



Choose Your Own Adventure: Introducing Student Choice into a First Year Experience Course

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Introduction & Background

Traditionally, student assessment in large engineering courses depends upon a systems-level approach, such as exams or written assignments, whereby all students are assessed on the same criteria with limited consideration for individual student needs, approaches to learning, interests or goals. This approach lacks consideration for student motivation, which is an important element of student engagement in the first year experience, leading to the development of a sense of belonging and persistence in the engineering program [1] - [3]. Self-determination theory (SDT) approaches motivation from the perspective of three psychological needs: autonomy, competence, and relatedness [4]. Competence is portrayed as feelings of mastery that allow individuals to complete tasks, relatedness concerns our desire to feel connected to others in meaningful ways, and autonomy refers to an individual's ability to control experiences in their life [5]. In educational contexts, autonomy support involves a cluster of instructional practices that are well-suited for first year experience courses, including offering choices; framing the lesson with a set of meaningful goals; explaining pedagogical decisions and rationale behind learning activities; communicating with non-controlling and informational language; offering opportunities for self-direction; acknowledging and accepting expressions of negative affect; and allowing students to work at their own pace [6]. It is important to note that autonomy is not synonymous with freedom. Whereas freedom indicates unconstrained choice, autonomy relies on a supportive structure to frame choices that are personally relevant, interesting, and not overly numerous or complex [7].

In the following sections, we will describe the introduction of student choice in two assignments for a first year experience course as a relevant variable in increasing motivation and supporting student autonomy in the exploration of academic major, planning for experiential learning and educational decision-making. We will also present recommendations for connecting first year students with various mentors, including alumni, and will discuss future opportunities for student choice in a first year experience course.

Course Structure

Engineering 110 (ENGR 110): Design Your Engineering Experience is a first year, non-technical elective course designed to introduce students to the field of engineering, to encourage the exploration of academic and co-curricular opportunities within Michigan Engineering, and to support the development of self-understanding needed to make academic and personal decisions.

During Fall 2018 and Fall 2019, the course enrolled 300-350 students each semester and utilized a single lecture, single discussion session format each week. The lecture portion of the course was led by two faculty instructors and focused upon faculty presentations intended to introduce students to different engineering disciplines, majors and careers, along with guest presentations/panels intended to explore broader perspectives of engineering and the engineering student experience. The discussion portion of the course, led by upper-level undergraduate

engineering students, focused on the introduction of experiential learning opportunities, as well as topics related to self-understanding (personal strengths [8], values, ethics and social identity). Students completed eight reflection assignments, based on the lecture and discussion topics.

Prior to Fall 2018, course evaluations for ENGR 110 consistently indicated that some students desired more exposure to careers within the engineering field, while other students needed more support leveraging academic resources and integrating into the engineering community successfully. Many students indicated that their primary motivation for enrolling in the course was to determine which major to pursue and had limited interest in other topics provided by the course. In an effort to improve student engagement and motivation across a range of needs, we introduced student choice into two critical assignments.

Foundational Course Initiative

Beginning in May 2018, ENGR 110 was involved in a multi-year, transformative course design process in partnership with the Center for Research on Learning and Teaching (CRLT) through the Foundational Course Initiative (FCI). FCI was created in an effort to transform large-enrollment introductory courses or introductory courses that have a high-impact on the student population at the University of Michigan. Through systematic inquiry, purposeful exploration of ideas, and thoughtful implementation, courses are redesigned with the intention of producing student success. Assignment redesign and assessment for ENGR 110 were accomplished through a collaborative course design (CCD) process, established through the Foundational Course Initiative.

Assignment Design: Introduction of Choice

Over a two year period, we incrementally introduced choice to students within two class assignments, henceforth referred to as Assignment #6 and Assignment #7. The design and subsequent revision of these assignments was an iterative process completed in collaboration with FCI consultants. In addition to incorporating student choice, we also introduced action-based choices whenever possible.

Assignment #6 (Exploring Potential Career Pathways)

Assignment #6 was designed to address students' interest in better understanding the career paths available for engineers within each discipline. The purpose of Assignment #6 was for students to identify and explore potential career paths, reflect on how their personal strengths [8] and interests align with a particular path and consider what educational experiences would support the development of necessary skills required.

When the assignment was originally developed in Fall 2018, students submitted a written reflection on two career pathways of interest, incorporating strengths, relevant skills and a consideration of a day in the life of an engineer in this career. While this assignment incorporated some element of choice in relation to career paths to reflect on, it required no action beyond reflective writing and students had limited experience upon which to base their response.

Students indicated during focus groups that the reflective writing nature of the assignment was tedious and they had difficulty translating the reflection into valuable, concrete actions.

To address these concerns, the CCD team redesigned the assignment in Fall 2019, to introduce a stronger element of choice, including a more action-based option. After identifying a career path to explore, students selected between two options: conducting an informational interview with an engineering professional or creating an aspirational resume highlighting skills and experiences needed to attain a future job of interest. In both options, the objective to guide students through an exploration of future career opportunities remained the same. The complete Fall 2019 version of Assignment #6 is included in Appendix A1.

Assignment #7 (Exploring Michigan and Michigan Engineering)

Assignment #7 was created as a redesign of an existing assignment related to co-curricular involvement and academic minors. The goal of this assignment was to provide students with a better understanding of the broad array of opportunities to enhance their engineering education, inside the classroom and beyond. In the original assignment, students were asked to respond to a series of reflective prompts that encouraged them to consider what co-curricular opportunities or academic minors they were interested in pursuing and how those align with their strengths and future goals. Similar concerns related to students' lack of motivation for reflective writing and difficulty reflecting upon limited experience led us to redesign this assignment in 2018.

Maintaining the same objective for the assignment, the CCD team incorporated student choice by presenting students with several options for completing the assignment: meeting with an academic or career advisor, attending faculty office hours, meeting with a peer advisor, attending a student organization meeting, or conducting an informational interview with an alumnus. In Fall 2019, we revised the assignment to include additional guidance to students on how to arrange each activity. The complete Fall 2019 version of Assignment #7 is included in Appendix A2 along with an accompanying Assignment #7 Informational Interview Guide in Appendix A3.

Connection with Mentors

While engagement with most of the activities presented in Assignment #6 and Assignment #7 was well supported by the established university advising structure, we anticipated potential barriers to students connecting with engineering professionals and alumni. To make this activity accessible to all students, we created a unique opportunity for mentorship between first year students and alumni (who are typically also professionals in the field). We leveraged an existing program, through a partnership with the alumni engagement office at our institution, to offer alumni/student mentoring sessions exclusively for students enrolled in the course. The program provided alumni biographies to students in advance, thereby allowing them to choose an alumnus whose educational and career paths were of particular interest. One-on-one conversations took place in person or through video conference, depending on the availability of each alumnus.

Because the alumni participants (shown in Table 1) were more accustomed to connecting with junior and senior level students, we provided additional guidance to prepare them for the developmental level and needs of first year students. This guidance also included information

about the course goals and suggested discussion topics, which mirrored the informational interview questions recommended to students in the Homework #7 assignment resources, included in Appendix A3. The alumni responded positively to this additional guidance and found the experience valuable. Significant interest from students and alumni prompted us to add additional mentoring sessions in Fall 2019.

Table 1. Student and Alumni Mentorship Session Participation

Fall 2018	Fall 2019
Alumni Participants: 15*	Alumni Participants: 25*
Student Participants: 53	Student Participants: 99
Sessions Completed: 80**	Sessions Completed: 123**

*Each alumnus met with several students in one-on-one meetings.

**Some students elected to interview more than one alumnus.

All other mentoring opportunities presented in Assignment #6 and Assignment #7 were available to students through existing College of Engineering resources and therefore students arranged these independently.

Research Questions & Methods

Research Questions

In the interest of understanding how choice influences student motivation in undergraduate engineering students, we investigated the following research questions:

- How does the introduction of choice in critical assignments influence student engagement and motivation?
- How does the introduction of choice influence students' level of excitement and sense of the usefulness of an assignment?
- How does the introduction of action-based assignment elements influence students' engagement and motivation?

Methods

In Fall 2019, FCI consultants led a Mid-Semester Feedback (MSF) session during regularly scheduled course lecture time, near the end of the semester. Approximately 225 students participated. The MSF session included a facilitated feedback discussion during which students were organized into 58 small groups with 2-5 students per group. Students reflected on the strengths of the course as well as areas of improvement. Students had the opportunity to share their perspectives on the assignments in the course.

The MSF session discussion was followed by a survey, administered through Qualtrics, which explicitly focused on student perspectives on the assignments. The survey consisted of two selected response questions and one open-ended question regarding the seven assignments for the course. (The final assignment had not been made available to students prior to the MSF session and was not included in the survey.) The first question inquired about usefulness to students' learning and was given on a Likert-type scale from "extremely useful" to "not at all

useful”. The second question asked students to rank the assignments from most exciting to work on (1) to least exciting to work on (7). The final, open-ended question asked students to reflect on the previous answers, including why they found an assignment useful and/or exciting. The full version of the survey is shown in Appendix A4.

In addition to the MSF session and associated survey, we conducted a qualitative analysis of student work completed for Assignment #7 during Fall 2019. This analysis explored the motivation and perceived gains associated with the different choices for completing the assignment. We analyzed a sample of 54 student assignments, by randomly selecting three assignments from each of the 18 discussion sections. We first identified the type of activities students completed most frequently. Following a constant comparative method analysis, we then identified salient themes related to two broad categories: a) *reasons* to choose a specific type of activity and expectations of potential learning from it; and b) *gains* from the experience, expressed in terms of expectations being met, benefits obtained or learning generated by accomplishing the task(s).

Results & Discussion

Mid-Semester Feedback Session & Survey

During the MSF session, 23 out of 58 small groups of students reported that homework assignments were a strength of the course, specifically identifying Homework #7, interactions outside of class (e.g., informational interviews), and opportunities for self-reflection.

For the MSF survey exploring the value of assignments, 217 students responded regarding how useful the assignments were to learning, 42 students ranked the assignment based on excitement, and 173 submitted open-ended responses. In response to the usefulness of the assignments to learning, students found Assignments #4, #6, and #7 to be most useful. This determination is based on the number of responses of “extremely useful” or “very useful” each assignment received, as shown in Figure 1. Assignment #4 focused on academic major exploration, which aligned with many students’ primary motive for taking the course, so it is not surprising that students found this assignment the most useful. Assignment #6 and Assignment #7 both incorporated action-based choice and Assignment #7, which incorporated the most action-based choice, had the highest frequency of mentions as an “extremely useful” assignment, with 47 mentions.

Usefulness of Assignments for Student Learning

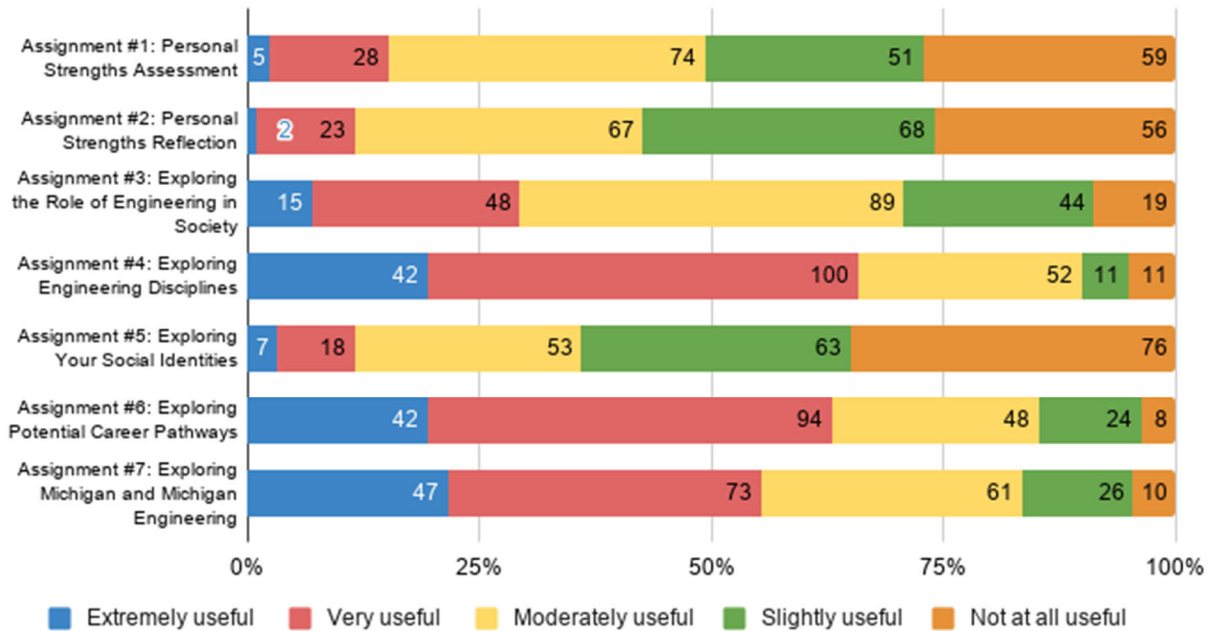


Figure 1. Usefulness of assignments for student learning, based on Fall 2019 student survey

Of the 42 ranking responses, 18 students ranked Assignment #6 as their most or second most exciting assignment to work on, and 16 students ranked Assignment #7 this way. Students found Assignments #6, #4, and #7 to be most exciting to work on, shown in Table 2.

Table 2. Ranking of Excitement to Work on Assignments.

Assignments	First	Second	Third	Total
Assignment #6: Exploring Potential Career Pathways	10	8	11	29
Assignment #4: Exploring Engineering Disciplines	6	10	9	25
Assignment #7: Exploring Michigan and Michigan Engineering	12	4	8	24
Assignment #1: Personal Strengths Assessment	11	5	0	16
Assignment #3: Exploring the Role of Engineering in Society	2	7	7	16
Assignment #2: Personal Strengths Reflection	0	6	5	11
Assignment #5: Exploring Your Social Identities	1	2	2	5

In the open-response section of the survey, students spoke positively about assignments that required them to explore different facets of engineering careers and engineering at the University of Michigan. When students had the opportunity to choose tasks based on their own interest, they found the assignment more useful than other assignments and were able to identify gains obtained from those choices. One student explained:

“My favorite was the resume and job search one as I was able to look at real jobs for my field and such and that was very interesting to me so I am very happy about that and I was then able to learn a lot about real jobs which was exciting.”

Another student explained:

“The [assignments] that involved future planning and career building skills (resumes, meeting with others, networking, etc.) I felt were the best for improving my non-technical skills and developing me as a person who can make choices rather than told to do something. The assignments in general helps us gather information and build skills to help us decide our major.”

Coupled with the opportunity to choose assignment tasks based on their own interests and needs, students also valued homework assignments that elicited action as opposed to only requiring hypothetical reflection. Specifically, students positively used language that mentioned being forced to explore, for example, one student said:

“The assignments that forced me to research opportunities at Michigan as well as get involved helped motivate me to actually start considering my future here. Other assignments did less to this effect”

Qualitative Analysis of Assignment #7

The analysis of Assignment #7 shows that students in the sample chose the option of exploring “Engineering Student Organizations” most frequently with 18 occurrences out of 54, followed by “Interview an Alumni” with 17 occurrences out of 54 (Table 3). The structured alumni mentorship opportunity that we provided may have positively impacted student selection of the “Interview an Alumni” option. Similarly, clear channels existed to connect students to student organizations, including several information fairs and recruiting meetings that took place in the early part of the semester. Two thirds of those students sampled selected either “Engineering Student Organizations” or “Interview an Alumni”, so the clearly structured first steps may have encouraged students to pursue these activities.

Table 3. Frequency of Choices Made by Students in Assignment #7.

Type of Activity	Frequency of Choice
Explore Engineering Student Organization	18
Interview an Alumni	17
Appointment with Academic Advisor	9
Appointment with Professor/GSI* ENGR110 or Other Course	6
Explore Experiential Learning Programs	3

Appointment at the Engineering Career Resource Center	1
Total	54

*Graduate Student Instructor

In addition to reviewing the frequency students selected specific options in Assignment #7, we also examined the reasons and learning expectations students provided. Our analysis of student responses to this prompt showed diverse reasons for choosing specific activities, often based on individual interests, social identities or level of familiarity with specific majors and careers within engineering. For example, students who chose to schedule an appointment with an academic advisor often expressed uncertainty in their academic path, including extracurricular activities and how to succeed in their academic programs. One student said:

“I chose the route of meeting with an academic advisor because I don’t feel like I know exactly what I would want to do quite yet. I have a general idea that I want to do entrepreneurship or finance, but I don’t have a specific path in mind.”

However, students who chose connecting with a student organization had a clearer idea about the major/career they wanted to pursue and expressed a desire to explore those interests, while gaining relevant experience for their future careers. One student said:

“I chose this activity because I am interested in mechanical engineering and I wanted to join a project team that would meet this interest.”

Regardless of the chosen activity, many students indicated an interest in making connections with mentors and peers in an environment that felt welcoming and inclusive. In some cases, this desire for connection touched directly on students' social identities. For example, one student said the following, in reference to his motivation to explore a student organization:

“I realize that I identify as a black male at this predominantly white institution. With that being, it is a big deal for me to have somewhere to meet students that look like me and have similar aspirations as me.”

Another student said:

“I have noticed in class that there aren’t a lot of representation of female students in the College of Engineering. Therefore, I wanted to look into clubs where I can meet other women in engineering to find people who I can share a common interest with.”

Students also indicated interest in learning about different majors and careers from someone with personal experience who could offer meaningful insights about academic and career paths. This reason was particularly salient for those students who chose to interview an alumni and those who scheduled an appointment with a professor or graduate student instructor. One student said:

“I chose this activity because it really interested me to be able to talk to someone who had been through the Michigan Engineering program and how they used their degree in their jobs.”

From the sample of 54 assignments, 43 students provided explicit ideas about expectations of gains from the chosen activity. The most frequently expressed expectations talked about learning what resources were available at the institution and how to get advantage from these opportunities. One student said:

"I was generally expecting to learn what kinds of things that the (first-year advising office) can do, along with receiving some advising on what kinds of extracurricular options are out there that I could perhaps personally find interesting."

Students also expressed expectations of learning what different careers entail, and how different engineers made their academic/career choices. For example, one student said:

"I wanted to know what exactly their jobs entailed to better understand the kinds of tasks I would be expected to do once I joined the workforce. I also wanted to learn the path each engineer took to reach their current position and what advice they would have for college students like me who are still trying to find their path."

Students who chose to explore an engineering student organization valued becoming an active member of a team, gaining hands-on experience and putting skills into practice. One student said:

"I expected (the student organization) to be more hands-off for me, only allowing the older students or leaders of the group to work on the project. However, this is not the case! (The student organization) creates teams and sub-teams so that everyone, from freshman to seniors, get the opportunity to engage in the project."

Assignment #7 also asked students to report the learning, benefits and overall gains obtained after participating in the selected activity. The analysis suggests meaningful learning and overall gains on multiple levels. One of the most frequent mentions was learning about the array of co-curricular and extracurricular opportunities available for the students. Learning about these opportunities allowed students to envision their preparation beyond the technical and academic preparation. One student said:

"What I learned from this experience is that Michigan Engineering isn't only concerned about the technical side of engineering, they genuinely care about making well rounded engineers by exposing them to many different opportunities to grow and learn outside the classroom."

Another important learning mentioned frequently by the students, was the newly developed understanding of academic pathways as flexible endeavors, where a choice of major does not constrain their opportunities or bind them to a specific career. This insight was reinforced by ideas about the applicability of the knowledge and skills accrued in the major to multiple contexts and career pathways. One student said:

"During my meeting I learned a little more about what kinds of careers different engineering degrees can lead to. I learned that mechanical engineering is one of the most broad types of

engineering. [...] Basically he reaffirmed for me that even though the different departments within the college of engineering focus on different things, the career paths after the degree are really broad."

Students frequently mentioned the benefit of establishing connections with peers, mentors, professional engineers and potential employers as an important gain. One student said:

"Through this experience, I learned that Michigan Engineering teaches you skills that can be applied anywhere. They also have an amazing selection of student orgs that help me apply the material I learn in class to the real world. It is also a good networking experience by not only finding other talented girls in engineering, but also meeting recruitment officers from big companies."

A frequent gain mentioned by those students who chose exploring student organizations was the opportunity to put skills learned in their courses into practice. One student said:

"I was able to learn how students apply the skills they learn inside of Michigan Engineering classrooms. Students were able to learn what they learned in class in a real-world example of something, and the best part was they were able to have fun with it."

Finally, some students mentioned that an important gain from the chosen activity was receiving advice for academic and non-academic problems, including learning that their struggles as first year students are not unique. One student said:

"One of the first things that I learned was that there are a lot of students who struggle so it was not abnormal for me to feel very stressed in my first semester. Given that, I also realized that there are plenty of other students who have been in my shoes before that would be able to help me figure out how to overcome the challenges that I am having. I also discovered that there are a lot of different paths that I can take within Michigan Engineering."

Conclusion

Providing structured, action-based choice appears to positively influence students' sense of the usefulness of the assignment as well as their excitement for completing the assignment. Students viewed homework assignments that elicit action as more useful and exciting than those requiring only hypothetical reflection. Additionally, when students were able to select options within a homework assignment, they found the assignment more useful than those assignments without choice and were able to identify gains obtained from those choices.

When implementing choice, it is helpful to consider potential barriers and provide structure to ensure that the range of options is accessible to all students. Generally, students were more likely to engage in action-based options that had clearly structured steps. In our course, students indicated an interest in better understanding careers available within the field of engineering, and subsequently, connecting students to alumni mentors through an existing campus program was effective. Providing students with choice regarding which mentor they connected with and

providing mentors with guidance regarding the developmental needs of students was motivating to both students and mentors.

Future work should examine the impact of incorporating choice on students across various demographics (e.g., gender, race/ethnicity, parental level of education). Additionally, we intend to explore self-direction and the impact of allowing students to navigate student-selected course content at their own pace. Utilizing a measurement device such as the Intrinsic Motivation Inventory (IMI) to examine additional subscales of motivation, beyond interest/excitement and usefulness [9], may be valuable to further understand the influence of choice on student engagement and motivation in a first year engineering course.

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Appendix

A1. Fall 2019 Homework #6: Exploring Potential Career Pathways

Purpose: In a previous assignment, you were asked to explore two specific disciplines from within Michigan Engineering that were of particular interest to you. You were also asked to identify three different types of jobs within each discipline that you found to be particularly interesting. For this assignment, we are asking you to focus on ONE of these specific types of jobs (or career pathways) within the one discipline that most interests you. We encourage you to choose the job or career pathway that, at this point, is the most interesting and exciting to you.

The **goals** of this assignment are:

- to explore how well your personal strengths and interests align with the day to day work associated with this discipline,
- to learn about the skills and knowledge relevant to the job/career pathway you identified, and
- to think about what experiences can participate in during your time within Michigan Engineering that will help you to develop the relevant skills needed for this discipline.

You have the option of choosing one of two ways in which you can complete this assignment: (a) conduct an informational interview OR (b) draft a resume. Both options are designed to help you explore a career pathway. In the interview, you will consult with someone in your chosen pathway on what prepared them for their particular career path. In the resume, you will imagine what you would like your professional profile to be at the end of your undergraduate career, in order to be prepared for a particular career path.

Choose the option that seems most helpful and relevant to your own interests. To decide between whether an informational interview or drafting a resume is the best choice for you for this assignment, **first review the step by step guides for “informational interviews” and “resume writing” where are included with the assignment.** These guides will help you make the most of this experience.

For many of you, this may be the first time you conduct an informational interview or draft a resume. That is not a problem! This assignment is designed to provide you with an opportunity to practice and develop these skills.

Option 1: Informational Interview

When exploring new career pathways, it is very common and often quite helpful to conduct informational interviews. The purpose of an informational interview is to learn more about the specific role or pathway you are interested in, including what the day-to-day work looks like. Informational interviews are also a valuable opportunity to ask about the types of experiences that prepared someone for the position (and that made them a competitive applicant). For this assignment, you will:

- Identify an interviewee with experience in or familiarity with the career path you've chosen to focus on for this assignment.
- Prepare questions and conduct the interview.
- **Graded component:** List your interview questions. Then, write a **200-300 word summary** of what you learned in the interview. You should address what you learned about:
 - The alignment between this career pathway and your interests and strengths.
 - Two to three experiences that would be valuable in preparation for this career path.
 - Skills and knowledge that are valuable for this career path.

Option 2: Resume

Imagine it's your senior year and you're preparing to apply to a job in the pathway you have chosen. Search relevant job sites for a real posting and select one that sounds interesting. **Write an "aspirational" resume. What would you like your resume to look like if you were applying to this position as a senior?** In drafting the resume, keep in mind that as a senior, you will have taken several years of coursework and have taken advantage of opportunities such as internships, speakers, student groups, etc. to gain experience in the engineering field. For this assignment, you will:

- Research job postings and identify a job to apply to.
- Identify the types of qualities the hiring committee is likely to look for, and craft an "aspirational" resume that demonstrates your fit for the position.
- **Graded component:** Write a **1-page resume**. Your resume should include:
 - Your strengths that would make you an ideal candidate for this position.
 - At least two to three experiences, including coursework and co-curriculars, *that you could imagine experiencing during your undergraduate career* that are aligned with the day to day responsibilities of the job.
 - Skills and knowledge that you *hope to have by your senior year* that are valuable for this career path.

Assignment 6 Rubric (as provided to students)

Criteria	EXCELLENT	PROFICIENT	DEVELOPING	INSUFFICIENT
Connecting personal strengths to career/pathway	Describes with detail central personal strengths AND explains/highlights their connection to the career/pathway	Describes relevant personal strengths, suggesting ideas about their relationship with the career/pathway	Lists a few personal strengths, although it is not clear how they relate to career/pathway of choice	It is NOT clear what are relevant personal strengths NOR how they relate to the career/pathway of choice
Identifying potential experiences that would be valuable/ relevant to this career/pathway	Describes with detail experiences that are central to the career/pathway AND	Describes relevant experiences for the career/pathway, suggesting ideas about their value	Lists a few relevant experiences, although it is not clear how they are valuable for the	It is NOT clear what are potential relevant experiences NOR how they are valuable for

	explains/highlights their value		career/pathway of choice	career/pathway of choice
Identifying skills and knowledge that are relevant to this career/pathway	Describes with detail skills and knowledge that are central to the career/pathway AND explains/highlights their value	Describes relevant skills and knowledge for the career/pathway, suggesting ideas about their value	Lists a few relevant skills and knowledge, although it is not clear how they are valuable for the career/pathway of choice	It is NOT clear what are potential relevant skills and knowledge NOR how they are valuable for career/pathway of choice
Using format and style appropriate to the type of assignment	Suggested word count and/or page length is adhered to; no typos or formatting errors	Suggested word count and/or page length is adhered to; few typos and/or formatting errors	Final product is slightly shorter than recommended length; many typos and/or formatting errors	Final product does not meet word count and/or page length expectations; numerous typos and/or formatting errors distract from the final product

A2. Fall 2019 Homework #7: Exploring Michigan and Michigan Engineering

Purpose: An important part of designing a Personal Plan for your time in Michigan Engineering is having a better understanding of all of the things that the University of Michigan and Michigan Engineering have to offer. The purpose of this assignment is to provide you the opportunity to explore some of these options AND get course credit for doing so!

With respect to the “Engineering Design Process” introduced in this class, this assignment relates to “**prototyping a solution**” to one of the questions that you are exploring, such as “*Which project team is available to me that might help me gain the skills needed to obtain a summer internship in Discipline X?*”

Instructions:

Step #1: Choose one of the following activities to explore:

- Special opportunity - Interview an Alumni - Two opportunities: Friday, October 18, 2019 and Friday, November 8, 2019.**
 - Michigan Engineering alumni want to connect with you! Sign-up for a 30 Minute Mentor session to web chat with an alum about their experience in Michigan Engineering. We will provide you with suggested questions if you're not sure what to ask!
 - An online registration link will be provided to the class once it is established, approximately two weeks prior to each event.*
- Explore Experiential Learning programs and pick one that interests you. Make an appointment with an advisor (including a peer advisor) to learn more.**
 - Consider one of the following areas: Engineering Honors, Multidisciplinary Design Program, International Programs in Engineering, ArtsEngine, Center for Entrepreneurship, and the Center for Socially Engaged Design.
 - A good starting point might be the CoE's Immersed Program website!
- Make an appointment with your academic advisor at the Engineering Advising Center to discuss co-curricular experience, services they provide or other ways that they can help you, outside of choosing classes.**
- Explore Engineering Student Organizations and pick one that interests you.** Attend a meeting or event.
 - Find them on the Student Leadership Website
- Make an appointment with one of your professors or GSIs, either from ENGR**

110 or another course, to discuss a topic beyond coursework (for example career paths or disciplines). Send an email to set up an appointment time. Email addresses for our ENGR 110 instructional team are: [Name][email], [Name][email] and GSI [Name] [email]. We look forward to meeting you!

- ❑ **Make an appointment at the Engineering Career Resource Center to find out what services they have to offer.** First, create an account in the Engineering Career by Simplicity system, if you have not already done so. Then make an appointment to get an overview of the services ECRC provides.

NOTE: If you are not sure which of these options that you would like to pursue, check with your DA (discussion leader) and see what suggestions they might have for you.

Step #2: Prior to attending your activity, write up a brief explanation of why you chose the activity. Did you choose this activity due to general interest, the suggestion of a friend, etc.? Also, provide a brief explanation as to what you expect to learn during your investigation.

Step #3: Participate in the activity! If you chose to learn more about a particular student group and they have already had the mass meeting/recruitment activity, considering emailing the organization to set up a meeting with a current board member of that organization.

Step #4: Write a brief reflection on your experience exploring the activity that you have chosen. Your reflection should include the following:

- a. Did your participation in the event/activity/meeting meet your expectations as expressed in Step #2 above?
- b. Do you see yourself joining this club/attending another related event/making another appointment?
- c. Even if you choose not to pursue this activity again, provide an example of how you benefited from this experience, even if only in some small way.
- d. What did you learn about Michigan Engineering through this experience?
- e. What are three next steps you plan to take following the conversation to continue your learning and exploration of Michigan Engineering?

Your total response for this assignment should range between 400 and 500 words.

A3. Homework Assignment #7 Interviewing Guide

To assist with preparing for Homework Assignment #7, we've compiled this short guide to help get you started and feel more comfortable going into the appointment with whomever you choose to meet. Whether you're meeting with an alumni, a professor, an advisor, or your GSI, it may be helpful to frame the conversation as an **informational interview**.

An informational interview is an informal meeting to learn about the real-life experience of someone working in a field or company that interests you. This will be good practice for a lifelong skill to help you understand and navigate possible career paths as well as network with others.

Here is a link with advice put together by University of California Berkeley on informational interviews. Please feel free to watch the video and read through their information. Of course, you won't need your resume or anything for this casual engagement, but nonetheless this site shares some good tips and is an excellent starting place for learning how to prepare for these types of conversations for both for this assignment and future informational interviews.

If you're interviewing an alumni, GSI, or professor, some helpful starter questions may include the following:

- What did you study in college?
- How did you choose your major?
- What did you get involved in during your time at University that helped shape your career?
- Where do you work now and what's your job title?
- What skills do you use from your degree at your job?
- What's your typical workday like for you?
- What's the most rewarding aspect of your work?

If you want any in-person guidance on this, feel free to meet with anyone on the instructional team during his or her office hours, or feel free to email us to set up a time one-on-one. Email addresses and office hour times/locations are on the course syllabus. We look forward to helping you out and making sure you have a great time!

A4. Qualtrics Survey Questions for Fall 2019 Mid-Semester Feedback

The instructors in ENGR110 are interested in your opinion about how the different course assignments contributed to your learning. The next three questions ask you to rate the usefulness of each assignment for your learning, which assignments were you most excited about, and what are your ideas about the ways in which the assignments were useful to your learning and exciting to work on. Thank you so much for taking the time to answer these short questions!

Q1: How useful were the following assignments for your learning?

Q2: Which assignments were the most exciting to work on? Please rank the assignments by dragging them to the position of your choice, 1 being the most exciting to work on and 7 being the least exciting.

- Homework Assignment #1: Personal Strengths Assessment
- Homework Assignment #2: Personal Strengths Reflection
- Homework Assignment #3: Exploring the Role of Engineering In Society
- Homework Assignment #4: Exploring Engineering Disciplines
- Homework Assignment #5: Exploring Your Social Identities
- Homework Assignment #6: Exploring Potential Career Pathways
- Homework Assignment #7: Exploring Michigan and Michigan Engineering

Q3: Looking at your previous responses, please explain in what ways the assignments were useful to your learning and/or made you feel excited about working on them. (You can choose to comment on specific assignments or in general, about all of them).