**ES 101**

*The structure moved, is that a problem?*

*Design, Risk, and Judgment in Geotechnical Engineering*

Prof. Mary Roth

Fall 2016

Instructor: Prof. Mary Roth, AEC 324 [rothm@lafayette.edu](mailto:rothm@lafayette.edu)

Class times: Section 04, MWF 8-9:15 513 Acopian Engineering Center

Office Hours: M,W 2-3:45 p.m.

T,Th 10:30-11:30 a.m.

and by appointment

**Course Catalog Description**

This course teaches the fundamentals of engineering design methodology. Students will use engineering design processes to aid them in: recognizing the need for an engineering solution, defining constraints, specifying requirements, and modeling an engineering solution, among other aspects of engineering design. Instructors integrate societal contexts of engineering practice into the projects and examine the implications of engineering solutions.

**Module Description**

All physical structures created by engineers are supported by soil and/or rock for at least a part of their design life unless they are constructed and used entirely at sea, in the air, or in space. The movement of the underlying soil and rock materials in response to the loads applied by a structure can be an important consideration in the structure’s design and if the actual movements are greater than anticipated, the structure may be damaged. In this module, students will learn to look for evidence that a structure has been damaged or is at risk of being damaged due to the movement of the soil or rock supporting the structure—a type of study often conducted by geotechnical engineers. Geotechnical engineering has often been called more of an art than a science because the materials involved are not manufactured to given specifications (such as the specifications associated with steel and concrete design) but are the natural (and sometimes not-so-natural) soils and rocks present at the location where a client wants to develop a project. In this module, students will investigate structures that are showing evidence of poor performance related to underlying the soil and rock conditions. Students will document the current conditions of a structure, develop and use models to analyze the risk of a potential failure, and prepare recommendations regarding the priority that should be given to restoration/rehabilitation of the structure.

**Text**

While there is no text for this module, there is a text for the graphics portion of the course:

A Concise Introduction to Engineering Graphics, 4th Ed., Worksheet Series B.

ISBN 978-1-58503-590-8

NOTES:

1. This text is different from the Series A text used in fall 2015.
2. Do not buy a used version of this text – it is a workbook and, if it is used, it is very likely that the pages you will need will be written on or torn out.
3. The text is $15 cheaper at the College bookstore than online sources identified by the graphics instructor.

**Learning Outcomes**

The Engineering Division has adopted the following learning outcomes for ES 101:

Upon successful completion of this course, students will:

* recognize that engineering at Lafayette and beyond is innovative and exciting and
* understand the engineering design process.

In support of the outcomes listed above, students will:

* have had an introductory design experience (ABET outcome c);
* have had experiences using engineering equipment, tools, software, and hardware appropriate to the topic of the course (ABET outcome k);
* have a working knowledge of engineering graphics and basic CAD skills (ABET outcome g & k);
* have an introductory understanding of the societal context of engineering relevant to the topic of the course (ABET outcome f); and
* gain experience in visually and orally conveying engineering information (ABET outcome g).

In addition to the general outcomes for ES 101 listed above, upon successful completion of this module of the course, students will be able to:

* demonstrate a basic knowledge of geotechnical engineering;
* develop a simple model related to the performance of a structure;
* conduct a simple analysis of risk; and
* understand the purpose and format of a geotechnical report.

**Grading**

Your grade in ES 101 will be based on the following:

40% module 1 (“A” section)

40% module 2 (“B” section)

15% graphics

5% co-curricular attendance

In addition, in order to pass this course you must successfully pass each of the four components listed above.

Your grade in this module of ES 101 will be based on the following:

20% - Participation (rubric for participation is included with this syllabus)

50% - Homework assignments

30% - Final report

10% - Final presentation

If you miss more than one class during this module, your grade for this module will be reduced by 10% for every class missed. Your participation grade may also be lowered as a result of repeated tardiness.

**Assignments**

Writing assignments (drafts and revisions) will be submitted through Moodle. Electronic files for all assignments should be formatted as either a .doc or a .pdf. Files submitted to Moodle in the format of a Google Doc or another text format are not acceptable. (Files submitted as Google Docs or other text formats are not readable when downloaded from Moodle.)

**Co-curricular Activities:**

Students are required to attend 6 co-curricular events during the semester including: 3 brown bags events, the Resnik lecture, the introduction to the Entrepreneurial Mindset lecture, and one other lecture that is loosely related to engineering, such as the Presidential Lecture Series or a 4th brown bag lecture. Students are welcome to attend more than 6 events. If a student cannot attend the Resnik lecture or the Entrepreneurial Mindset lecture, then students may attend 2 brown bags events for each of the Resnik and Entrepreneurial Mindset lectures missed to receive full credit for the co-curricular component of the course.

Grading for co-curricular component:

* Attendance at 6 or more events = 100%
* Attendance at 5 events = 80%
* Attendance at 4 events = 60%
* Attendance at 3 or less events= 0%

Students may receive credit for the “other” lecture by sending an email to Lisa Karam at [karaml@lafayette.edu](mailto:karaml@lafayette.edu) indicating when and where the lecture was given, who gave the lecture, and a brief paragraph summarizing the content of the talk.

Students will need to reserve a slot for all noontime co-curricular events. An email will be sent to students with instructions on how to reserve a slot. Lunch will be served at these events and most cases, the students’ meal plan will be charged for the lunch.

IMPORTANT: Students are expected to act in a professional manner during all of the co-curricular events. Use of cell phones, reading non-related materials, talking, or other rude behaviors will not be tolerated. This is a college course and students are expected to behave accordingly.

**Student Responsibilities**

* ***Attend Class.*** If you miss more than one class during this module, your grade for this module will be reduced by 10% for every class missed.
* ***Do the Work.*** Complete all work in a timely manner. Deadlines are firm. You may have one extension, but you must request it at least 24 hours in advance of the time due. If you do not receive an extension, late assignments will be penalized 10% of the grade for that assignment for every day they are late.
* ***Check E-Mail and Moodle Daily.*** Information about the class including assignment updates and schedule changes will be posted to Moodle and/or sent by e-mail. Not reading your e-mail or checking Moodle will not be accepted as a reason for me to accept a late assignment or your absence in a class activity.

**Communication**

* ***Title.*** My preference is for you to address me as either Professor Roth or Dr. Roth. If you have a preference regarding how you would like to be addressed, please let me know.
* ***Requests.*** If you need to schedule a meeting or have a request of me that will require time outside of class, please be sure to follow up any conversation we might have about the request immediately before, during, or after class with an e-mail to confirm that I have placed the request on my calendar. Because class time can be busy, by the time I return to my office, there is a chance I will have been distracted and forget our conversation.
* ***Email.*** Students often worry about how to e-mail a professor. I recommend reading the guidelines at <http://web.wellesley.edu/SocialComputing/Netiquette/netiquetteprofessor.html>. I have attached a copy of those guidelines to this syllabus.

**Academic Accommodations**

In compliance with Lafayette College policy and equal access laws, I am available to discuss appropriate academic accommodations that you may require as a student with a disability. Requests for academic accommodations need to be made during the first two weeks of the module, except for unusual circumstances, so arrangements can be made. Students must register with the *Office of Advising and Co-Curricular Programs* for disability verification and for determination of reasonable academic accommodations.

**Academic Integrity**

To maintain the scholarly standards of the College and, equally important, the personal ethical standards of our students, it is essential that written assignments be a student’s own work, just as is expected in examinations and class participation. A student who commits academic dishonesty is subject to a range of penalties, including suspension or expulsion. Finally, the underlying principle is one of intellectual honesty. If a person is to have self-respect and the respect of others, all work must be his/her own.

**Technology**

Technology in the classroom should enhance the learning environment for all students.  Use of technology for purposes defined by the College as academic dishonesty is prohibited.  In the event that students receive permission in advance to digitally record a class (audio or video), the material should not be posted to the internet for public access, unless a prior agreement has been made with me.

The use of technology in my classes should reflect two key values:

* ***That we are here for a common purpose – education.*** Use of technology in the classroom by the faculty member and the students should always support student learning. If you are using your phone, tablet, or computer in class, be prepared to show me how you are using the technology to support your learning.
* ***That the classroom should be a place of mutual respect.*** I, as the teacher, need to respect how students understand and use technology to best support their own learning (though I might engage students in a discussion about the research that shows handwriting is better than typing for taking notes). I also need to be sympathetic to valid reasons students may have that require them to communicate with others during class time. Students need to respect my efforts to create a classroom environment and to organize the course in ways that support the learning of all students. Students also need to respect their fellow classmates and their classmates’ rights not to be distracted from participating fully in the classroom.

**Federal Credit Hour Compliance:**  The student work in this course is in full compliance with the federal definition of a four credit hour course. Please see the Registrar’s Office web site (http://registrar.lafayette.edu/files/2013/04/Federal-Credit-Hour-Policy-Web-Statement.doc) for the full policy and practice statement.

**Privacy and Moodle:** This course uses Moodle course management system. Moodle contains student information that is protected by the Family Educational Right to Privacy Act (FERPA). Disclosure to unauthorized parties violates federal privacy laws. Courses using Moodle will make student information visible to other students in this class. Please remember that this information is protected by these federal privacy laws and must not be shared with anyone outside the class. Questions can be referred to the Registrar's Office.

**Class Participation Rubric**

(Source: John Immerwahr, 8/15/2008,

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|  |  |  |  |
| --- | --- | --- | --- |
|  | **Strong Work** | **Needs Development** | **Unsatisfactory** |
| **Listening** | Actively and respectfully listens to peers and instructor | Sometimes displays lack of interest in comments of others | Projects lack of interest or disrespect for others |
| **Preparation** | Arrives fully prepared with all assignments completed, and notes on reading, observations, questions | Sometimes arrives unprepared or with only superficial preparation | Exhibits little evidence of having read or thought about assigned material |
| **Quality of Contributions** | Comments are relevant and reflect understanding of: assigned text(s) or assignments; previous remarks of other students; and insights about assigned materials | Comments sometimes irrelevant, betray lack of preparation, or indicate lack of attention to previous remarks of other students | Comments reflect little understanding of either the assignment or previous remarks in seminar |
| **Impact on Class** | Comments frequently help move class conversation forward | Comments sometimes advance the conversation, but sometimes do little to move it forward | Comments do not advance the conversation or are actively harmful to it |
| **Frequency of Participation** | Actively participates at appropriate times | Sometimes participates but at other times is “tuned out” | Seldom participates and is generally not engaged |

Class participation deserving of an A grade will be strong in most categories; participation that is strong in some categories but needs development in others will receive a B; a grade of C reflects a need for development in most categories; D work is typically unsatisfactory in several categories; and F work is unsatisfactory in nearly all categories.

**How to E-mail Your Professor**

(http://web.wellesley.edu/SocialComputing/Netiquette/netiquetteprofessor.html)

Students often tell us that they worry about how to address an e-mail message to a professor – especially one whom they don't know. Below are suggestions that answer concerns we've heard not just from students, but from professors. And note: use these tips not just for e-mailing professors, but people who work in college offices, your employers and job supervisors, and your class deans and RDs.

**On addressing your professor**

**E-mail to a professor should be treated like a business letter –** at least until you know that professor's personal preferences very well. Although e-mail is widely regarded as an informal medium, it is in fact used for business purposes in many settings (including Wellesley College). You won't err if you are too formal, but there is the possibility of committing many gaffes if you are too informal.

**The subject header should be informative.** It is not a salutation line, so don't write something like "hey professor" in that line. Instead, write a few words indicating the purpose of your message: "Request for a space in your class," for example.

**Use professors' names when addressing them.** Many professors we queried said that they do not like to be called simply "professor." They prefer "Professor Lee" or "Ms./Mr. Lee"; most tell us that the title itself doesn't matter nearly so much as the fact that you also use their names ("Dr. Lee" does seem to be uncommon at Wellesley, though, just so you know). Some professors will eventually suggest that you call them by their first names, but if you are more comfortable continuing to use a title, that is always fine. Just be sure to use a name. (Note: these comments are true for personal interaction as well as for e-mail).

**Dear, Hi, Hey, or nothing?** To some eyes and ears, "Dear Professor Jones" may be too formal for an e-mail message – but in fact it will do just fine when your purpose is a business-like one. Simply writing "Professor Jones" (followed by a comma) is fine, too. Some faculty are sensitive to the word "Hi" as a salutation, whether alone or with a name (e.g., "Hi, Professor Jones"), but others don't mind it and in fact use it themselves. But avoid "hey" – no one we queried likes that one.

**Don't expect an instant response.** Although we have all become accustomed to the instantaneous quality of electronic communication, your professors want you to know that they simply cannot always answer a message quickly. Allow them a day or two, or even more, to respond. You can re-send the message if you haven't heard back in five days or so.

**On e-mail style**

**Don't use smiley faces or other emoticons when e-mailing professors, and don't use all those internet acronyms, abbreviations, and shortened spellings** (e.g., LOL, or "U" for "you"). Similarly, don't confuse email style with txt style. All of that electronic shorthand signals a level of intimacy (and perhaps of age) that is inappropriate for exchanges with your professors.

**Write grammatically, spell correctly, and avoid silly mistakes.** Proofread. Use the spelling checker. Especially double-check for embarrassing errors in your subject header. Show that you care about how you present yourself in writing to your professor.

**Use paragraph breaks** to help organize your message. It's hard to read a long unbroken stream of words on a screen.

**On content**

**Don't use e-mail to rant or whine.** Sometimes the very appearance of a message can signal "rant": very long paragraphs, no capital letters, no sentence breaks. These are not fun to read, and may well elicit the exact opposite response that you intend. Of course, we are all tempted to rant sometimes in e-mail, so what one professor recommends is this: Sure, rant all you want in an e-mail. But don't send it. Hit the delete button, and then write a more measured message. (Many faculty will tell you that they have files full of unsent messages; they have wisely learned that an e-mail written in the first flush of frustration must be re-crafted and sent with care.) On the other hand, an email in which you direct a constructively worded complaint to the person most able to address such complaints is just fine.

**Keep most messages to under a screen in length**; lots of readers will simply defer reading long messages, and then may never come back to them. On the other hand, a very short, terse message may simply be meaningless. Be sure to include enough information so that your reader can understand what you are requesting. Provide a bit of background or context if necessary. State your request clearly.

**Take extra steps to minimize the e-mail exchange**; for example, if you are requesting an appointment, state your purpose and name the times that you could come in in your initial message. Your respondent may then be able to answer you with only one additional message.

**Quote selectively and briefly** from any prior messages to provide context and background. Although sometimes it's good to quote an entire exchange so as to keep a record of what's been said and decided, often that's unnecessary and simply ends up making a message too long and cluttering the screen.

Many professors advise that you **think about *why* you are sending an e-mail message.** Are you asking something that could easily be checked if you took a few extra steps yourself? For example, e-mailing a professor simply to ask when her office hours are can be annoying when the office hours have been clearly announced on the syllabus already. On the other hand, e- mailing for an appointment is just fine. Are you asking a question privately that might be better asked on the course conference, where all the students might usefully see the response? Are you e-mailing to lodge a complaint or to ask for a letter of recommendation or to seek help with a problem set? In these cases, personal contact and an office visit might be much better.

**Be respectful, and think about what kinds of things might sound odd or offensive to your professor.** For example, don't say flippantly that you slept through that professor's class, or talk about your love life, or bash chemistry or math or writing.

Wellesley faculty think very highly of their students, and you will soon find that they will work closely with you and that you'll feel quite comfortable entering an intellectual relationship with your professors. E-mail has often been seen as a democratizing system of communication that flattens hierarchies and that allows people of all sorts to communicate comfortably and freely with each other. We value the ease of communication that e-mail offers us - but we who work a Wellesley have also learned, over time, that we don't quite want our e-mail with students to feel like an instant-message exchange. Most professors are overwhelmed by the vast number of e-mail messages they receive; some have been shocked by the sheer effrontery of some of those messages; many become frustrated if e-mail consumes so much of their time and emotional energy that they can't then spend valuable personal time with you. We hope these tips will help you - and your professors - conserve some of that emotional energy.

**And as for that emotional energy, here's one last tip:**

**Be kind to yourself if you make an electronic faux pas.** All of us – even those who have studied electronic communication for years – have made some pretty monstrous errors. We learn from our mistakes, and we learn to forgive ourselves (and others).