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# A Description and Evaluation of a Team-Based Composition Course Integrated into a First-Year Engineering Program

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Abstract

This paper provides a description and evaluation of an English Composition course integrated into a First-Year Engineering Program. ENGL XXX is a hybrid course taught at University X, in which some instruction is provided asynchronously and online, and some instruction is provided in person through visits to students' first-year engineering course during the second semester of students' first year in engineering.

ENGL XXX walks students through the process of writing a 6,000-word conference-style research paper which culminates in a conference-style presentation at the end of the academic year, at a conference organized by the First-Year Engineering Program. Students are required to write their research papers in teams of three, so the course also places strong emphasis on teamwork and teamwork skills.

This non-traditional, hybrid course serves 450+ students every year. It involves considerable coordination between the English faculty and the engineering faculty, and allows students to experience the importance of communication skills within the context of engineering. Student responses provided as part of a course assignment were used to conduct an initial evaluation of the course and course implementation.

At the end of the spring 2024 semester, students answered several reflection questions about their experience in the course, as part of a required course assignment. Three of these questions were selected for analysis: (1) What is one piece of advice you would give to student teams taking this class in the future? Why?; (2) What was the most difficult, challenging, or demanding thing about ENGL XXX?; and (3) What was the best thing about ENGL XXX? Responses from 450+ students were qualitatively analyzed. The themes that emerged from this data analysis are presented in this paper, and are used as part of the evaluation of this course.

This paper will (1) describe the course and course assignments, (2) summarize student responses to the reflection questions listed above, (3) identify, based on students' responses, what has worked well in the course, and (4) identify, based on students' responses, ways to improve the course. In addition, recommendations for other faculty interested in implementing similar aspects of this course into their own courses will be provided.

## I. Introduction

University X offers engineering students a uniquely multidisciplinary first-year experience with an integrated curriculum of three co-requisite classes, representing a partnership between the first-year advising team, Engineering Faculty, and the English Department. Each student takes a year-long sequence of two classes from each of these entities. These three courses interlock, occasionally referring to components that students are encountering in the other classes. The Engineering and English classes are especially corequisite, occurring at the same time on a student's schedule. The Engineering class is synchronous, an in-person, three-credit class that

meets four hours weekly on Tuesdays and Thursdays. The English class is hybrid, with modules and assignments introduced asynchronously online, and synchronous instruction happening periodically *within* the Engineering class. In practical terms, this arrangement means that an English professor visits the engineering classroom about five times for a total of five hours over the course of the semester.

Both year-long course sequences work together to move students toward the ABET Student Outcomes described in the third criterion for baccalaureate level programs [1]. While both classes address multiple outcomes, they partner together especially to address Student Outcome #5: "an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives" [1]. Professional engineers work in teams on a regular basis, and ABET recognizes that teamwork is an essential component of engineering education.

Teamwork skills, however, are notoriously difficult to both acquire and teach [2]. Many students detest mandatory teamwork in class, noting instances when they have had to do "all" of the work. Many teachers also decry assigning teamwork in the classroom, generally because of the student complaints. Within ASEE, Felder and Brent (2007, 2024) have specialized in making teamwork skills and cooperative learning more transparent and achievable, offering criteria for team formation, strategies for promoting collaboration and reflection, and advice on dealing with difficulties [3], [4]. Wolfe (2010) describes team accountability structures and methods for writing with teams particularly for first-year engineering students [5]. Purdue University hosts a peer-assessment software called CATME, which assists in dividing students into optimized teams and monitoring team performance [6].

At University X, the corequisite Engineering (ENGR YYY) and English (ENGL XXX) classes work together to facilitate team experiences. During the fall semester equivalent of ENGR YYY, students are introduced to both teamwork and CATME as they work on a semester-long team-based design project. The fall curriculum for English is individually based, equipping students with composition skills necessary for academic English, including writing with specificity for clarity and credibility, integrating sources, paragraphing, connecting sentences and sections, and revising. These skills are taught in the context of individual assignments designed to support the advising curriculum about why they chose University X, what kind of engineer they might become, and how to work through ethical dilemmas.

During the spring semester, both classes work extensively in the context of a three-person team for both classes. In the ENGR YYY class, students sit with their teams during class and work on short-term projects together. ENGL XXX requires these same teams to write conference-length research papers about a recent innovation in engineering. These papers are presented at a mandatory First-Year Engineering Conference (FYEC) in April, where professional engineers from the community are invited to both attend and present. While the work of the conference is supported by the ENGL XXX class, the conference itself is organized by the engineering program.

This collaborative curriculum has been ongoing for over 20 years [7], [8], [9]. Originally, the two classes were one class, with the writing curriculum a percentage of the grade in ENGR YYY. In

2019, the English class was separated out as its own 3-credit, hybrid course. The challenge with this set-up is that the course centers around one team-based assignment, establishing 95% of the course grade dependent upon teamwork. This percentage is too team-based for an entire course and works against best practices for collaborative learning as described by Felder and Brent (2024), where Individual Accountability is a key component [4]. Within this new structure, it has become necessary to make teamwork skills transparent and assessable without adding too much work to an already rigorous project timeline.

In this paper, we offer a description of ENGL XXX, the spring writing curriculum. In the spring 2024 semester, we incorporated new team accountability techniques based on Wolfe (2010) [5] so that the team-based portion of the grade totaled 82%. At the end of the semester, students answered several reflection questions about their experience in the course, as part of a required course assignment. We used these questions to assess our support of student teamwork, paying particular attention to the kinds of problems teams encounter and the question of the extent we can address these problems pedagogically.

## II. Background: Course Description and Assignment Sequence

### Course Description

ENGL XXX contains five main modules, each containing online, asynchronous instruction that introduces the next assignment and any requisite skills. As part of each module, English professors visit the engineering classroom, providing synchronous instruction, hands-on activities with the task or skills, and clarifying expectations before the students complete the module by writing the assignment.

For the Spring of 2024, ENGL XXX had 472 students divided into 163 teams, graded by a team of 26 English professors. Five of these professors were part of the classroom team that provided synchronous instruction.

The course is described as follows in the course catalog:

> *ENGL XXX is a required course for all School of Engineering first-year students enrolled in ENGR YYY. In ENGL XXX students write a significant research paper for the University X's Annual Conference on Sustainability, held near the end of the spring term. Students compose this paper in teams of 3; students also compose individual papers reporting and reflecting on their experience with teamwork and with researching, composing, assessing, and presenting written work within a context of maximum personal and professional responsibility and integrity. In ENGL XXX students undertake intensive research into a current engineering innovation/technology. Students expand upon that research as they move through a multi-step process of writing and revising a conference paper that includes considerable technical content as well as intensive analyses of the social value and ethical applications of that technology. Through ENGL XXX, students will continue to increase their experience and success with major teamwork projects, will practice best policies and procedures for professional communication and presentation, will continue to learn about and practice communication modes and expectations in*

*engineering, science, and technology, and will continue with an academically and intellectually rigorous process (begun in ENGL AAA, First-Year Composition: Engineering), of understanding and communicating what it means personally, educationally, professionally, socially, and globally to "be an engineer."*

FYEC Paper Assignment and Sequence

We divide the process of writing the conference paper into five main scaffolded assignments.

At the beginning of the semester, we present a Call for Proposals with the basic assignment, which includes the rhetorical situation of the conference:
"The FYEC [First-Year Engineering Conference] paper must report on a recent technology/innovation that the authors evaluate as being important to engineering and to society. The FYEC paper will also engage the conference theme of sustainability. Through their research and writing, the paper's authors will provide detailed information about their technology/innovation to conference paper readers and conference participants who are:

- practicing engineers and other professionals.
- university-level engineering, math, science, and liberal arts faculty.
- engineering students from first-year students to graduating seniors and graduate students."

To help the students fill out an entire conference paper, we require that every paper includes five elements:

1. a description of the technology/innovation,
2. an application for the technology,
3. an example of that technology (whether in use, on the market, or in development),
4. an evaluation of the technology,
5. connections to sustainability (the conference theme) throughout the paper.

For example, if a team chose additive manufacturing, more commonly known as 3D printing, they would choose an application. For additive manufacturing, the team might focus on large-scale 3D-printed houses, or perhaps a medical application of small-scale 3D-bioprinted organs. Once they have an application, they choose an example to work with. We've had several teams examine the process of building 3D-printed concrete homes in Central America. The team then evaluates the technology in terms of its goals in sustainability.

The semester-long paper-writing process is scaffolded into a series of smaller assignments described in Table 1. More substantial descriptions can be found in Appendix A. The full paper draft is due before Spring Break in University X's schedule, and the FYEC often falls on the first Saturday in April (depending upon religious and university calendars).

**TABLE 1: ENGL XXX Assignment Sequence**

| **Assignment Name** | **Description** | **Due** |
|---|---|---|
| Prewriting & Research | Worksheet with questions about the FYEC Topic elements; requires 5 citations. 3% of final grade. | Week 2 |

| | | |
|---|---|---|
| Paper Proposal | Essentially an expanded abstract, the proposal is a 400-500-word narrative supported by at least 7 sources. 5% of final grade. | Week 4 |
| Annotated Outline | At 1,400 words minimum, the annotated outline describes each section and the sources that support its information. At least 10 sources. 10% of final grade. | Week 6 |
| Full FYEC Paper | The full paper has a minimum of 5,800 words (approximately 2,000 words per student on the team) supported by at least 10 sources. 20% of final grade. | Week 9 |
| FYEC Presentation Slides | These slides are used on the day of the presentation; teams submit slides to professors for feedback before the conference. 5% of final grade. | Week 11 |
| FYEC Poster | Teams create an academic poster based on their research. These posters are displayed on monitors throughout the building on the day of the conference. 5% of final grade. | Week 12 |
| Revised FYEC Paper | The revised paper is 6,000 words minimum, supported by 12 sources, encouraging students to continue researching along the way. 30% of final grade. | Week 12 |
| First-Year Engineering Conference (FYEC) | A day-long conference, often at the end of Week 12. Students present their research; attend a session of other teams' presentations; attend a panel of professional engineers; and attend the keynote & Best Paper Awards. | End of Week 12 |

Team Accountability Support

*Team Creation*

During the first week of class, the ENGR YYY faculty team uses CATME, a team-assessment software hosted by Purdue University, to divide students into optimized teams [6]. Students complete surveys in CATME providing information about their gender, race, schedule, commitment level, leadership preference, and big picture vs. detail oriented. CATME then creates teams of 3 based on those criteria, which align with best practices from Felder and Brent [3], [4]. Additionally, all students in ENGR YYY and ENGL XXX have successfully passed the fall semester in engineering composition, where they all practiced the composition skills assessed in the FYEC Paper.

*Team Accountability*

In keeping with best team practices, the first assignment the teams complete in both classes is a Team Contract [3], [5]. In ENGL XXX, guidance is given in an online module. For Spring 2024, the online guidance followed principles set forth by Wolfe (2010), specifically written for first-year engineering students writing in teams [5]. Among other suggestions, Wolfe (2010) recommends that teams rely on Project Managers and accountability documents, which we have adapted for our context into a Teamwork Grade.

Each team selected a Project Manager, whose role was to keep the team organized and on task by maintaining the team accountability documents in the Team Folder shared with the professor. We were clear that the role of the Project Manager was *not* the boss or the supervisor of the project, only the organizer; they were not responsible for ensuring that others did their work, only making the tasks visible to all involved.

Each Project Manager was to keep a Team Folder that was shared with all team members and the professor grading their work. The Team Folder held three team accountability documents: the Team Contract, Meeting Minutes, and a Task Schedule. In this way, individual work would be public and transparent to both the team and professor alike. These documents were then used for student and professor assessment of the Teamwork Grade. The full rubric for the Teamwork Grade is provided in Appendix B.

Tables 2 & 3 describe the Team Accountability Assignments and Individual Assignments for ENGL XXX. Table 4 is a Gantt Chart for the full semester. Further descriptions are available in Appendix A.

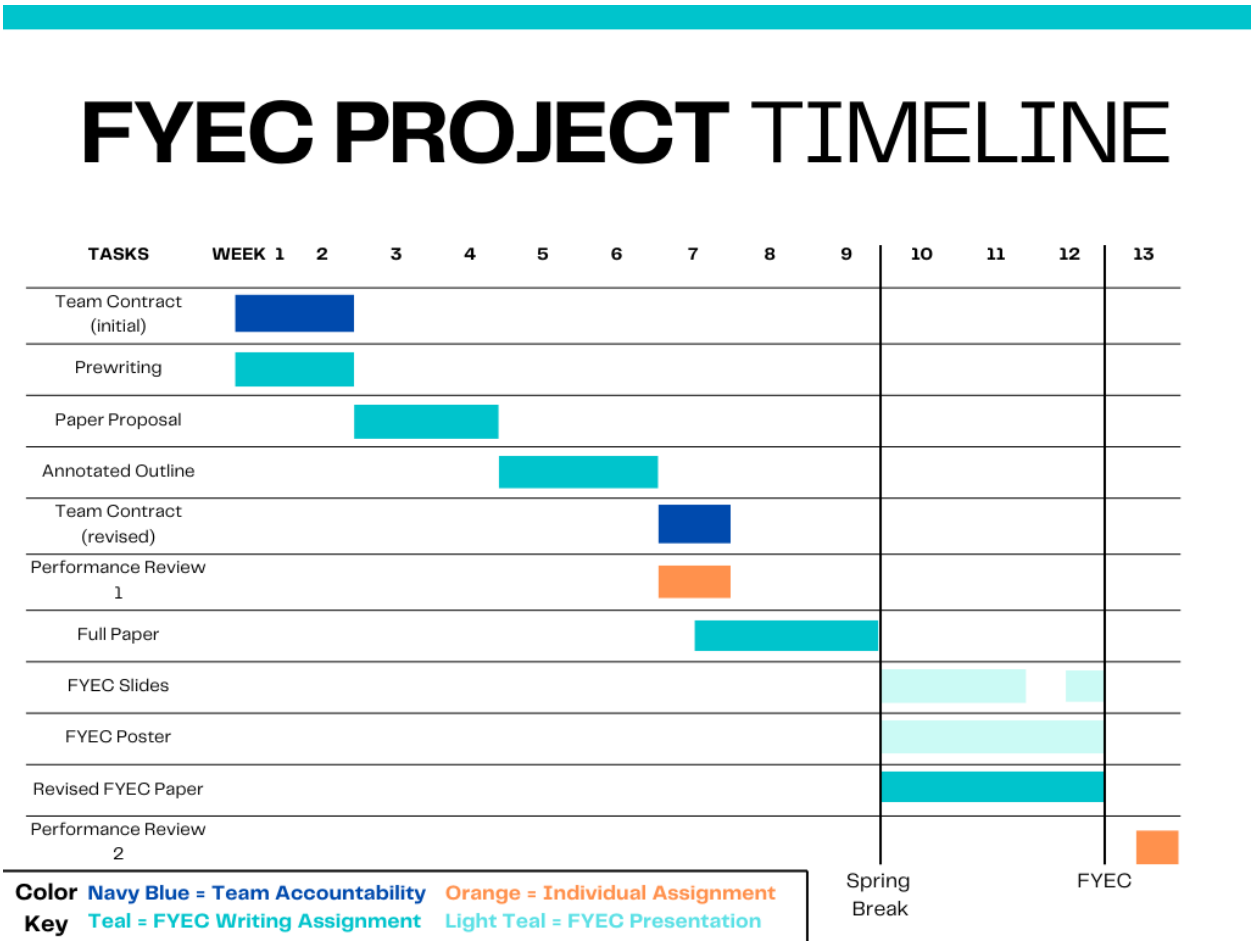
**Table 2: Team Accountability Assignments**

| **Assignment Name** | **Description** | **Due** |
|---|---|---|
| Team Contract (initial) | A document drafted at the initial team meeting, outlining team roles, agreed-upon behaviors, and plans for meeting, document-filing, and conflict management. 2% of final grade. | Week 2 |
| Team Contract (revised) | As students fill out their first Performance Review, they also check in with their team about team performance and revise any necessary elements of the team contract. 2% of final grade. | Week 7 |
| Meeting Minutes | For each meeting, the Project Manager keeps meeting minutes, which are saved in a file shared with all teammates and the professor. Assessed in Teamwork Grade. | Throughout; Week 13 |
| Team Task Schedule | Each team manages a task schedule that breaks down each task assigned to individuals, along with a value-weight for each task. Value weights are monitored throughout the semester so as to keep the work equal. The work of the Project Manager is | Throughout; Week 13 |

| | | |
|---|---|---|
| | also assigned a value weight. Assessed in Teamwork Grade. | |

| **Table 3: Individual Assignments** | | |
|---|---|---|
| **Assignment Name** | **Description** | **Due** |
| Module Content Quizzes | Each instructional module contains a content quiz to ensure student understanding of the upcoming assignment and expectations. Five quizzes, worth 4% of final grade. | Each major module. |
| Performance Review 1 | A mid-term graded survey on Canvas with questions about self-performance, team performance, % of meetings attended, and teammate ratings. 2% of final grade. | Week 7 |
| Performance Review 2 | A final graded survey on Canvas with questions about self-performance, team performance, % of meetings attended, teammate ratings, and a conference reflection about the presentation after watching a recording. 2% of final grade. | Week 13 |
| Teamwork Grade | This category is not based on any single assignment, and is based on teammate ratings, self ratings, professor observations, team accountability documents, and attending a required meeting with professor. 10% of final grade. | Throughout. |

Table 4: Gantt Chart of FYEC Project Timeline




*In Class Support*

As part of the hybrid structure, writing professors visited the classroom for each module: six times over the course of the semester. Most visits focused on clarifying composition requirements and skills for the assignments themselves, but the third visit focused on communication styles. Wolfe (2010) provides assessments on Discussion Style and Decision-Making Style [5] that we introduced to the students in class, asking them to take the self-assessments and discuss their results with their teams. Each assessment also provides suggestions for how the different discussion and decision-making styles might work together.

*Individual Communication & Required Team Meeting*

As part of the Teamwork Grade, each team was required to meet in real-time with their writing professor before the first full draft of the paper was due. These mandatory meetings had been suggested by both students and professors in previous semesters, so we implemented them this semester.

Individual team members were also encouraged to correspond with their professors via email when they encountered difficulties.

III. Data Analysis and Results

As part of the final Performance Review, students were asked to reflect on various topics including professional communication, their FYEC presentation, their experiences with teamwork, and the ENGL XXX course.

Three of the assignment reflection questions were selected as part of the evaluation process:

- Question 1: What is one piece of advice you would give to FYEC Teams in the future? Why? Write at least 2 sentences (1 pt. per sentence).
- Question 2: What was the most difficult, challenging, or demanding thing about ENGL XXX? Please write at least two sentences (1 pt. per sentence).
- Question 3: What was the best thing about ENGL XXX? Please write at least two sentences (1 pt. per sentence).

These questions were selected for this study due to their potential for providing information on what worked well and what could be improved in the course, and also on what the instructional team might be able to do to better support students.

Each of the questions were open-ended questions. Student responses ranged from a minimum of three words to a maximum of 155, and had an average of 53 words. Table 5 provides the word count information for each of the questions.

Table 5: Word count information for each of the analyzed assignment questions

| Question | Average Number of Words in Responses | Minimum Number of Words in Responses | Maximum Number of Words in Responses |
|---|---|---|---|
| What is one piece of advice you would give to FYEC Teams in the future? Why? | 53 | 14 | 144 |
| What was the most difficult, challenging, or demanding thing about ENG XXX? | 50 | 6 | 151 |
| What was the best thing about ENG XXX? | 43 | 3 | 155 |

Students' open-ended responses were analyzed qualitatively, through a process of coding, which "involves the classification of elements in text data into categories that are related to the study topic and are useful in analysis" [10]. For each of the questions, a process similar to what is described in Merriam & Tisdell (2015) [11] was followed:

- First, there was an initial reading of the data, and as this took place, codes began to emerge.
- Second, after reading through the entire dataset, the codes that emerged were revised, and when possible, grouped with other similar ones.

- Third, these resulting categories or themes were then used to go through the entire dataset, to classify student responses according to these categories.

The results are presented by question.

Question 1: What is one piece of advice you would give to FYEC Teams in the future? Why?

452 students provided a response to this question. The codes that emerged were classified under the following main themes: time management, teammates, organization, content, and writing. Table 6 includes more detailed information about the percent of students that indicated each one. Note that the codes below are those that were mentioned by at least 5% of the students; codes mentioned by less than 5% of students were not included.

Table 6: Summary of themes that emerged from Question 1

| | Code | Percent of student responses under each code (n=452) |
|---|---|---|
| Time management | Start early or as soon as possible, don't procrastinate or leave until the last minute | 25.4 |
| | Create internal earlier due date (complete work before deadlines; complete work early) | 7.7 |
| Teammates | Get to know teammates to build rapport and/or friendship | 8.4 |
| | Open, clear and/or respectful communication – speak up, give feedback, provide encouragement, ask questions, ask for help | 21.2 |
| Organization | Stay organized, and/or create a plan, and/or "stay on top of things" | 13.7 |
| | Split up work evenly and/or make sure expectations are clear | 7.7 |
| | Agree on and set up meeting schedule and/or meet regularly | 11.1 |
| Content | Choose topic of interest | 8.2 |
| Writing | Use your resources: Use the Writing Center, meet with professors, use professor feedback, use peer feedback, materials in Canvas modules | 5.1 |

Regarding time management, students advised that future teams begin working on the assignments as soon as possible and avoid procrastination. They also recommended that students complete work before the set deadline, and even suggested setting earlier internal deadlines for the team. For example:

*"Start the work as early as possible so you can slowly add to it instead of trying to do it all the couple days before. It helps prevent stress and makes the assignment feel not as heavy since you have been slowly attacking it for some time."*

*"Set your internal deadlines earlier than when the project is due! If an assignment is due on Tuesday, make sure everyone on the team is done on Sunday, so you can meet on Monday and go through the whole thing together so it's cohesive, and have someone tie up the loose ends on Tuesday and submit."*

Regarding teammates, students advised that future teams put in the effort to get to know each other and to build rapport and/or friendship among the teammates. They also emphasized the importance of open, clear and/or respectful communication, encouraging future students to speak up, give feedback, provide encouragement, ask questions, and ask for help when needed. For example:

*"One piece of advice I would give future groups would be to become good friends with your group mates or at least stay on each other's good sides. This keeps things fun and enjoyable; it also makes all the work easier when you like the people you are working with."*

*"One piece of advice that I would give to FYEC Teams in the future is to communicate about everything, whether that is conflicts, questions, concerns, deadlines, and expectations. This will make working in a team so much smoother and allow the quality of your work to be high."*

Regarding organization, students advised future teams to stay organized and/or have a plan. They also recommended that teams have a meeting schedule and/or meet regularly. For example:

*"I would advise teams in the future to get a solid plan of what you're doing early, so you don't waste time at the last minute trying to figure out small problems. With this, you will have a straightforward path of what to do for your paper and you can follow this throughout the process without getting stumped or confused."*

*"I would advise future teams to establish a consistent meeting schedule, multiple times a week and always try to meet at the same times and places, even if there is no work imminently due. This will allow your team to get ahead on work and ensure you stay committed to your tasks for the entire semester."*

Regarding content, students advised that future teams select a topic of interest for their paper, and regarding writing, they recommended that future teams make use of the various resources available to them, including the university's Writing Center, the course faculty, and the materials posted in Canvas, the course's learning management system. For example:

*"One piece of advice I would give to future FYEC teams is to choose a topic your whole team is truly interested in learning about. As you're working with the same topic for a*

*whole semester, it is easy to get bored of the topic if it doesn't interest you, which in turn can reflect in your work."*

*"One piece of advice I would give to FYEC Teams in the future is to utilize the writing center, especially if you can get [one of the course faculty]. Their input is extremely valuable when you are in the drafting or revision process of your paper."*

Question 2: What was the most difficult, challenging, or demanding thing about ENGL XXX?

450 students provided a response to this question. The codes that emerged were classified under the following main themes: course and course assignments, time management, teammates, and writing. Table 7 includes more detailed information about the percent of students that indicated each one. Note that the codes below are those that were mentioned by at least 5% of the students; codes mentioned by less than 5% of students were not included.

Table 7: Summary of themes that emerged from Question 2

| | Code | Percent of student responses under each code (n=450) |
|---|---|---|
| Course and course assignments | Deadlines, course schedule/pace | 15.1 |
| | Workload, and/or staying on track with the work | 10.9 |
| | Assignment requirements (including word counts and formatting), completing the assignments (including process of writing, reading and/or researching) | 35.6 |
| Time management | Time management, time constraints, time required to complete assignments, conflicts with other courses and/or balancing with other courses | 31.3 |
| Teammates | Working with others and/or unproductive teammates | 14.2 |
| Writing | Writing as a team | 16.0 |

Students indicated that some of the most difficult and challenging things about the course were regarding the course and course assignments. Specifically, they mentioned deadlines and the pace of the course, the workload and staying on track with the work, and the assignments – both the assignment requirements and the process of completing the assignments. For example:

*"In my opinion, the most challenging thing about [the course] was the timeline. It felt that a lot of assignments were due close to each other and the due dates for the draft and the revision were tough."*

*"Most challenging part of the class was the workload."*

> *"As I had no prior experience to creating a full research paper at this level, generating writing on the same topic/research was the most challenging and demanding part of this course. Typically, I am used to producing writings on different topics or essays with different prompts for each assignment. For me, the transition from that to lengthening our initial findings in the Pre-writing assignment was a struggle."*

Issues related to time management, especially when it came to balancing the demands of this course with their other courses, was another aspect of the course that students found challenging. For example:

> *"The most challenging thing about [the course] was managing the work with other courses. The work that was assigned for this course was not difficult by itself but balancing it with other courses became challenging at times."*

Working with others was also challenging, regardless of whether the team was a well-functioning team or whether the team had any unproductive members. For example:

> *"I think the most difficult part of [the course] is working in a team. Even though my team was amazing and had all the elements I wanted in a team, there was still times where I wished I was on my own, and some undue stress that came from working in a team."*

> *"The most difficult part was working with the team. My team would not work on the assignments proactively until the end of the semester. One time in particular was the first rough draft of the paper. I had my work done days in advance but my teammates waited till the last day to write their parts. As time was ticking I had to write for four hours while I was on a flight in order to make up for the work they didn't get done."*

Finally, the process of writing as part of a team was also challenging.

> *"The hardest part of [the course] was writing as a team. Writing alone and writing with a team are totally different experiences, and it was difficult at times to maintain a cohesive voice in the paper."*

> *"The most challenging part about [the course] was writing a research as a group. I had never done this before, and did not realize how hard it would be to integrate everyones different writing styles into one cohesive voice."*

Question 3: What was the best thing about ENGL XXX?

450 students provided a response to this question. The codes that emerged were classified under the following main themes: improved skills and knowledge, course and course assignments, teammates, and culminating experience. Table 8 includes more detailed information about the percent of students that indicated each one. Note that the codes below are those that were mentioned by at least 5% of the students; codes mentioned by less than 5% of students were not included.

Table 8: Summary of themes that emerged from Question 3

| | Code | Percent of student responses under each code (n=450) |
|---|---|---|
| Improved skills and knowledge | Improved teamwork skills | 10.4 |
| | Improved communication skills (writing, presenting); gained experience/practice writing, researching, and/or presenting | 16.2 |
| | Learned about a topic (new or of interest) | 11.8 |
| Course and assignments | Resources: Professors, Canvas modules, Writing Center, class visits | 5.6 |
| | Assignments, assignment requirements, completing assignments (doing the writing, researching) | 20.0 |
| | Picking own topics / interest in topic | 11.8 |
| Teammates | Working/writing in a team | 23.6 |
| | Meeting teammates and/or making friends | 12.7 |
| Culminating experience | Seeing things come together and completed, work completed or accomplished, feeling of pride or accomplishment | 14.4 |
| | Attending the conference: presenting, seeing others present, keynote, panels | 25.1 |

Students indicated that one of the positive aspects of the course was what they learned and the skills they improved/developed. They mentioned improved teamwork skills, learning about a new topic (the topic they researched), and improved writing, researching, and/or presentation skills. For example:

> *"The best thing about [the course] was learning how to collaborate with teammates. I feel like I learned a lot about how to be productive in a team and work well with others."*

> *"I believe it has helped me understand what all goes into a research paper and presentation and also how to write professionally. I think it prepared me a lot for what I will have to write and present in the future."*

> *"I appreciate having the opportunity to learn how to write an in-depth research paper. I had never written a paper of this caliber before, and the step-by-step process over the course of the semester helped me understand the large amount of planning that needs to be done. I am now more confident in my research and writing abilities, and I understand how to go about writing a large paper."*

The course and course assignments were also a positive aspect of the course. Students appreciated the available resources (the professors and the Writing Center, among others), working on the assignments, and being able to select their own topic to write about. For example:

> *"The best thing about [the course] was the availability of the professors and being able to meet with them to receive feedback on assignments. This feedback was extremely helpful and sometimes essential when finishing assignments."*

> *"One good thing about [the course] was that the assignments were enjoyable. The assignments this semester were fun to do to and picking our own topics greatly improved my experience compared to last semester…."*

Working with teammates was another positive aspect of the course, both in terms of the work and working together, and also in terms of forming new relationships. For example:

> *"Being able to collab and be in groups. Having the constant opinions of others, the constant flow of different ideas, and how different people approach things helps to get everything done. There was always a new idea or side to something that the others might not have thought of."*

> *"The best thing about [the course] was being able to work within a group. Not only were we able to enhance each other's ideas, but we all helped to decrease the workload of each other as we could divide assignments into components to work on separately."*

> *"The best thing was meeting my new group mates and making friends out of this class. Being able to meet new people through our groups allowed me to make new friends, as well as find people with the same interests as me."*

Finally, having a culminating experience was also included as a positive aspect of the course. This culminating experience was described in terms of seeing a big project come together, and the feelings of pride or accomplishment that accompany that, and also in terms of attending the conference, where they presented their work and also saw others' presentations. For example:

> *"The best thing about [the course] was the ability to see all your work at the end of the semester to be a complete final project. At first, it starts slow but by the end, you become proud of all the work you research and present to others."*

> *"The best thing about this class was the conference in my opinion. I liked the design components a lot such as designing the poster and slides. I also enjoyed the actual day as it was fun to see my classmates work and ideas and our own presentation was exciting."*

> *"The best thing about [the course] was the FYEC. I felt like the conference was a good culmination of not only the class, but my first year of engineering as a whole. It felt special to get dressed up and be with my friends. That was a fun experience and just wrapped up the year well."*

## IV. Discussion and Conclusion

Student responses to these three questions reveal the breadth of experiences individual students can experience in a team-based writing class. About 30 percent of students mentioned their teammates or writing as a team as the *most difficult* part of the course, while 36 percent said that working/writing in a team and meeting their teammates and/or making friends was the *best* part of the course. Another 10 percent suggested that the best part of the course was developing their teamwork skills. In other words, one-third of the class struggled with teamwork, one-third of the class enjoyed the teamwork, and the other third discussed other aspects of the course.

The question for professors, then, is about how to support teams pedagogically. If professors can help the 30% for whom writing with a team is most difficult, that support should also improve the experiences of the middle 30% as well. By using the major themes suggested by the students in their answers to these three final reflection questions, we can discuss the kinds of problems teams encounter and how to address them pedagogically.

### *Content*

Content rose as a theme under two of the questions. About eight percent of the advice for future teams was to choose a topic of interest. When students enjoyed their topic, the content of the paper appeared as the best thing. About 11% of students enjoyed choosing and learning about a topic.

Our curriculum encourages teams to choose a recent innovation in the field of engineering—but what the students choose is dependent on the team.

### *Writing*

Writing was a theme under all three questions. Under advice, students suggested to future teams to use their resources: the Writing Center, professors, feedback, and Canvas materials (5 %). Writing as a team was the most difficult thing (16%), but one of the best things about the class was improving writing and gaining practice researching and writing a lengthy conference paper (16%).

Although it appeared as a consistent theme, writing was a minor theme in all three questions compared to the challenge of actually working and writing with a team.

### *Time Management*

Time Management was a theme that surfaced in both the question about advice for future teams and the question about what was most difficult about the course. About one-third of the advice for future teams regarded time management, and nearly one-third of the students named time management as the most difficult part of the course. Some of the problems with time management occurred within the team, like starting the work early or working with internal deadlines, and some referred to individual time management in regard to balancing work with

other courses. Other time management difficulties had to do with the pace of the assignments in the course itself, or conflicts with major deadlines in other courses.

The pace of our assignments is set by factors external to the class: where spring break falls in the curriculum (sometimes Week 8; sometimes Week 9) and the scheduling of the First-Year Engineering Conference itself, which itself is affected by the timing of religious holidays in March/April. Based on that time frame, students are writing 6,000-word conference papers in teams of three within 11 weeks of a 14-week semester: our scaffolded sequence of assignments is necessarily rigorous.

To help students with time management in our hybrid context, we publish a "to-do" list on Canvas each Monday with the suggested tasks for that week. Some of those tasks involve deadlines for assignments, but sometimes the tasks are simply reminders to work on an assignment due the following week. In general, if students and teams follow the to-do list suggestions, they stay current with the work for the class.

More than seven percent of teams encouraged future teams to start early and create internal deadlines in advance of the course deadlines, to be proactive about their internal time management and deadlines. While our professors also encourage teams to be proactive, our curriculum does not reinforce the concept.

One way faculty may be able to encourage team time management is to make it more transparent as a developing team skill, especially in the context of the ABET student outcome that names the observable tasks of "establish goals, plan tasks, and meet objectives" [1]. For teams to first divide a project up into smaller tasks for each individual and then set an internal deadline for those tasks, they are establishing goals and planning tasks to meet objectives. Self-assessment reflections might also ask questions about how well the students are meeting this goal.

*Organization*

Another third of the advice for future teams discussed Organization, which seems closely tied to Time Management. The topics students listed under this theme involved staying organized, creating plans, following through with those plans, meeting regularly, splitting up the work evenly, and making sure expectations were clear for everyone.

Our curriculum worked to support these elements through an introductory module that included Best Practices for Writing with a Team. These practices included describing three methods for writing together: face-to-face (drafting together in real time), divided (each person takes a piece and writes separately), and layered (working on the same document in turn; each person returning to the document several times). We included advice from previous teams, emphasizing the need to start early. Additionally, the first team assignment is the Team Contract, where teams were asked to consider what they would do in the event that a member might miss a deadline, turn in poor quality of work, or disagree on a course of action.

The Spring 2024 semester also included team accountability materials, particularly the Task Spreadsheet and Meeting Minutes [5]. We had hoped that these materials would help align

student expectations and workloads by recording what was decided in each meeting and assigning value weights to each task. Unfortunately, anecdotally, we did not see an increase in team satisfaction or decrease in team complaints during the semester we implemented these accountability materials. Both students and professors found the team accountability materials to be "busy work," and teams often did not fill them out at all. The results of these questions confirm these suspicions, as at least 14 percent of students found that working with others and/or unproductive teammates was the most difficult aspect of the course, and another 16 percent found that writing as a team was the most difficult aspect. Organization of team assignments clearly plays a part in this frustration.

Again, we suspect that making organizational tasks more visible as developing teamwork skills may help students face the challenge. In our introductory materials at the beginning of the semester, we can use the ABET student outcome to establish the expectation that part of teamwork involves organizing responsibilities with others.

*Teammates*

Teammates appeared as a substantial theme in the answers to all three questions. Advice for future teams included getting to know teammates to build rapport and/or friendship (8.4%) and making space for open, clear and/or respectful communication—speaking up, giving feedback, providing encouragement, asking questions, asking for help (21.2%). These suggestions are all communication-based and would be difficult to assess. Pedagogically, however, this advice could be supported more clearly in the introductory module, as well as throughout the semester with reminders about good team communication.

Some teams identified aspects of teamwork as the best thing (36%), and some teams identified working with others and/or unproductive teammates as the most difficult part of the class (14.2%). (And sometimes these observations were within the same team!) Some teams would not work ahead of the schedule, writing everything on the day of the deadline. Others found researching as a group or writing with a cohesive voice to be the most difficult.

Pedagogically, we encouraged teams to stay on task and communicate through the creation and revision of the Team Contract. Teams wrote an initial contract in their first meeting; after three assignments, they revised the contract. On the revision, we noticed an increase in teams who had more concrete consequences for unproductive team members. While some scholars suggest having clauses for firing or quitting teams [4], our collaborative course structures do not allow for students to switch teams.

While many teams had provisions to contact a professor in the event of an unproductive team member, not many spoke out when the problems occurred. We noticed that a number of teams did not disclose conflict until the final self-assessment, at which it was too late for the professor to intervene. Even when a professor could intervene, it was—at times—difficult to address team problems after attitudes and patterns of communication had already been established.

To encourage team accountability, Felder and Brent (2024) suggest that cooperative learning works well when the following five conditions are met:

1. Positive interdependence.
2. Individual accountability.
3. Promotive interaction.
4. Development and appropriate use of teamwork skills.
5. Regular self-assessment of team functioning. [4]

These five conditions require a mix of individual and team assignments. Based on the hybrid nature of our class and the demanding pace of the schedule, our course struggles to meet all of these conditions. We could increase individual accountability and development and appropriate use of teamwork skills.

One small way to encourage individual accountability is to allow the students to *only* include the names of the students who actually worked on the assignment [4]. Suppose a student does not attend to any aspect of the Annotated Outline: for whatever reason, the student is uncommunicative for a week, missing the team meeting and not responding to team communication. They don't participate. In this situation, the team members who did work on the project should be allowed to exclude the absent team member's name—and explain why they did so on a note that accompanies the assignment.

Although we tried to encourage individual accountability through the team accountability documents described, these documents did not seem to hold students accountable to their work—in part because our accountability on these documents was not strict. We required initial drafts and a check-in five weeks into the project. Additionally, the keeping of these documents is extra work on the part of the Project Manager, a member of the team who is likely doing more than their fair share of the project already.

In future semesters, we propose replacing these accountability documents with individual assignments that foster accountability. Within 24-hours of each team writing assignment due, we will require an individual report in the form of a graded quiz on Canvas with accountability questions about each student's contributions to the assignment, along with the requirement to upload an annotated copy of the team assignment, highlighting the student's own contributions to the assignment. These reports can be used to adjust individual grades on team assignments [4] or serve as indications for professors to intervene.

In the event that professors notice discrepancies, they have a number of interventions that they can take, ranging from email warnings or advice to requesting that the team meet with the professor in real-time. In the event of team conflicts, professors can utilize the active listening technique described in Felder and Brent (2024) to facilitate conversation and hopefully reach resolution [4]. In our hybrid context, we find that when teams meet with the professor at least once in real time (ideally in person, but virtually also works), their communication is smoother for the rest of the semester.

Another way to troubleshoot team conflict is to address it in the classroom visits. Professors can lead brief "crisis clinics" [4], where they describe a difficult team scenario, for example, in which a team member may be "hitchhiking" on the work of other teammates. They can then invite students to identify the offensive behaviors, brainstorm possible responses, and then

prioritize those responses. Felder and Brent report that this kind of in-class work both equips students with strategies for these moments and alerts potential offenders that their behavior may have consequences [4].

Working with teammates can be complicated no matter the context or the experience that individuals have working together. The more experiences students have to work in teams, the more comfortable they will be in team settings in the future. Offering students clear paths for resolving conflicts equips them for managing conflict in team settings in professional settings as well.

*Course and Course Assignments*

Comments about the course and its assignments were mentioned as both the most difficult aspect (50%) and the best aspect of the class (25%). Several students mentioned that the workload for the course by itself was manageable, but combined with all the other first-year responsibilities, the workload was a lot to manage. As a hybrid composition class, this class was not a high priority for first-year engineering students.

Two difficult weeks in the semester were mentioned several times: the week before spring break, when the first full draft of the paper was due, and the week before the conference, when all the conference materials were due. While we cannot manage the workload for other courses, we can address ours somewhat. For the draft due before spring break, we will lower the minimum word count required. Our hope here is that a lowered word count will make the assignment more attainable, and also offer students more space to strengthen their paper for the revision.

The week before the conference is more difficult to mitigate, as we cannot lower our expectations for conference papers or presentation slides. At present, however, we are not printing the conference posters, only showcasing them on the monitors around the building. This assignment seems like a simple requirement to eliminate without lowering the standards of the conference itself. Students will learn about research posters in later stages of their career.

That over 25% of students mentioned elements of the course as the *best* thing is encouraging. Our resources and detailed assignment requirements, along with the freedom for students to pick their own topics, seems to work well.

*Culminating Experience*

Finally, the last theme to address only occurred under the question about the best aspect: the culminating experience. Over 40% of students noted that seeing things come together at the end, attending the conference, and a sense of pride or accomplishment was the best thing about the course. This sense of celebratory completion is rare for any composition class, and it is invisible in this hybrid course until the very end. It is crucial for this course to showcase and celebrate students' rigorous research and writing.

Pedagogically, we help students prepare for this celebration by continually mentioning the conference: who will be there as the specific audience for the research, repeating the date so

students keep their calendars clear, and building a sense of anticipation. At the conference itself, we also name best papers for six engineering disciplines.

## Conclusion

Although not without its challenges, this hybrid collaboration between Engineering and English works to prepare students for communicating and working with teammates, as well as writing for academic and professional audiences. In a hybrid, large-class setting, it is extremely important to pay attention to best practices of assigning teamwork in the classroom: intentionally assigning teams, encouraging individual accountability, providing multiple check-in points, and offering many resources to establish assignment requirements. Although teamwork by itself is difficult to assess, there are pedagogical strategies professors can use to encourage productive team behaviors. Leaning especially on the ABET student outcome describing teamwork, professors can also make productive team behaviors and expectations more transparent, which should, in turn, identify for students the communication skills they are learning through the process of working with a team.

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**Appendix A: Assignment Descriptions**

*Prewriting (3% of final grade)*

At the beginning of the semester, we present a Call for Proposals with the basic assignment, which includes the rhetorical situation of the conference:
"The FYEC [First-Year Engineering Conference] paper must report on a recent technology/innovation that the authors evaluate as being important to engineering and to society. The FYEC paper will also engage the conference theme of sustainability. Through their research and writing, the paper's authors will provide detailed information about their technology/innovation to conference paper readers and conference participants who are:

- practicing engineers and other professionals.
- university-level engineering, math, science, and liberal arts faculty.
- engineering students from first-year students to graduating seniors and graduate students."

In response, the teams fill out a Research and Prewriting Worksheet that includes questions aimed at helping them think through their topic. A full FYEC paper includes a description of the technology/innovation, an application for the technology, an example of that technology (whether in use, on the market, or in development), and an evaluation of the technology.

*Proposal (5% of final grade)*

Once teams receive feedback on their prewriting, they work on a proposal, which is really an expanded abstract. The assignment requires students to refine their research and understanding of their topic by combining their answers to the questions (and further research and thinking suggested by the professor) into a 400-500-word narrative supported by at least seven sources.

*Annotated Outline (10% of final grade)*

The third assignment is an annotated outline of the FYEC paper that includes an abstract and a list of at least 10 sources. Under each heading, teams include a description of what that section will entail. We offer the following template for descriptions:
"In this section
on_____, we will
describe _____. Descriptions will include
_____ _____. To clarify
_____, we will emphasize

_____. For further clarification, and to lead into our next section on _____, we will be using information about _____ from the Journal of Xxxxx xxx Xxxxxxxxxx article Zzzz zzz Zzzzzzz Zzzzzz [3]."

At 1,400 words minimum, this assignment is a key step for both professors and students. This assignment demonstrates to professors to what extent the students understand the technology they've chosen and where to find the detailed information about that technology. If it is clear that the students either don't understand the material or don't have enough material to warrant a 6,000-word finished product, the professor's feedback at this stage is a key intervention in the process.

*Full Paper (20% of final grade)*

The full paper is due the week before spring break, set at 5,800 words (approximately 2,000 words per person on a three-person team), with at least 10 sources. For this assignment, the teams expand their annotated outline into the full paper, employing all of the composition skills they learned the previous semester about being specific, incorporating sources, connecting sections together, etc.

The simplified prompt continues to remind students of all elements of a successful FYEC paper: "Write a 5,800-word (minimum) FYEC research and analysis paper describing and explaining a technology, an application, and an example, addressing sustainability, and evaluating the technology based on the application and example."

*Revised Paper (30% of final grade)*

Requirements for the revised paper include a minimum of 6,000 words, 12 sources (increased by 2 over previous draft), and reworking the paper for full clarity, authority, and impact in every aspect. At this stage, teams *must* pay attention to professor feedback for a successful revision.

These papers are submitted the Tuesday before the conference and reviewed by the Director and Assistant Director of the program for Best Paper Awards according to the six major engineering majors offered by University X's School of Engineering.

*Presentation Slides & Poster (each worth 5% of final grade)*

In preparation for their presentation, teams create slides for the day of the conference. They receive professor feedback on the slides, and they have the opportunity to practice their presentation with an upperclass student who will moderate their presentation slot the day of the presentation.

Additionally, to cover all conference experiences, teams prepare a poster of their research. These posters are no longer printed, but displayed on monitors throughout the building on the day of the conference.

*First-Year Engineering Conference (FYEC)*

The FYEC is generally held on a Saturday in April that does not conflict with religious holidays or major university events. In general, this is the first Saturday of the semester, which is two or three weeks before the end of the semester. All research and writing is completed before the conference, so after the conference, they have only a final reflection and course evaluation to complete.

The conference is all day, 9am-5pm. Each student attends four sessions throughout the day: the session in which they present, a session in which they support other teams as an observer, a session held by professional engineers in the city, and the keynote session. To confirm attendance, students fill out surveys for each session facilitated by Qualtrics.

*Individual Assignments (4% of final grade)*

The only individual assignments occurred online as accountability measures for instructional material. At the end of each online instructional module setting up the writing assignments, students were required to complete quizzes assessing comprehension of the next assignment and its expectations. This semester included five online modules, and thus five individual quizzes, each worth less than 1% of a student's final grade. Completing these module quizzes on time ensures that students are prepared for their next team meeting.

*Team Contract & Revision (4% of final grade)*

In keeping with best team practices, the first assignment that the teams complete in both classes is a Team Contract [3] [5]. In ENGL XXX, guidance is given in an online module. For Spring 2024, the online guidance followed principles set forth by *Team Writing: A Guide to Working in Groups*, a textbook aimed at first-year engineering students writing in teams [5].

For this contract, teams were required to establish a weekly meeting plan (where & when); a communications plan (which mode: text, email, app like GroupMe/WhatsApp); a shared folder for accountability documents; five operating/behavioral guidelines all students agree to (e.g. let team know if we get sick); conflict guidelines; and a Project Manager. The conflict guidelines required students to consider what their actions would be in three specific situations: 1) in the event of irreconcilable differences; 2) in the event of a student missing a deadline; 3) in the event a team member turns in a poor-quality contribution. For each conflict, our instructions provided potential solutions and their advantages and disadvantages.

Halfway through the semester, teams were instructed to reread their team contracts, discuss their project work flows, and make any revisions necessary.

*Team Accountability Measures*

New to the Spring 2024 rendition of the course, in keeping with the team accountability measures described in Wolfe (2010) [5], each team was to select a Project Manager. The Project

Manager's role was to keep the team organized and on task by maintaining the team accountability documents in the Team Folder shared with the professor, and to send reminders to other team members regarding tasks, deadlines, and meetings. We were clear that the role of the Project Manager was *not* the boss or the supervisor of the project, only the organizer; they were not responsible for ensuring that others did their work, only making the tasks visible to all involved.

Each Project Manager was to keep a Team Folder that was shared with all team members and the professor grading their work. The Team Folder would hold the team accountability documents: the Team Contract, Meeting Minutes, and a Task Schedule. In this way, individual work would be public and transparent to both the team and professor alike. The Team Contract has been previously described. Team Minutes were to include date and time of meeting, records of who attended, and descriptions of any decisions made. Students were given sample minutes as an example to mimic.

In the Task Schedule, teams were to keep track of all of the project "to do" items, assigning a value weight to each task. All tasks would be assigned an agreed upon Contribution Value, and we suggested specific values for the Project Manager Tasks. All other tasks were to be assigned values on a 1-5 scale: 1) easy, quick tasks; 2) easy, longer tasks; 3) medium, shorter tasks; 4) medium, longer tasks; 5) difficult and/or very lengthy tasks. These team accountability measures would be evaluated by the end of the semester according to a rubric provided with the initial assignment. Table 9 shows the Sample Task Schedule given to students.

Table 9: Sample Task Schedule

| Sample Task Schedule Spreadsheet | | | | |
|---|---|---|---|---|
| **Deadline** | **Task** | **Who** | **Contribution Value** | **Status** |
| 1/15/23 | Initial Group Meeting: Brainstorm Team Contract & FYEC Topic | Everyone | | Complete |
| 1/15/23 | Project Manager (documents updated; tasks emailed) | Sam | 2 | Complete |
| 1/16/23 | Edit and Submit Contract | Diedre | 2 | Complete |
| 1/16/23 | Double-check Contract Submission | Abhi | 1 | Complete |
| 1/17/23 | Research: Bring 2 articles to next meeting | Everyone | | Complete |
| 1/17/23 | Group Meeting: Brainstorm answers to Asgmt. 2 Questions | Everyone | | Complete |
| 1/17/23 | Project Manager (documents updated; tasks emailed) | Sam | 2 | Complete |
| 1/17/23 | Compile answers and send to Diedre | Abhi | 2 | Complete |
| 1/18/23 | Compile Sources Section and Edit Formatting | Diedre | 2 | Complete |
| 1/19/23 | Submit Asgmt. 2 | Diedre | 1 | Complete |
| 1/19/23 | Double-check Asgmt. 2 submission | Abhi | 1 | Complete |
| 1/24/23 | Complete Module 3 materials before next meeting | Everyone | | Complete |
| 1/24/23 | Proposal Meeting | Everyone | | Complete |
| 1/24/23 | Project Manager (documents updated; tasks emailed) | Sam | 2 | Documents Complete; Reminders in progress |
| 1/26/23 | Write Proposal Draft and send to Abhi | Diedre | 4 | Complete |
| 1/27/23 | Write Sources section and edit/revise proposal and send to Sam | Abhi | 3 | In Progress |
| 1/28/23 | Edit Proposal; fix formatting; submit Proposal | Sam | 3 | |
| 1/28/23 | Double-check Proposal Submission | Abhi | 1 | |
| 1/31/23 | Next Meeting | Everyone | | |

*Performance Reviews (4% of Final Grade)*

Students were required to reflect on their own contributions twice during the semester: at midterm and at the end of the semester after the conference. At midterm, after the teams submitted their revised team contract, they also completed a Performance Review in the form of a Canvas Quiz. Each student answered questions about what was working well for their team and what could be improved, and they were required to frame these behaviors using the commitments they described in their own Team Contracts. They named their own contributions, as well as where they might individually improve.

In the corequisite Engineering class, the teams filled out CATME evaluations that were reviewed by their engineering professors. CATME is a platform that allows students to submit comments viewable to their professor only, and then they also submit comments viewable to their team members [6]. Since our faculty did not have access to the CATME software, we asked the students to summarize their CATME evaluations from their peers for our Performance Review. In this way, we kept the surveys from each class separate, and we also provided space for reflection on what students were learning about their own teamwork.

For the final Performance Review, teams were also required to watch the recording of their own presentations and provide feedback on their individual performances—what went well, and what could be improved.

On both the midterm and final Performance Review, students documented what percentage of team meetings they attended, how they would rate their own performance, and how they rated the performance of each of their team members.

**Appendix B: Teamwork Grade Rubric**

Ten percent of your individual final grade is determined by teamwork. *Please note that in cases of extreme team difficulty, the professor reserves the right to alter the Teamwork Grade to reflect the reality of contribution. For instance, if you attend the meeting with the professor before Spring Break, but after the break, you ignore emails from your teammates and stop attending team meetings, you may receive 0 points for the Teamwork Grade because you bailed on your team (this is an extreme example, though, and surely won't happen to you!).*

Below, you'll find the rubric for how your teamwork will be evaluated over the course of the semester.

**Rubric Category Definitions:**

*Attend Mandatory Conference with 0412 Professor (30 pts)*

Before Tuesday, March 5, all groups must meet **in real time** with their 0412 professor to discuss their writing and work as a team. We recommend in-person meetings, but recognize that everyone's schedules (and health at the time of the meeting) may make planning an in-person

meeting difficult. In these cases, using an online platform like Zoom is appropriate. All participants must turn their cameras ON for this meeting to ensure full participation.

If a situation arises and a team member needs to miss the meeting, the meeting can *either* be rescheduled OR, with the agreement of everyone on the team and the 0412 professor, the absent team member *may* make up the meeting individually with the 0412 professor. Except for in cases of emergency (broken leg, etc.), **advance notice of absence must be given** to meet the make up requirement. Treat this meeting with the importance of a midterm.

*Equitable Task Value Total (20 pts)*

By the end of the semester, each team should demonstrate an “Equitable Task Value” on the team Task Schedule (see Module 1 "Best Practices for Writing with a Team"). The phrase "Equitable Task Value" does not mean that each team member needs to finish the semester with the exact same value. It does mean that each team member should finish the semester **within a reasonable range** of the other members. In other words, if Member A finished the semester with 76 points, Member B 79 points, and Member C 73 points, that would be a reasonable range.

- For totals below 50 pts each, “reasonable” range would be within 6 pts from highest to lowest.
- For totals between 51-100, reasonable range is 8 pts from highest to lowest.
- For totals over 100, reasonable range is 10 pts from highest to lowest.
- For totals over 150, reasonable range is 12 pts from highest to lowest.
- For totals over 200, reasonable range is 14 pts from highest to lowest.

For teams that do NOT demonstrate Equitable Task Value, the 0412 professor will assign appropriate individual scores after taking into consideration the rest of the team documents.

*Attend the Majority of Team Meetings (20 pts)*

It is expected that **all** team members attend every weekly meeting, as well as other meetings that the team may schedule as needed to complete the FYEC assignments. However, it also happens that people get sick, travel, or sometimes have conflicting responsibilities. "Majority" here is at least 85% of team meetings, unless otherwise discussed with your team.

*Constructive Conflict Score (10 pts)*

This score tracks to what extent your team followed your contract if and when you experienced conflict. Experiencing conflict is likely, so you are *not* penalized for experiencing conflict! You are evaluated individually for following the guidelines set out in your contract.

**A (9-10 pts)** – Individuals in the A category seek to resolve their differences by following the team contract and interacting respectfully with teammates and the professor(s). In general,

individuals in the A category are able to resolve their differences with teammates, but in some circumstances, this may not be possible. Insofar as the professor is able to observe, these team members worked to resolve issues and complete the work to the best of their abilities.

**B (8 pts)** – Individuals in the B category also seek to resolve their differences by following the team contract and interacting respectfully with teammates and the professor(s). Insofar as the professor is able to observe, these team members worked to resolve issues and complete the work, but there are probably ways the conflict could have been handled differently—e.g. sought intervention earlier, discussed conflict as a team more directly, etc.

**C (7 pts)** – Individuals in the C category on a team attempt to resolve their differences by following the team contract. Insofar as the professor is able to observe, team members in this category tried, but there are ways the conflict should have been handled differently, like seeking intervention earlier or following through more fully. Individuals in this category may not have responded within a reasonable time frame to professor emails about the conflict.

**D (6 pts)** - Individuals in the D category failed to follow the team contract in some way, but did respond to emails and attempt to resolve differences at least once.

**F (0-5 pts)** - Individuals failing in this category demonstrated failure to work with their team on issues, either by ignoring requests from teammates or the professor.

*Performance Review 2 Assessment Scores (20 pts total)*

Performance Review 2 will be submitted **after** the First-Year Engineering Conference in April, once all FYEC Team assignments are turned in, and will require all team members to view a recording of their FYEC presentation, consider their Team Contract in light of the semester, and assess their own work as well as the work of their teammates.

**Self-Assessment Score** will be on a scale of **10 pts.**

**Teammate Scores** will each be on a scale of **5 pts** (for a total of **10 pts** of the overall teammate score). For the occasional 2-person team, the professor will use their discretion in doubling the sole teammate's score for the overall 10 pts.