVL 1112?

- *Course Title:* Civil Engineering Analysis
- *Course Description:*

Microcomputer applications for data analysis, presentation, documentation; emphasis on algorithm design and logic; fundamental numerical analysis; elementary programming

What is CIVL 1112?

- *Prerequisites:*
  CIVL 1101 – Civil Engineering Measurements
- *Course Meetings:*

Tuesday/Thursday; 1:00 - 1:55pm, ET 302

Lab:	Tuesday:	2:30 - 5:20 pm, ES 116
	Wednesday:	2:30 - 5:20 pm, ES 114
	Thursday:	2:30 - 5:20 pm, ES 116

What is CIVL 1112?

- *Instructor:*

Dr. Charles Camp, Office: ES 106B
Phone: 678-3169 (office)
Email: cvcamp@memphis.edu

- *Office hours:* An "open door policy" or by appointment

What is CIVL 1112?

Recommended Textbooks

Strategies for Creative Problem Solving
by Fogler and LeBlanc - Prentice Hall

Any reference for Microsoft Excel

Excel 2019 For Dummies
by Greg Harvey

What is CIVL 1112?

Recommended Textbooks

Design and Control of Concrete Mixtures

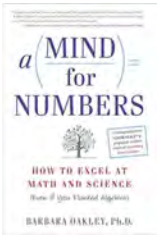
Portland Cement Association 2016

What is CIVL 1112?

Required Textbooks

A Mind for Numbers: How to Excel at Math and Science (Even If You Flunked Algebra)

by Barbara Oakley Ph.D.



What is CIVL 1112?

- *Required Computer:*

Office 365

- Web site: **www.ce.memphis.edu/1112**

What is CIVL 1112?

Course Objectives

1. To continue to build on the skills and materials introduced in CIVL 1101 in order to further enhance the ability of the student to execute the design process typical to the Civil Engineering profession .
2. To expand the communication skills of the student through a series of project reports and presentations completed within a group environment.
3. To further develop the student's skills in the application of the personal computers to solution of engineering problems and to the development of material supporting engineering decision making and report presentation.

What is CIVL 1112?

Course Objectives

4. To develop the analysis skills of the student, especially in the evaluation of alternative designs.
5. To expand the computational skills of the student through the use of computer software as a support to the analysis process.
6. To expose the student to problems typical and illustrative of those found in civil engineering design.
7. To develop an understanding of the limitations, constraints, and applicability of various analytical methods.

What is CIVL 1112?

Course Learning Outcomes

Course Learning Outcomes	POs*	Assessment Tools
1. Recognize and apply basic modeling principles to the analysis, design, and evaluation of civil engineering problems	1	Homework, exams, and projects
2. Recognize limitations, constraints, and applicability of various modeling and analytical methods	1	Homework and projects
3. Convert mathematical models into computer spreadsheets	1	Homework, exams, and projects
4. Design and operation a small-scale water treatment system	1, 2, 5, 6	Project

What is CIVL 1112?

Course Learning Outcomes

Course Learning Outcomes	POs*	Assessment Tools
5. Design, construction, and load test of a reinforced concrete beam	1, 2, 5, 6	Project
6. Size and locate a detention pond	1, 2, 5, 6	Project
7. Write and present technical reports supporting engineering decision making	3, 5	Projects
8. Demonstrate the ability to work in a group	3, 5	Projects

What is CIVL 1112?

Course Learning Outcomes

1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.
3. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
4. An ability to communicate effectively with a range of audiences.
5. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
6. An ability to recognize the ongoing need for additional knowledge and locate, evaluate, integrate, and apply this knowledge appropriately.
7. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

What is CIVL 1112?

Grading

The final grades for the course will be based on the following percentages:

Components	Percentages
Computational Homework	10%
Mid-Term Exam	20%
Final Exam	25%
Project #1	15%
Project #2	15%
Project #3	15%

What is CIVL 1112?

Grading

Final letter grades will be based on the following scale which reflects the percentages as noted above.

Exam/Homewrok/Projects	Grade
90-100	A
87-89	B+
84-86	B
80-83	B-
77-79	C+
74-76	C+
70-73	C-
Below 70	F

What is CIVL 1112?

Grading

- Attendance in both the lecture and lab portions of the class is ***required***. Every unexcused absence from lecture is a reduction in the final class average of 2 points.
- Every unexcused absence from a lab is a reduction of 25% on the student's individual grade for that lab section.

What is CIVL 1112?

Make-up Work

- Due to the nature of the class, make-up work will be very difficult to complete.
- If you need to miss a class or a lab session, you ***must*** submit documentation, in writing, at least two days prior to the class period.
- It will be up to the discretion of the instructors if work may be made up or if the absence is excused.

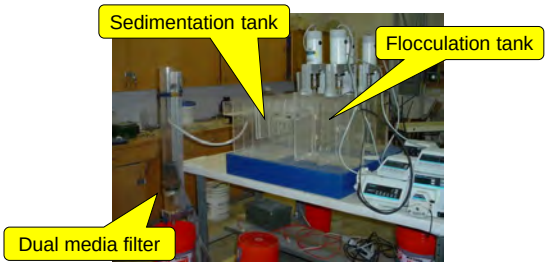
What is CIVL 1112?

Homework

- Homework is due at the beginning of class on the due date.
- **Late homework will not be accepted for any reason.**
- If you sign up for the class ***Remind*** page with join code **ce1112**, three homework assignment will be dropped in computing the final homework average.

What is CIVL 1112?

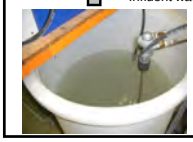
Project #1 – Water Treatment



What is CIVL 1112?

Coagulation and Flocculation | Sedimentation | Gravity Filter

Influent water



Turbidimeter

What is CIVL 1112?

Project #1 – Water Treatment

The objective of this project is to utilize, within given constraints, a prototype water treatment system to design a full-scale system.

The effectiveness of the treatment design will be evaluated by the yearly operational and maintenance costs.

Each prototype system will be scaled-up to handle a flowrate of 20 million gallons per day (MGD).

What is CIVL 1112?

Project #1 – Water Treatment

The ***Total Cost*** = $Cost_{CF} + Cost_S + Cost_F + Cost_{FM}$

where:

$Cost_{CF}$ are the cost of the full-scale coagulation and flocculation units;

$Cost_S$ are the costs of the full-scale sedimentation units;

$Cost_F$ are the costs of the full-scale filters; and

$Cost_{FM}$ are the costs of the filter materials

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Project #1 – Water Treatment

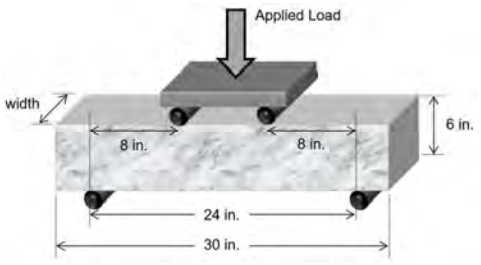
- Construction Engineering
- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering
- Urban Planning
- Water Resources

What is CIVL 1112?

Project #2 – Reinforced Concrete Beam

What is CIVL 1112?

Project #2 – Reinforced Concrete Beam



What is CIVL 1112?

Project #2 – Reinforced Concrete Beam

The objective of this project is to develop the strongest reinforced concrete beam as measured by the strength-to-weight ratio (***SWR***). The strength of the beam is the ultimate load recorded during testing.

The cost of each beam will be estimated using the following cost sheet.

The ***SWR*** will be increased for cost-efficient beams and decreased for expensive beams

What is CIVL 1112?

Project #2 – Reinforced Concrete Beam

What is CIVL 1112?

Project #2 – Reinforced Concrete Beam

- Construction Engineering
- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering
- Urban Planning
- Water Resources

What is CIVL 1112?

Project #3 – Detention Pond Design

What is CIVL 1112?

Project #3 – Detention Pond Design

The objective of this project is to design a stormwater detention pond on the site assigned to your group in lab.

The detention pond must provide a maximum storage of 100,000 gallons, meet all design criteria, and minimize the total cost of the project.

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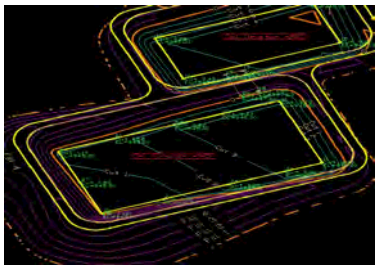
Project #3 – Detention Pond Design



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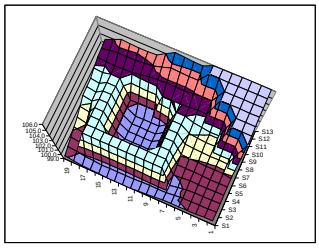
Project #3 – Detention Pond Design



What is CIVL 1112?

Project #3 – Detention Pond Design

- Construction Engineering
- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering
- Urban Planning
- Water Resources

What is CIVL 1112?

Technical Communications

- Intra-group and Inter-group communications
- Intra-class communications

What is CIVL 1112?

Technical Communications

- Intra-group and Inter-group communications
- Intra-class communications
  - E-mail is a very useful tool for intra- and inter-group communications
  - The instructors in CIVL 1112 will use the university email system to communicate with students
  - If normally you use another e-mail account, then you need to go to http://iam.memphis.edu to make sure that mail sent to your UM account is automatically forwarded to the account you do use.

What is CIVL 1112?

Technical Communications

What is CIVL 1112?

Technical Communications

- Technical writing
- Technical presentations

What is CIVL 1112?

Any questions?