George Mason University
Volgenau School of Engineering

ECE 491 Engineering Seminar
a.k.a.
“How to succeed and prosper in the real world”

Version 8/3/18
Course meets Thursday, 7:20-8:35 PM, Innovation Hall 137, from August 30th to December 6th

Instructor: Dr. Thomas Fowler
tfowler@gmu.edu
202 316-6757

Office Hours: Thursday 4-5 or by appointment

Description
This course will give you some key skills that you need to make your way in the world. The work world today is very competitive, and you need every advantage possible. With many qualified candidates looking for jobs, you must make yourself stand out. Fortunately this is not difficult as most candidates are weak in many of the areas covered in this course!

Course Objectives
• Provide information on the various career paths in the electrical and computer engineering fields
• Assist students in the career development process
• Bring awareness to the importance of continuing professional education
• Emphasize the critical importance of ethics and professionalism in the engineering field and to address ethical issues confronting technical/engineering personnel
• Bring awareness to modern engineering developments in electrical and computer engineering
• Fulfill the writing intensive requirement for the major and to enable students to further develop research and technical writing skills
• Facilitate students in public speaking
• Bring awareness to the impact of various technologies on the economy, environment, and society
• Provide an avenue for practice in professional networking and job search processes
• Build networking skills
Course topics

- Key skills
  - How to write a resume that will get you attention
  - How to act during a job interview
  - How to market yourself
  - How to write a good technical paper
  - How to give a technical presentation

- Important resource and background areas
  - Career services overview and career paths
  - Preparing for the job/internship fair
  - Networking and job search strategies
  - Graduate studies and continuing professional education
  - State of the industry
  - Engineering Ethics

These topics are all related and that will be part of the course discussion.

Prerequisites
90 credits applicable to the electrical engineering or computer engineering program, and COMM 100. Note: Students cannot receive credit for both ECE 491 and BENG 491

Course Outcomes
After taking this course, students will
- Possess a basic understanding of the various career paths in the electrical and computer fields
- Acquire practice in oral communication skills
- Acquire skills to write an extensive paper related to their major with proper use of citations
- Be better prepared to start the job search process and transition into a career as an engineer
- Comprehend the importance of ethics and professionalism in the engineering field and be aware of some of the ethical issues surrounding their chosen field of study
- Understand the impact of various engineering developments on the economy, environment, and society
- Be better able to market his or her skills and network with other professionals
Grading

Students are graded on how well they:

- Learn key terms and concepts
- Complete assignments
- Participate in discussions

Assessment of student knowledge may use quizzes and exams. Following is the anticipated grading schema:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resume (draft and final)</td>
<td>15%</td>
</tr>
<tr>
<td>Technical Research Paper (drafts and final)</td>
<td>40%</td>
</tr>
<tr>
<td>Presentation on Contemporary Engineering Issue</td>
<td>20%</td>
</tr>
<tr>
<td>Job Fair or Mixer</td>
<td>10%</td>
</tr>
<tr>
<td>Advising Session</td>
<td>Pass/Fail**</td>
</tr>
<tr>
<td>Tests/Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Technology Debate</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Advising assignment will be graded Pass/Fail, and you must pass in order to pass ECE 491!!

98 – 100% A+ Passing
94 – 97% A Passing
90 – 93% A- Passing
86 – 89% B+ Passing
82 – 85% B Passing
78 – 81% B- Passing
74 – 77% C+ Passing
70 – 73% C Passing
66 – 69% C- Unsatisfactory *
60 – 65% D Unsatisfactory *
0 – 59% F Failing *

* Grades of "C-" and "D" in this course are considered unsatisfactory.

According to departmental policy, no C- or D grades in ECE, BENG, CS or ENGR courses can be submitted for the BSEE or BSCpE degree. You will need to repeat the course if you obtain a grade of C- or lower.

Raw scores may be adjusted by the Instructor to calculate final grades. Final grades will be posted to http://patriotweb.gmu.edu, which is the only vehicle for students to obtain those grades.
A student with a "hold" on his/her PatriotWeb account will be unable to access final grades until the hold has been removed by the Registrar.

Due to many problems in the past, I have implemented new rules for homework and grading. All work must be turned in on time. If you cannot come to class, you can email or fax the homework. If you cannot submit the homework or complete the coursework due to health or other problems, you should consult with the department about dropping the course, or make some arrangement to retake it at a later date. So that there is no misunderstanding, NO CHANGES WILL BE MADE TO FINAL GRADES UNLESS THERE WAS A RECORDING OR CALCULATION ERROR. Unless otherwise indicated, students should do their own homework and not collaborate with others. Students are expected to have personal computers and Internet access. A student project and presentation is required.

**Text:** There are no required textbooks for this course. You should visit the following references and download material as appropriate:

Resume and Career Documents:  
[https://careers.gmu.edu/students/documents/](https://careers.gmu.edu/students/documents/)

Career and Internship Guide:  

Other Career Resources:  
[https://careers.gmu.edu/resources/](https://careers.gmu.edu/resources/)

**Course Policies**

- Late work may be accepted under extenuating circumstances, but only with prior permission and may be subject to late penalty.
- Students concerned about meeting course requirements should discuss these with the instructor in advance of the due date.
- Missed exams must be arranged with the instructor before the exam date. All students must be present, on campus, to write exams in this course.
- While students are encouraged to discuss topics and solutions to problems, *students must submit their own, original, work*. All students are expected to abide by the George Mason University Honor System and Code (which contains a definition of plagiarism, amongst other things). Plagiarism will not be tolerated. This is an engineering ethics class and you are professionals. All assignments are to be individual efforts. It should always be clear which words are yours and which are someone else’s. If you are unsure how to cite a quotation properly, ask for assistance. Do not paraphrase. If you have questions or need help with writing, please ask or contact the Writing Center. Each student is expected to enlist the aid of an independent proofreader to proofread each written assignment. Further related information is available from IEEE and ACM.
- All course materials may be accessed by visiting [http://mymason.gmu.edu](http://mymason.gmu.edu)
• Important announcements may be posted on Blackboard so please make sure to follow the announcements and discussion board periodically. The discussion board on Blackboard may also be used for online discussions between students.

• Any student acting in a disruptive or unruly manner may be asked to leave the classroom by the instructor. Civilized interaction is essential for quality education.

Note that we reserve the right to submit student work for automated testing against other submitted work to confirm a submission’s originality.

Classroom Conduct
You are expected to be punctual, alert, and prepared for each class. Be considerate of other students, i.e., be quiet for the duration of the class period, except when you have something to contribute. Do not surf the Internet during class time. Please feel free to ask questions and/or offer pertinent comments in class. If you are confused, more than likely, someone else is too. If you need extra help, please schedule an appointment in advance or drop by during regular office hours.

Cell phones have no place in class. Either leave them behind or turn them off prior to entering the classroom.

Open laptops are allowed in the classroom only when specifically suggested by the instructor to be used as part of the instruction process, otherwise they must be closed and packed away. The same policy applies to tablets, smartphones, and other wireless connected devices.

Students are expected to interact with, and address faculty and staff in a professional and respectful manner. If you need to send an email to faculty or staff, please compose them such that it reflects a high level of professionalism. Make sure to include any pertinent information he or she might need to handle your request.

Communications:
Registered students will be given access to a section of the Blackboard Learning System for this course which may be accessed by visiting the following link:

http://mymason.gmu.edu

Blackboard will be used as the primary mechanism (outside of in-class lectures) to disseminate course information, including announcements, lecture slides, assignments, and scores for assignments and exams. All submissions are to be made via Blackboard on the due dates. I will make every effort to post lectures by the Friday before class. All pertinent course material will be posted there.

Communication with the Instructor on issues relating to the individual student should be conducted using Blackboard Mail, GMU email, via telephone, or in person - not in the public forums on Blackboard, or other network media. Students should not broadcast their messages to and from the instructor to the whole class or other groups of students.
For urgent messages, you should also attempt to contact the Instructor via telephone. GMU policy requires that any communication with a student related in any way to a student's status be conducted using secure GMU systems – if you use email to communicate with the Instructor you MUST send messages from your GMU email account.
Campus Services
Several services are available to students, and you are encouraged to make use of them as you may need:

- Writing Center: A114 Robinson Hall; (703) 993-1200; [http://writingcenter.gmu.edu](http://writingcenter.gmu.edu)
- Disability Services: If you are a student with a disability and you need academic accommodations, please see your instructor and contact the office of Disability Services (ODS) at 703 993 2474. All academic accommodations must be arranged through the ODS [http://ds.gmu.edu](http://ds.gmu.edu) and be arranged **before** any accommodation is needed.
- Counseling and Psychological Services (CAPS): (703) 993-2380 [http://caps.gmu.edu](http://caps.gmu.edu)
- University Policy: The University Catalog, [http://catalog.gmu.edu](http://catalog.gmu.edu), is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at [http://universitypolicy.gmu.edu](http://universitypolicy.gmu.edu). All members of the university community are responsible for knowing and following established policies.
- Course online Resources: Announcements, materials and related resources for this course are available on-line through Blackboard, at [https://mymason.gmu.edu](https://mymason.gmu.edu). Typically, work you submit (e.g., assignments, papers) is submitted through the on-line system used for your section.

Administrative support:
Ms. Patricia Sahs
Academic Programs Coordinator
psahs@gmu.edu

Ms. Jammie Chang
Academic Programs Manager
jchangn@gmu.edu

Location: 3100 Engineering Building
Phone: 703-993-1569

Library/Research support:
Ms. Theresa Calcagno
Librarian, Volgenau School of Engineering
STEM Librarians Team
George Mason University
Fairfax VA 22030
703-993-3712
tcalcagn@gmu.edu
Description of Graded Items

All submissions described below are to be made via Blackboard on the due dates stated in the syllabus.

Resume Assignment:
Each student will need to prepare an initial draft of a professional resume and submit it on the due date listed on the calendar. The resume should be prepared in accordance with the suggestions made in class and should conform to the guidelines outlined in the Resume and Career document referenced above. The student will need to visit the career services center during walk-in hours or make an appointment with one of the counselors to have their resume reviewed. Alternatively, they can get it reviewed by potential employers that are oftentimes present at GMU to provide such services to our students. The student should then use all the feedback provided to incorporate any suggested changes and then submit a final version on the date listed on the calendar. You will need the resume for the Job Fair or the Mixer. Failure to submit an initial draft on the due date will result in a grade penalty for this assignment. The grade you will obtain in this assignment will be based partially on whether you have incorporated the suggested modifications into your resume. Failure to submit the final resume on the due date will result in 0 points for this assignment.

Technical Research Paper

This course has been approved by the Faculty Senate Writing Across the Curriculum Committee to fulfill all/in part the Writing Intensive requirement in the Electrical and Computer Engineering majors. It does so through the paper described in the following paragraph. The research paper will be completed through a draft/feedback/revision process. The due dates for the first and second drafts are given in the syllabus; The instructor will provide comments on both drafts. The final paper (which must incorporate changes suggested in the comments) will be due at the end of the semester.

Students are expected to prepare a 3500 word (minimum) technical research paper on a topic related to their major. The topic chosen should describe a problem and an appropriate engineering solution. It must include a discussion of the technology’s impact on the economy, on society, and on the environment. The paper must be an original report, not something copied from the Internet or a term paper service. It is permitted to quote from references, but all quotations should be identified and the source clearly indicated in the footnotes. Plagiarism is not acceptable and is considered a violation of the Honor Code. We check papers for originality and you will be questioned if we suspect that you are not the author of the paper you submitted.

You should submit a first draft, which will receive comments, and then a second draft that will also receive comments, and a final version of the paper. Submission dates are given in the syllabus. The skeletons of both the proposal and the paper will be available on Blackboard and/or sent via email, as will samples of quality papers from previous semesters. Drafts and final submissions should be written using these skeletons and must include all sections! Failure to
submit the technical research paper on the due date will result in 0 points for this assignment. If you need help with research for your paper, please contact Ms. Theresa Calcagno (contact information given above). If you need help with the composition of your paper, please visit the Writing Center. This paper is extremely important for both your career and accreditation for the Engineering School, so you are expected to take it very seriously and be conscientious about it. The ability to do quality technical writing is a skill that will pay you great dividends in future years.

Contemporary Engineering Issues Presentation

Many technical developments have occurred in the last 5 years and there are numerous and exciting up-and-coming fields in electrical and computer engineering today. Each student is expected to choose an interesting technological development that has occurred recently in one of these areas and prepare a 5-minute presentation on the subject. The presentation should be on a technology that has gained attention in recent years. The title of the chosen topic should be submitted to the instructor on the due date listed on the calendar.

The grade received in this component will be based both on the quality and scope of the oral presentation and the timely submission of the topic to the instructor. Failure to submit a topic on the due date will result in 0 points for this assignment. Failure to present the topic during class time will also result in 0 points for this assignment. If you need help with research for your presentation, please contact Ms. Theresa Calcagno (contact information given above). Also note that the Libraries have several rooms where students can practice and record their presentations. The One Button Studio in the Gateway Library in the Johnson Center is one location. In Fenwick Library, there are 2 presentation practice rooms. All 3 rooms allow students to record their presentation so they can review it prior to class. Students need to reserve these rooms to use them and can do so here:

One Button Studio: http://library.gmu.edu/onebutton

Fenwick Presentation Rooms: http://library.gmu.edu/use/tech/fenwickpractice

Job Fair or Mixer Assignment

Students who are not currently employed full time must attend the Mason Job Fair or the Student/Company/Alumni Mixer on September 19th. The job fair will be held on October 3-4 on the Fairfax campus, Johnson Center, Dewberry Hall, from 11-4. Students who choose to attend the Job Fair are expected to interact with at least 3 potential employers during the fair and to write up a 1-page report/summary (double spacing, 12 pt. font) outlining the results of the meeting with each employer. If you choose to attend the Mixer you must write a similar report of your meetings with companies or alumni.

Information on the job/internship fair and other events of interest to seniors may be obtained from the following link:

https://careers.gmu.edu/events
You are also encouraged to open a LinkedIn account, as this is a good way to network with other professionals, and often companies use LinkedIn to search for job prospects.

**Advising Session**

It is mandatory for all students in the class to physically meet with an academic advisor of his or her department to generate a degree evaluation and a plan of study at some point during the semester. Each student needs to download the proof of advising session participation document from Blackboard and have the advisor fill it out. The student should then scan and upload:

1. The advising verification form
2. Plan of study onto Blackboard through the assignments tool.

Failure to submit both of the advising session documents on the due date will result in 0 points for this assignment.

Note: Friday, November 2 is advising day for the ECE department so you can meet with your advisor on a walk-in basis between 1:00-4:00 p.m. that day. However you are encouraged to meet with your advisor prior to this date as lines on the advising day can be long and not all faculty are available on that day.

**NOTE:** This is a pass/fail assignment. You must receive a passing grade in order to pass the course. If you do not submit the advising session document from your advisor, you will fail the course.

**Technology Debate**

From teaching this and similar courses, I have found that students too easily latch onto new technologies and assume (1) that they will do all that their proponents say; (2) that they will actually solve real-world problems; (3) that we don’t have to worry about costs, i.e., they will be cheaper than everything else; and (4) that they have no bad environmental or other effects. Generally, all four of these are false. So we are going to have an evening of debates. I will assign one side of a topic to a group, and you must research the topic and pick someone to give a short presentation. Then you will have to rebut the arguments of the other side, so you will have to know both sides! The topics are: Electric Cars vs. Fossil Fuel Cars; Solar vs. Nuclear Power; Self-Driving Cars vs. Human Driven Cars.
## Syllabus
**ECE 491**
*Engineering Seminar*
**Fall, 2018**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Assignment or Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 August</td>
<td>• Presentation by ECE Librarian Theresa Calcagno on resources for research paper and contemporary engineering issues presentation</td>
<td></td>
</tr>
<tr>
<td>6 September</td>
<td>• Course Description</td>
<td>• Read <em>Wall Street Journal</em> article, “The Key to Success: Doing Less”</td>
</tr>
<tr>
<td></td>
<td>• Overview of course material</td>
<td>• Read <em>Wall Street Journal</em> article, “Bring Back the Work Ethic”</td>
</tr>
<tr>
<td></td>
<td>• Description of major assignments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Place of engineering in the world</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The seven “laws” of technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Work-life balance</td>
<td></td>
</tr>
<tr>
<td>13 September</td>
<td>• How to write a good resume</td>
<td><em>None</em></td>
</tr>
<tr>
<td>20 September</td>
<td>• How to write a good technical paper</td>
<td>• Resume draft due</td>
</tr>
<tr>
<td>27 September</td>
<td>• Preparing for job/internship fair: how to act in a job interview</td>
<td>• Final resume due</td>
</tr>
<tr>
<td>4 October</td>
<td>• Graduate studies and continuing professional education</td>
<td>• Technical paper topic due</td>
</tr>
<tr>
<td></td>
<td>• How to give a good technical presentation</td>
<td></td>
</tr>
<tr>
<td>11 October</td>
<td>• Career services presentation-Matthew Myers</td>
<td>• Job Fair assignment due</td>
</tr>
<tr>
<td>18 October</td>
<td>• Ethics in the professional sphere</td>
<td>• Contemporary Engineering topic for class presentation due</td>
</tr>
<tr>
<td></td>
<td>• Ethics in the marketplace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ethics in global politics, policies, and economics</td>
<td></td>
</tr>
<tr>
<td>25 October</td>
<td>• Intellectual property rights (IPR), IT, and Digital Rights Management (DRM)</td>
<td>• First draft of technical research paper due</td>
</tr>
<tr>
<td></td>
<td>• Impact of changing technology on protection of IPR</td>
<td></td>
</tr>
<tr>
<td>1 November</td>
<td>• Technology debates</td>
<td>• Advising documents due</td>
</tr>
<tr>
<td></td>
<td>• Electric Cars vs Fossil Fuel Cars</td>
<td>• Read article by Thomas Fowler, “The Impact of Technology on Intellectual Property Rights”</td>
</tr>
<tr>
<td></td>
<td>• Solar Power vs. Nuclear Power</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Self-driving cars vs. human driven cars</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Events</td>
<td>Additional Information</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>8 November</td>
<td>Presentation on Entrepreneurship by Mr. Ravi Kalaputapu</td>
<td></td>
</tr>
<tr>
<td>15 November</td>
<td>Student Presentations</td>
<td>Second draft of technical research paper due</td>
</tr>
<tr>
<td>29 November</td>
<td>Student Presentations</td>
<td></td>
</tr>
<tr>
<td>6 December</td>
<td>Student Presentations</td>
<td>Final version of technical research paper due</td>
</tr>
<tr>
<td></td>
<td>Course wrap-up</td>
<td></td>
</tr>
</tbody>
</table>