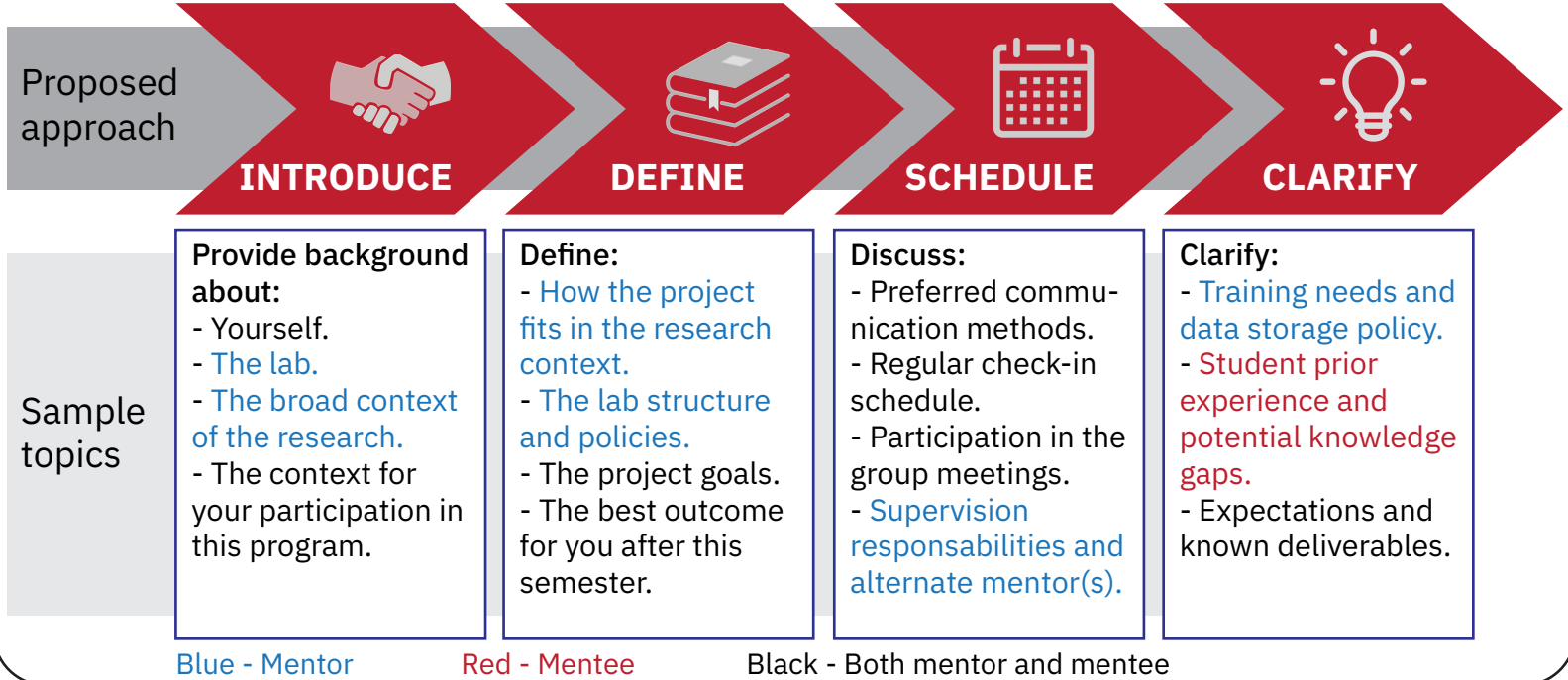


INTRODUCTION

This worksheet was designed by MIT Materials Initiative for Comprehensive Research Opportunity (MICRO) to guide research mentors and undergraduate researchers through their beginning-of-the-term conversation(s). It contains information on key topics to be brought up as the semester starts, as well as backwards design approach tools to design the undergraduate research projects and the associated expectations.

FIRST CONVERSATION(S) ROADMAP

This roadmap is meant to provide mentors and mentees a potential way to approach their first conversation and define the research project together.⁽¹⁾ Emphasis should be put on discussing what both the mentor and mentee expect from this research experience and how it can serve their research or career goal.



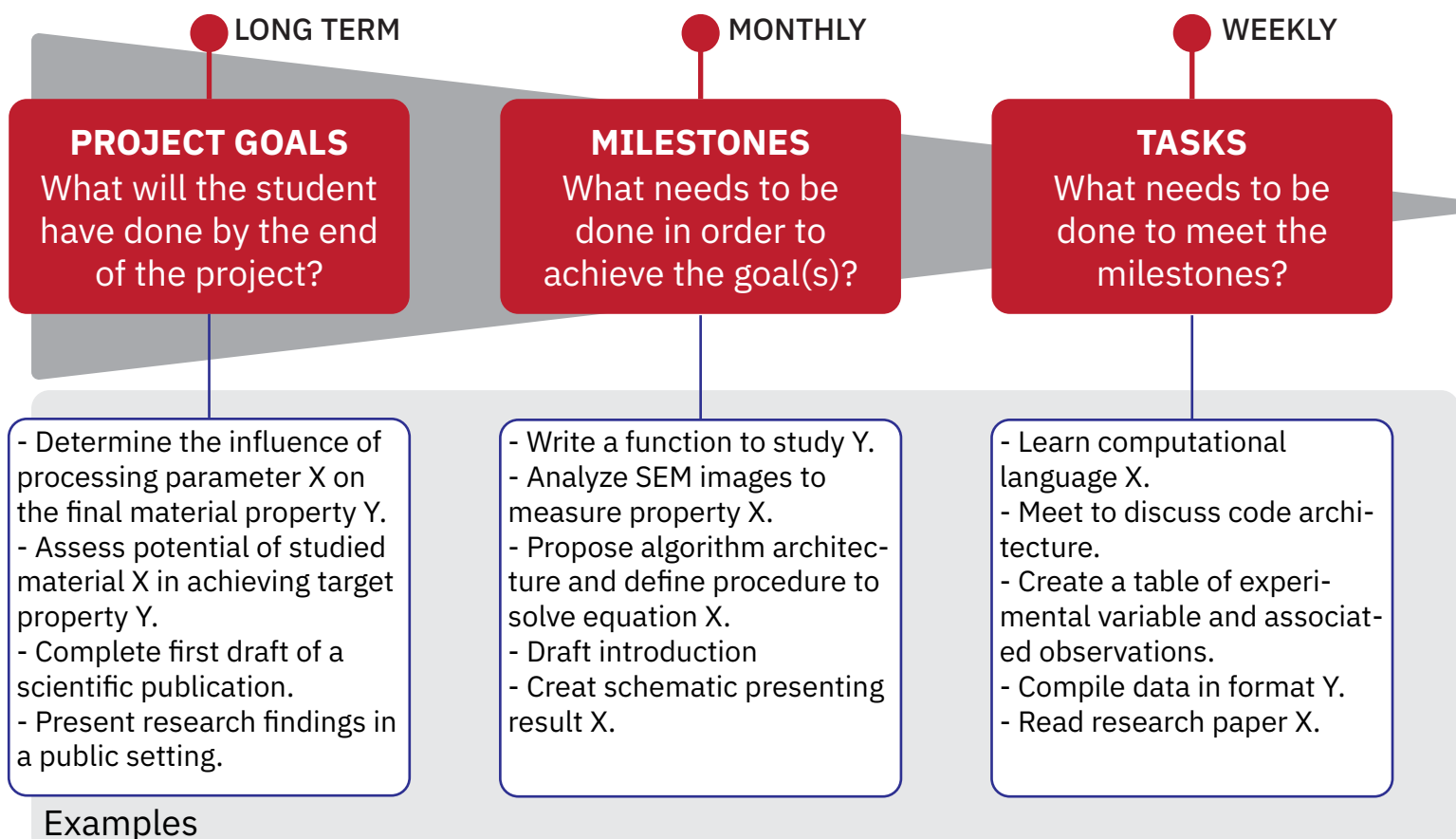
ITEMS TO DISCUSS AT THE START OF THE TERM ⁽²⁾

- 1. Project Logistics** - Overall semester's time commitment (and its potential irregularities), who are the primary and secondary contacts for the undergraduate student, specific equipment or software license required, etc.
- 2. Training Needs** - Specific software or coding language the student must learn how to use, potential safety trainings and requirements.
- 3. Mentee's Role and Responsibilities** - What will be the student's contribution to the project. Define the student's role, their tasks and potential deliverables. What are the mentee's personal goals for the project and how do they align with the project research goal? What does the student hope to learn during this term?
- 4. Mentor's Role and Responsibilities** - How will the mentor assist the mentee throughout the semester? What are the mentor's expectations for the student's accomplishment and how will they guide the undergraduate mentee to achieve these goals.
- 5. Communication Preferences** - What is the preferred communication platform (e.g. emails, slack, phone, etc) and how quickly do you both anticipate being able to respond.

Sources: (1) Entering Mentoring: First Edition, Christine Pfund, Janet Branchaw, and Jo Handelsman, W. H. Freeman, 2015, ISBN:9781464184901. (2) Condensed Facilitating Effective Research Workshop for UROP Mentors, MIT UROP Office.

BACKWARDS DESIGN APPROACH - DEFINE THE RESEARCH PROJECT

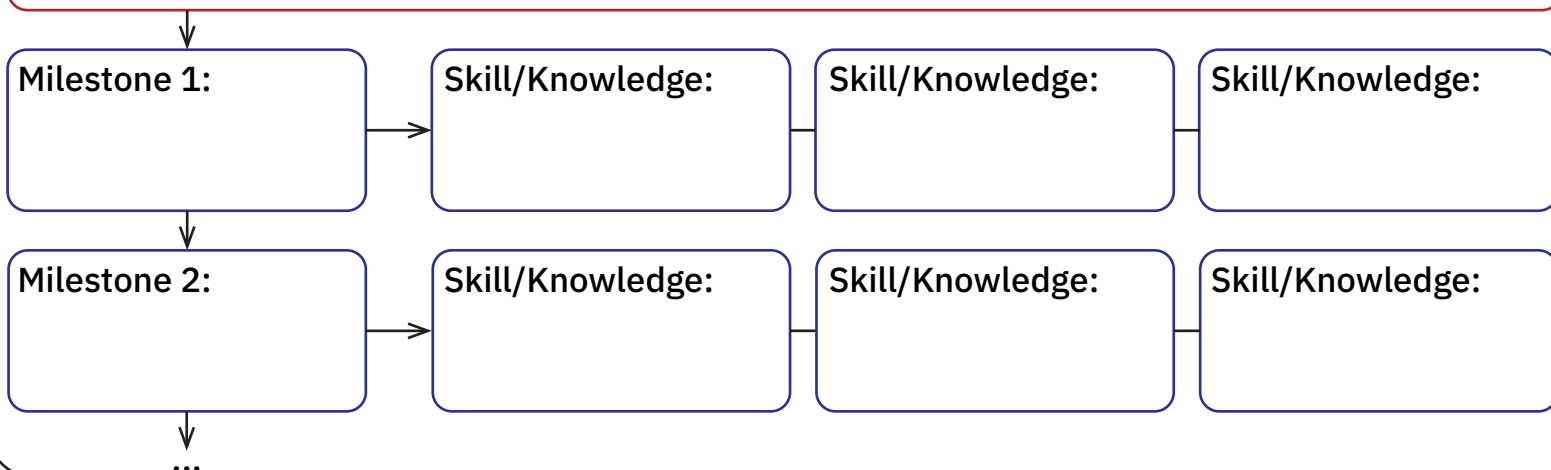
Take some time to define the student's research project using the backwards design approach detailed here.⁽²⁾ The project can either relate to a task where steps have already be perfected, or provide the student with an overall idea of the milestones and let the mentee define the tasks needed to meet them.



BACKWARDS DESIGN APPROACH - RESEARCH SKILLS AND KNOWLEDGE

Take a couple minutes to identify the skills and knowledge required to fulfill the project using this alternative model of the backwards design approach.⁽³⁾ Work from the overall high level goal and the milestones you have identified above (2-4 milestones). For each milestone think about the skills and knowledge required. This will help you design the tasks and training needs.

Overall Goal for the Undergraduate Research Experience:



MIT OpenCourseWare
<https://ocw.mit.edu/>

RES.3-006 MICRO Mentoring Resources and Materials Science Curriculum
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