Seminar in Engineering (PHY 591)

Draft Syllabus

INSTRUCTORS:

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MEETING TIME:  
Mondays 12:30-1:20

CATALOG DESCRIPTION:
A series of lectures, discussions and engineering speakers to assist pre-engineers to define more clearly their professional goals by acquainting them with diversified career options available to engineers. Topics include: engineering career exploration and development; cooperative education and internships; and job search, resume writing and interviewing techniques.

COURSE DESCRIPTION:
This course will prepare students, particularly interested in careers in engineering, renewable energy technology, or related disciplines, to gain internship and employment opportunities. Students will be exposed to diverse disciplines and fields in these areas via guest speakers and personal research. They will develop proficient interviewing and writing skills to help them succeed in the professional world.

COURSE OBJECTIVES:

1) Students will develop the skills necessary to gain internship and employment opportunities in the areas of renewable energy technology, engineering, and sustainability. These include cover letter and resume writing, the interviewing process, and the job search process.

2) Students will gain exposure to diverse career opportunities in the areas mentioned above through guest speakers and self-guided research.

3) Students will discern career fields of interest based on their individual talents, passions, and skills and set goals towards achieving such a job.

4) Students will develop presentation and writing skills suited to both technical and non-technical audiences.
ASSIGNMENTS:

See attached pages for drafts of detailed assignments

Application Packet (3-5 pages + rewrite): Resume, cover letter, and a detailed description of job/company you are applying for/to.

Guest Speaker Reaction Paper (2 pages minimum): React to the presentation given by one of the guest speakers over the course of the semester.

Journal Article Reviews (2 pages minimum x 2): Find a peer-reviewed journal article of interest in the fields of engineering, energy science, or sustainability, and write a summary that conveys the core information in a way that could be understood by non-technical audience.

Final Paper (10 pages + rewrite): Write a research paper on a career field of your interest. Include the relevant historical background of this discipline, a detailed technical analysis and description of a technology, product, system, or service developed in your chosen area, and discuss possible directions for the future.

In Class Exercises (five for a total of 10%): personal goal writing, elevator pitch creation/delivery, Resume peer critique, and two mini design exercises facilitated by our guest speakers.

Total Writing for the Courses: 27-29 pages

GRADING:

All written assignments will be graded according to the following criteria. Percentage weightings are specified depending on the assignment:

Content: thorough, nontrivial, and compelling; addresses the questions/goals of the assignment

Attention to Audience: language, content, and relevant background is tailored to the specified audience (technical or non-technical, etc.)

Writing Mechanics: correct spelling and grammar, well-organized material, clear and logical sentence construction

Layout: fonts, spacing, diagrams, and captions are all placed and formatted to maximize clarity and professionalism

A detailed rubric for the final paper is attached.
Assignment Breakdown:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Draft</th>
<th>Final</th>
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</thead>
<tbody>
<tr>
<td>Application Packet</td>
<td>5 %</td>
<td>15 %</td>
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<tr>
<td>Guest Speaker Reaction Paper</td>
<td>10 %</td>
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<tr>
<td>Two Journal Article Reviews</td>
<td>20 %</td>
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<tr>
<td>Presentation on Journal Article</td>
<td>10 %</td>
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<tr>
<td>Final Paper</td>
<td>10 %</td>
<td>20 %</td>
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<tr>
<td>In Class Exercises</td>
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<td>10 %</td>
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Letter Grades:

Grades will be given according to the following scale:

- A = > 90%
- B+ = 85-89%
- B = 80-84%
- C+ = 75-79%
- C = 70-74%
- D = 60-69%
- F = < 60%

TENTATIVE SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Month</th>
<th>Day</th>
<th>Topics and Major Deliverables</th>
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<tbody>
<tr>
<td>1</td>
<td>August</td>
<td>27</td>
<td>Intro to PHY 591</td>
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<td></td>
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<td>Personal goals exercise</td>
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<td>2</td>
<td>September</td>
<td>3</td>
<td>Workshop: Resumes and Cover Letters</td>
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<tr>
<td>3</td>
<td></td>
<td>10</td>
<td>Draft Resume due</td>
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<td>Field Trip – Renewable Energy career‐related</td>
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<td>4</td>
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<td>17</td>
<td>Speaker: Entrepreneurial Opportunities &amp;</td>
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<td>Perfecting the Personal “Elevator Pitch”</td>
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<td>5</td>
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<td>24</td>
<td>Journal Article Review 1 due</td>
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<td>Student presentations</td>
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<tr>
<td>6</td>
<td>October</td>
<td>1</td>
<td>Student presentations/Speaker</td>
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<td>7</td>
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<td>8</td>
<td>Final Resume and Application Packet due</td>
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<td>Required attendance for Fall Career Fair</td>
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<td>8</td>
<td></td>
<td>15</td>
<td>NO CLASS – Fall Recess</td>
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<tr>
<td>9</td>
<td></td>
<td>22</td>
<td>Workshop: Interviewing Skills</td>
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<td>10</td>
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<td>29</td>
<td>Journal Article Review 2 due</td>
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<td>Student presentations</td>
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<tr>
<td>11</td>
<td>November</td>
<td>5</td>
<td>Speaker</td>
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<td>12</td>
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<td>12</td>
<td>Final paper draft due</td>
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<td>Student and Faculty conversations: careers</td>
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<td>13</td>
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<td>19</td>
<td>NO CLASS - Thanksgiving</td>
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<td>14</td>
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<td>26</td>
<td>Speaker</td>
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<tr>
<td>15</td>
<td>December</td>
<td>3</td>
<td>Final paper rewrite due</td>
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Course Policies

1. Attendance is mandatory and will be taken at every class meeting. Note: notifying the instructor of an absence does not relieve you of the responsibility to either deliver an oral assignment or submit a written assignment on the assigned date.

   You are allowed one absence without penalty. After that, your grade will be lowered by two percentage points for each class period beyond the one. For example, if you have three absences and your grade (at the end of the semester) is 90%, your grade will be lowered four percentage points, resulting in a course grade of 86%. Arriving late or leaving early may be considered an absence at the discretion of your instructor.

University Activities -- If you are involved in a university activity requiring you to miss class, we require documentation of the activity from the advisor/coach of the event. Your absences will be lumped together allowing you to have one absence remaining without penalty.

Extreme Circumstances -- If your absences are related to extreme circumstances (family emergencies, hospitalization), you should follow procedures established by your college (i.e., College of Arts and Sciences, College of Business Administration, etc.) Your absences will be lumped together giving you one absence remaining without penalty. You are responsible for all information and assignments presented in class. “Extreme” circumstances will be dealt with on an individual basis.

2. Late Written Assignments: All written assignments are due on their assigned dates. Late written assignments will be subject to a deduction of 10% per day (not including weekends). No credit will be given after 10 days.

3. Late/Missed Presentations: Presentations and discussions must be delivered on their assigned dates. If you are absent on the day you are required to speak, you will receive a zero for that assignment and all related assignments for that day.

4. Integrity in Action – The Integrity Code: It is your obligation as a student to learn what your professors and fellow students expect of you at Creighton. The College can help by reminding you of this important responsibility from time to time, which is why the Student Senate drafted an Integrity Code in 2003 and asked the College to endorse it and promote its use by the faculty. The Code exists to remind you: (1) to work as hard as you can; (2) to learn as much as you can; and (3) to always ensure that the work you submit is your own (or that those portions of it that have been based on outside sources are appropriately acknowledged).

   This Code calls for your signature on assignments as deemed appropriate by your instructor. Each time you sign your name you are attesting that the work you submit is your own. When you sign your name, you do so in front of the College faculty, but even more so, in front of your fellow students and the thousands of alumni and those who preceded you at Creighton. The Pledge serves as a regular reminder of Creighton’s commitment to the very highest standards of integrity. The Pledge reads as follows:
**Academic Integrity Pledge**

In keeping with Creighton University's ideals and with the Academic Integrity Code adopted by the College of Arts and Sciences, I pledge that this work is my own and that I have neither given nor received inappropriate assistance in preparing it.

Signature: ________________________________

5. **Academic/Personal Misconduct:** You are expected to abide by University rules and regulations. All violations will be referred to appropriate people for specific disciplinary action. Examples of violations include, but are not limited to, cheating, plagiarism, and any behavior obstructing or disrupting the classroom teaching and learning environment. Academic dishonesty will not be tolerated; all documentation submitted to your instructor may be checked for verification. Any form of cheating or plagiarism may result in a grade of “F” for the assignment, and may result in an “F” for the course. For details, consult the Bulletin and the Handbook [here](http://www.creighton.edu/Registrar/Bulletin/COURSES/administrationandsuper.htm).

6. **Inclement Weather Days:** Since most of you live on or very near campus, I'm assuming that if Creighton is open, you can get to class. In the event that Creighton is open, but I am unable to drive to campus due to weather, I will attempt to inform you of a cancelled class by sending an e-mail to the class. If you have any doubts as to whether class might be cancelled due to inclement weather, you should check your e-mail. Class is in session if you cannot confirm a cancellation by these means. Please do not call the department's main office if you are seeking this information.
Application Packet

Description: You will prepare an application packet for a position (summer or post-graduation) to which you are actually applying or would consider applying. Your packet will include 1) a description of the company/organization and position, 2) a professional Resume, 3) a cover letter.

Length: 3-5 pages total

Draft: due week 3 of classes

Final (Rewrite): due week 7 of classes

Grading Criteria: This assignment will be graded according to the general writing assignment criteria for this class (see syllabus): Content – 30%, Attention to Audience – 20%, Writing Mechanics – 25%, Layout – 25%

Details:
Use the samples and guidelines for resumes and cover letters supplied by your instructor. The Creighton Career Center website also has many relevant useful resources (www.creighton.edu/careercenter/students).

1) Use Creighton’s job search portal or other methods to find a position for which you are interested in applying. This can be an internship or full-time job. Describe the position in detail and articulate why you are interested and how your background/skills qualify you. Conduct research on the company or organization and write a company brief, summarizing important information that would be useful to know in an interviewing context. This should include at a minimum: the company’s mission statement, history, major products/services, and demographics (size, location, disciplines of employees, etc.). This description should be a total of 1-2 pages.

2) Your Resume should be written according to the guidelines on Creighton’s Career Center website. Detailed feedback will be given from your instructor, which should be incorporated into your final draft. Your Resume should be 1-2 pages (1 if you are a 1st or 2nd year student; 2 only if you have more highly relevant information than can fit onto 1 page).

3) Your cover letter should be written according to the guidelines on Creighton’s Career Center website. Detailed feedback will be given from your instructor, which should be incorporated into your final draft. Your cover letter should be 1 page.
Guest Speaker Reaction Paper

Description: You will react to one of the guest speakers’ presentations, with attention to content, presentation style, and personal relevance.

Length: 2 pages minimum

Final: due 1 week after the presentation of your choice

Grading Criteria: This assignment will be graded according to the general writing assignment criteria for this class (see syllabus): Content – 60%, Attention to Audience – 10%, Writing Mechanics – 20%, Layout – 10%

Details:
Your reaction paper should include the following:

- A concise summary of the presenter’s talk
- Contextual information (where does this presenter’s work fit into the larger picture of their company, discipline, or field of work?). Include properly-cited resources
- Critique of presentation delivery (how effective were the visuals, speaking style, attention to audience, etc.?)
- A personal reaction to the content of the presentation. What was most interesting, surprising, or personally relevant to you and why? How does this shape your understanding of possible career directions?
Journal Article Reviews

Description: You will review two technical peer-reviewed journal articles related to engineering, renewable energy, or sustainability. You will prepare a formal presentation for one of these reviews, with the goal of communicating the technical and contextual details of the article to a non-technical audience.

Length: 2 papers, 2 pages minimum each. Attach a copy of the journal article.

Final: Review 1 due week 5; Review 2 due week 10

Grading Criteria: This assignment will be graded according to the general writing assignment criteria for this class (see syllabus): Content – 60%, Attention to Audience – 10%, Writing Mechanics – 20%, Layout – 10%

Details:
Your review should clearly communicate the core technical and contextual information given in the journal article, using language and description oriented towards a non-technical audience. You may have to conduct additional research to fill in gaps in your understanding of the technical aspects of your article.

Your review should be written in a style similar to scientific/technical newspaper articles or popular science magazines. Your goal is to provide the necessary knowledge and background to get a non-technical audience up to speed and then articulate the content in a way that maintains the integrity of the information.
Final Paper

Description: You will write a final research paper on a career field of interest to you. Your paper will provide an overview of the field, with specific detailed examples of technologies or product-services developed recently. Specific attention should also be given to how and why this field is interesting to you and a possible professional path that would take you in that direction.

Length: 10 pages minimum

Draft: due week 12. Your instructor will provide detailed written feedback and comments on your draft by one week after submission. You will have 2 weeks to incorporate these changes into a polished final paper.

Final (Rewrite): due week 15

Grading Criteria: This assignment will be graded according to the guidelines detailed on the following page.

Details:
Your final paper should include sections addressing the following:

- Introduction/Background: Introduce your reader to the field you will explore in your paper, with appropriate background information
- Historical evolution: Describe the history of this field of work/research. What disciplines and fields of thought does it originate from? How old is the modern version of the discipline? Include any interesting or relevant social, cultural, or historical events that shaped the field.
- Technology/Product/Service Description: Research at least one technology created and implemented in this career field. Describe the technology in detail, using appropriate schematics, pictures, and diagrams.
- Future Innovations: Where is this field going? Where is the cutting edge and where do you think the technology will be in 5-10 years? Develop your arguments from research on cutting-edge exploration occurring in this area.
- Personal Relevance: Why does this career field appeal to you and how do you imagine contributing to it? What are the necessary career steps for you to achieve your goals in this field or others?
- Sources: You should draw from a minimum of 5 rigorous sources, 3 of which must be peer-reviewed technical journal articles. You must cite these correctly throughout your paper.
Grading Guidelines for Final Research Paper

For a grade of A:

In addition to those items required for a grade of B, the paper shows an exceptional degree of understanding of the issues discussed in the course. An especially thoughtful reflection on the student’s personal mission and future responsibilities is evident. The paper demonstrates insight into the relationship between the issues in the course and the student’s mission and future responsibilities.

For a grade of B:

The paper should demonstrate the student’s understanding of the relevant concepts and clearly articulate the student’s mission and future responsibilities in light of these concepts/issues. The assignment is well organized. Paragraphs contain topic sentences and are coherent and appropriate in length. Sentences are smooth and carefully crafted. Transitions connect sentences and paragraphs so the writing is not choppy. There are virtually no errors in punctuation, spelling, grammar, and usage. The paper avoids triteness and generalizations. The thesis statement is clearly delineated. The introduction presents the issue and outlines its significance. The arguments and facts support the thesis. Terms are adequately defined. The writer shows an understanding of the topic. Conclusions are well-supported and follow from the argument. The paper is tight, not wordy. The bibliography is correctly displayed and refers to a sufficient number of current sources. Sources are correctly cited.

For a grade of C:

The paper demonstrates a basic understanding of the concepts and issues involved. The student’s personal mission and future responsibilities are addressed, but application of course-related concepts and issues is sometimes inadequate. The paper shows research beyond the level of the assigned texts in the course. The work is well organized, but the paragraph structure may sometimes be disjointed. The paper contains no more than a few awkward passages. There are some errors in punctuation, spelling, grammar, and usage. The language is too general, but none of these errors is glaring or highly distracting. The sources cited may be limited in number or somewhat out-of-date. There may be some errors in format in the citations and bibliography.

For a grade of D:

The relevant concepts and issues from the course materials are presented, but some inaccuracies may exist. The student’s personal mission and future responsibilities are discussed, but sufficient detail or clarity may be lacking. Application of course-related concepts and issues is often inadequate. Research is at the level of the assigned texts for the course. The work is adequately organized, though some paragraphs may be disunified or misplaced. Generally, it shows that the writer has followed a logical plan. The writing
is competent but wordy, general, or imprecise. Sentences may at times be awkwardly constructed, but their meaning is clear. Paragraphs do not develop topic sentences. Errors in grammar, punctuation and spelling are distracting. Errors in citations and in the bibliography are more extensive.

For a grade of F:

The student’s description and discussion of the relevant concepts and issues contains major errors or is omitted from the paper. The student fails to demonstrate significant thoughtfulness about his or her personal mission and future responsibilities. The paper lacks a clear thesis. The language is frequently muddled and unclear. The technical errors in writing are numerous and highly distracting. The writer’s understanding of the topic is in question. Bibliography and citations are missing or incorrect.