

Worcester Polytechnic Institute

Recommended Schedule and Assignments for a Three-Term IQP

Note: This recommended schedule was written for advisors. Advisors may choose to edit it and use it as a schedule of activities and assignments for students.

Term 1 – Background Research and Development of a Proposal

Before the term begins

- * Arrange an initial one-hour meeting with the students during the first week of the term. Have students arrange weekly meetings thereafter. Students should identify times when the team will meet without the advisors and develop strategies for using that time wisely, and they should establish a team e-mail alias.
- * Distribute the IQP Syllabus summarizing your expectations and how the students will be evaluated.

Goals for first term – You may want to explicitly discuss these with students

- * Students and advisor will understand each other's expectations and develop effective ways of interacting.
- * Student team will learn to work together productively and to make timely progress with modest guidance
- * Students will learn to facilitate a professional meeting.
- * Students will understand the project problem in context and develop appropriate project goals.
- * Students will develop research skills, and use those skills to perform background research to inform their work.
- * Students will develop writing skills appropriate to research reports.
- * Students will learn enough about existing methodologies to make appropriate choices for how to achieve their goals.
- * Students will deliver a written proposal to advisor(s) and sponsor (if any) by end of term.
- * (Optional) Students will make an oral presentation of their proposal to advisor (and sponsor, if there is one).

Week 1—The advisor(s) would typically run this meeting, with students expected to run subsequent meetings. Below are suggested topics.

- * Icebreaker: Advisors and students get to know each other a bit. (Where are they from, what is their major, what are their interests? What attracted them to this IQP? Do they know what the purpose of an IQP is?)
- * Expectations (distribute IQP Manual):
 - o Advisors discuss IQP learning outcomes, their roles as advisors, their expectations of the students, and the grading criteria and process.
 - o Students engage in discussion of what they hope to get out of project, what they expect from advisors, etc.

- Discuss explicitly that each student is expected to put in (and provide plausible evidence of) 15-20 hours per week. Ask students about their other commitments this term. Will they have trouble putting in the time? Will they have trouble finding times to meet with each other?
- Explain that students will be expected to run subsequent meetings (it may be helpful for advisors to prepare a model agenda for this first meeting).
- Discuss the expectation that students will develop a proposal during the first term, and explain what a proposal consists of. Perhaps show some examples.
- Give the students a copy of the IQP syllabus, and the assignments below.
- * **Grading:** It's on the students' minds, so it's best to discuss it explicitly. Discuss that students will each get a grade each term. Explain the criteria and give examples of A, B, and C level performance (see rubrics).
- * **Teamwork:** Encourage the student team to follow a good process whereby they get to know each other's expectations, strengths, weaknesses, preferred mode of working and communicating, etc. Recommend that the team meet *daily*. Encourage them to deal with teamwork challenges, and to seek help when they need it (from advisor or Student Development & Counseling Center).
- * **Project:** Initial discussion, questions, etc. Discussion of what constitutes a project goal, and to what extent the goal is clear at this point.
- * **Assignments:**
 - Draft a problem statement and goal statement (1-3 paragraphs)—due in 2-3 days
 - Identify areas for background research and 10-20 potentially useful sources of information—due in 4-5 days
 - Start doing background research
 - Prepare agenda for next meeting, including summary of accomplishments, discussion of assignments, and summary of plans for subsequent week.

Week 2—Students run this and subsequent meetings.

- * Discuss problem and goal statement—is goal clear, active, achievable, measurable, responsive?
- * Discuss areas and sources for background research—what have they found? Have any areas been overlooked? Might students need to develop any methodological expertise? Suggest that students meet with a research librarian to facilitate their background research.
- * **Assignments:**
 - Draft a 2-page Introduction that frames (and if necessary refines/revises) the problem statement and goal in context of the literature—due in 2-3 days
 - Continue background research
 - Develop an annotated bibliography summarizing the relevant material found in sources (at least 20 sources)—due in 4-5 days
 - Prepare agenda for next meeting

Week 3

- * Discuss Introduction draft—provide written comments
- * Discuss annotated bibliography, consider areas where more sources are needed
- * Discuss purpose of Background chapter
- * **Assignments**
 - Detailed outline of Background chapter—due in 2-3 days
 - Continue background research
 - Second draft of Introduction—due in 4-5 days
 - Begin identifying possible methodologies for achieving goals
 - Prepare agenda for next meeting

Week 4

- * **Mid-term feedback:** This is a good time to give students explicit feedback on their progress, or lack thereof. Students are used to courses with graded assignments and exams, and have little basis to judge their own work. *If they are not all doing A-level work, it's a good idea to make that clear now, since students often mistake a lack of explicit feedback as a signal that "all is well."*
- * Discuss Background outline—provide written comments
- * Discuss Introduction draft—provide written comments
- * Discuss possible methodologies for the project
- * **Assignments**
 - First draft of Background chapter—due in 4-5 days
 - Continue background research as necessary
 - Conduct more in-depth methodology research
 - Prepare agenda for next meeting

Week 5

- * Discuss Background draft—provide written comments
- * Discuss choice of methods—discuss purpose and content of Methodology chapter
- * **Assignments**
 - First draft of Methodology chapter—due in 2-3 days
 - Begin revising Background
 - Prepare agenda for next meeting

Week 6

- * Discuss Methodology draft—provide written comments
- * Discuss format of proposal (forematter, etc.)
- * **Assignments**
 - Complete draft proposal (Forematter, Introduction, Background, and Methodology)—due in 5-6 days
 - **Ask team to complete Formative Team Assessment (see IQP Syllabus)**
 - Prepare agenda for next meeting

Week 7

- * Discuss proposal draft—provide written comments

* **Assignments**

- Submit final proposal—end of term
- (Optional) Present proposal orally to advisor(s) and any sponsors

End of term: Advisor(s) review all work and the students' Formative Team Assessment. Assign each student a grade for the term, along with some written feedback describing its basis. Refer to the grading rubric in the IQP Syllabus for guidance in grading and suggestions for feedback to students. The SP grade gives no feedback and its use is discouraged.

Term 2 – Original Research, Analysis, and Findings

Before the term begins

- * Students: Arrange a weekly one-hour meeting with the advisor(s).
- * Advisors: Review Formative Team Assessment, and consider what recommendations the team might benefit from.
- * Advisors: Give team specific feedback on their Methodology so that they can begin implementing it as soon as the term begins.

Goals for second term

- * Students will gain experience conducting original research. While the nature of IQP research methods varies considerably, IQPs often involve collecting data and analyzing it using qualitative and/or quantitative methods, toward the generation of some set of conclusions or recommendations. Design-oriented projects, on the other hand, may involve development of criteria and iterative testing of ideas toward the goal of a system or process design.
- * Students will make further progress on teamwork, as a team and as individuals, by focusing on specific actions based on the formative team and self-assessment.
- * Students should begin to evidence the ability to be productive with less guidance; advisor meetings may become shorter as a result.
- * Students will continue to develop writing skills appropriate to research reports, focusing in particular on presentation of research findings and associated evidence.

Weeks 1-3

- * Primary focus on data collection and refinement of methods
- * Additional background research, as needed
- * **Assignments**
 - Revise Introduction and/or Background as needed
 - Develop detailed data analysis plans
 - Develop outline of Findings chapter

Weeks 4-7

- * **If needed, provide team with mid-term feedback**

- * Students complete data collection and as much analysis as possible
- * **Assignments**
 - Revise Methodology based on what actually happened
 - Submit draft of Findings chapter
 - **Complete second Formative Team Assessment**

End of term: Advisor(s) review all work and Formative Team Assessment and give each student a grade for the term, along with some written feedback describing its basis.

Term 3 – Recommendations, Conclusions, Documentation, Presentation

Before the term begins

- * Students: Arrange a weekly one-hour meeting with the advisor(s).
- * Advisors: Review Formative Team Assessment, and consider what recommendations the team might benefit from.
- * Advisors: Give team specific feedback on their Findings.

Goals for third term

- * Complete the project, refining the learning gains in research, writing, critical thinking, teamwork, etc.
- * If working with a sponsor, produce deliverables that are appropriate, creative and of professional or near-professional level.
- * Submit a complete and well-presented final report, and give an oral presentation to an appropriate audience.

Weeks 1-3

- * Complete analysis
- * Develop whatever deliverables might be appropriate beyond the report
- * **Assignments**
 - Revise Methodology and Findings as needed
 - Draft recommendations and conclusions

Weeks 4-7

- * **Give students explicit mid-term feedback as needed.**
- * Students complete report and deliverables, and prepare and deliver presentation
- * **Assignments**
 - Full report draft, including forematter, Executive Summary, Abstract, etc.
 - Final report submission
 - **Summative Team Assessment (see IQP Syllabus)**
 - Practice final presentation
 - Deliver final presentation

End of term: Students complete CDR forms and evaluation of IQP experience. Advisor(s) review all work and give each student a grade for the term and for the final project, along with some written feedback describing its basis.