**BEE 101 – Introduction to Ecological Engineering (3 credits) – Fall 2017**

Course Schedule & Syllabus

Instructor: Prof. Roger L. Ely, PhD, PE  
Gilmore 201; 737-9409; ely@engr.orst.edu  
Office Hours: Email for appointment

**Course Description:** Introduction to engineering at OSU and the emerging field of ecological engineering. Topics include engineering analysis and problem solving, professional ethics, the design process and teamwork. No prerequisites.

**Course Content and Schedule:**

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<tr>
<th>Tuesdays, 10:00-11:20, Rogers 440</th>
<th>Thursdays, 10:00-11:20, Rogers 440</th>
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<tr>
<td><strong>Sept 21</strong> Course Overview, How to Succeed</td>
<td><strong>Sept 28</strong> Excel 1 – Basic Operations Read Chapters 1 &amp; 2 before class</td>
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<tr>
<td>Sept 26 Engineering &amp; EcoE</td>
<td><strong>Sept 28</strong> Excel 1 – Basic Operations Read Chapters 1 &amp; 2 before class</td>
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<td>Oct 3 Problem Solving &amp; Creativity</td>
<td>Oct 5 Excel 2 – Using Functions Read pp 49-62</td>
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<td>Oct 17 Using References; Writing a Paper</td>
<td>Oct 19 Excel 4 – Boolean &amp; Logical Functions Read pp 75-80, 89-98</td>
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<td>Oct 24 The Design Process; Design Project</td>
<td>Oct 26 Excel 5 – Regression Analysis Read pp 157-173</td>
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<td>Oct 31 Midterm Exam</td>
<td>Nov 2 Excel 6 – VBA User-Defined Functions Read pp 181-201</td>
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<td>Nov 7 Writing Engineering Reports</td>
<td>Nov 9 Excel 7 – VBA Subroutines Read pp 207-224</td>
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<tr>
<td>Nov 14 Giving Oral Presentations</td>
<td>Nov 16 Testing/Demonstration of Projects</td>
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<td>Nov 21 Project Presentations/Review</td>
<td>Nov 23 Thanksgiving Holiday</td>
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**Course Specific Measurable Student Learning Outcomes:** At the conclusion of this course, students should be able to
1. explain general skills and knowledge required in engineering and describe the scope of ecological engineering as well as how the field interacts with human activities (Bloom Level 2 – Comprehension);
2. discuss the roles of both analytical thinking activities and creative thinking activities in the process of problem solving (Bloom Level 2 – Comprehension) and use the engineering method of problem solving to solve assigned problems (Bloom Level 3 – Application);
3. identify the elements necessary for the effective functioning of a team (Bloom Level 1 – Knowledge), explain the Importance of teamwork to engineering practice (Bloom Level 2 – Comprehension), and describe the experience of functioning successfully as part of a team (Bloom Level 2 – Comprehension);
4. use Excel to analyze a variety of situations and solve problems relevant to Ecological Engineering (Bloom Level 3 – Application);
5. carry out a logical, structured writing process, with proper grammar, structure, and conventions appropriate to scientific and engineering documents (Bloom Level 3 – Application);
6. demonstrate knowledge and application of the engineering design process in a guided but open-ended design project (Bloom Level 3 – Application);
7. deliver an oral presentation, with correct content and technique, that reviews, analyzes, and critiques the team’s performance in the design project (Bloom Level 3 – Application and Bloom Level 4 – Analysis); and
8. use appropriate techniques to carry out calculations for estimating solutions to various problems (Bloom Level 3 – Application).

Grading & General Information:
- Complete assigned reading before coming to class on that day.
- Because the instructor may communicate frequently with the class via email, you must check your official OSU email account at least once per day.
- Midterm (50 pts), Final (50 pts), Design Project/Report (50 pts.), In-Class Activities & Homework (50 pts.) Grading will be curved based on the top score in the class and the class average.
- Unless stated otherwise, homework assignments are due one week after assigned. Late homework assignments will not be accepted.
- During the course you will be given several handouts that you are expected to read and study. I encourage you to keep them organized in a three-ring binder so you can find and refer to them easily.
- The midterm exam will cover material, including handouts, covered up to and including Oct 26th.
- The final exam will be comprehensive but will emphasize material not covered on the midterm.
- You should always bring a calculator to class. You won’t use it during every class meeting, but you will need it from time to time.
- You will need a laptop with Microsoft Excel 2010 or newer. Please have Excel installed on your laptop and functional by Sep 28. College of Engineering laptop purchasing guidelines
and information about obtaining free software may be found at http://engineering.oregonstate.edu/laptop-requirements and http://it.engineering.oregonstate.edu/. Other software packages, such as Open Office, are strongly discouraged. In the past, many students have had major difficulties when trying to use a program other than Excel. Also, Excel is most common in professional practice, which is one of the reasons it is taught in this department. Finally, all demonstrations will be done on a PC. Because Macs differ from PCs in some ways, Mac users must be more self-sufficient and/or get help from each other during the Excel classes.

University and Departmental Policies:

Students with Disabilities: Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Student Conduct: The Biological & Ecological Engineering Department follows university rules on student conduct, may be found at: http://studentlife.oregonstate.edu/code. Cheating or plagiarism by students is subject to the disciplinary process outlined in the Student Conduct Regulations. Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

- cheating- use or attempted use of unauthorized materials, information or study aids
- fabrication- falsification or invention of any information
- assisting- helping another commit an act of academic dishonesty
- tampering- altering or interfering with evaluation instruments and documents
- plagiarism- representing the words or ideas of another person as one's own

Behaviors disruptive to the learning environment will not be tolerated and will be referred to the Office of Student Conduct for disciplinary action.

“The goal of Oregon State University is to provide students with the knowledge, skill and wisdom they need to contribute to society. Our rules are formulated to guarantee each student's freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. Behaviors that create a hostile, offensive or intimidating environment based on gender, race, ethnicity, color, religion, age, disability, marital status or sexual orientation will be referred to the Affirmative Action Office.”