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| Your Name: Email:    When will you do your practicum (approx. dates):  Have you been offered this research position yet? If not, when do you expect to hear a decision?    Summary (In less than 40 words: What do you propose to do?): |
| Practicum advisor: Rachel Osgood (rmosgood@mines.edu)  Research advisor:  ***Research advisor*** *(typically science or engineering faculty, or the REU director) supervise the student’s research. The research advisor also provides intellectual depth by identifying readings, topics, concepts, and issues for student to consider, as well as helping students develop bibliographies. They also help students develop the bibliographies. Although the research advisor assists the student in these ways, the McBride practicum advisor grades the students’ work and monitors completion.* |

**HNRS 405: Practicum** is an independent, experiential learning program that seeks to develop student skills and broaden their understanding of the socio-cultural context in which scientists and engineers work. Students are expected to complete work (including academic exercises, laboratory research, internships, and/or experiential investigations) that is comparable to a three-credit Honors course.

The **STEM Research Pathway** focuses on developing the student’s knowledge of the research process and academic scholarship in the fields of science, technology, engineering, or math (STEM), conducted in the U.S. or abroad. This track is especially well suited for those wishing to pursuing graduate work in STEM fields or medical school.

**Submit this agreement** via an email to Rachel Osgood (rmosgood@mines.edu).

This **Practicum Agreement** establishes the requirements for completing HNRS 405. Students should develop this agreement *in concert with the McBride practicum advisor*, who will approve the pertinent deadlines and activities and submit the final grade. For the STEM Research pathway, students will also work with a faculty research advisor (typically the faculty member leading the research team). Failure to meet deadlines or complete all the identified tasks will negatively affect the student’s grade. Submission of this agreement constitutes an agreement and signals your agreement to its terms.

**TIMELINE OF ACTIVITIES:**

In the right-hand column, enter the date by which you will complete each task. These are now your deadlines, which you are expected to meet. (Enter “complete” in right-hand column for applicable tasks.) **As you meet each deadline, notify Rachel Osgood, who will track your timely completion.**

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| **BEFORE PRACTICUM** | | |  |
| **Task** | **Target Date** | | **DEADLINE**  (mm/dd/yyyy) |
| Submit this Practicum Agreement, including preliminary bibliography\* | Semester prior to departure | |  |
| Apply for Honors Enrichment Scholarship or Undergraduate Research Fellowship, if applicable | Consult McBride website | |  |
| Apply for research position or REU; request recommendations | Requirements set by sponsoring organization | |  |
| Office of International Programs paperwork and approval (for projects abroad)\* | Consult OIP | |  |
| Register for **HNRS 405: Practicum** for \_\_\_\_\_\_\_\_\_\_\_\_\_ semester | CSM Registration period | |  |
| Submit background report and technical glossary\* | One week prior to departure | |  |
| **DURING PRACTICUM** | | |  |
| **Task** | **Target Date** | | **DEADLINE** |
| Research\* | When will your research position conclude? | |  |
| Journal/ “research culture” proofs\* | Complete while performing your research | |  |
| **AFTER PRACTICUM** | | |  |
| **Task** | | **Target Date** | **DEADLINE** |
| Submit journal/“research culture” proofs and final report\* | | Two weeks after your research position concludes |  |
| Exit interview or presentation | | Coordinate with McBride Director | TBA |

**\* See additional instructions below.**

**ADDITIONAL INSTRUCTIONS:**

Paperwork:

* *For research abroad*: Work with the Office of International Programs (OIP) to complete the required paperwork, immunizations, health insurance verification, ISIC card, etc. For additional information, see: <http://oip.mines.edu/Individual-International-Travel>

Background Report and Technical Glossary:

* If you are participating in an NSF-funded project, read the broader impacts section of the main grant, which can be obtained from your research supervisor. If it is not an REU or NSF grant, interview the research advisor about the broader impacts based on NSF criteria, available on the NSF website (<http://www.nsf.gov/pubs/2007/nsf07046/nsf07046.jsp>).
* In concert with your research advisor or the practicum advisor, select 4 journal articles (ideally 3 peer-reviewed academic journal articles and 1 review article) related to your proposed research.
* Read these journal articles and “flag” technical jargon. Create a technical glossary that defines key terms and jargon from the journal article readings pertaining to your research.
* Write a background report (~500-750 words, double spaced, IEEE style) that answers the following prompt:
  + Based on the articles you read and, as applicable, the broader impacts section or your communications with your research supervisor, what is the purpose and broader significance of your research project? What aspects of the research project do you not yet understand and how do you propose to develop your comprehension during your research work?
* Be sure to cite any sources you consult (using IEEE style).
* Submit your background report and technical glossary at least one week prior to your departure.

Journal and “Research Culture” Proofs:

* Your goal in pursuing this STEM research experience is to contribute to scientific knowledge and to develop your understanding of research culture in the process. Your challenge is to do more than work as an employee in a lab; your task is to learn about the peculiar culture of scientific research by being a thoughtful and independent observer. By documenting your experiences and insights appropriately, you will demonstrate your critical engagement of the research experience.
* To frame your inquiry, before beginning your research experience you should read chapter two (“An Anthropologist Visits the Laboratory”) of Bruno Latour and Steven Woolgar’s *Laboratory Life: The Construction of Scientific Facts*, pgs. 43-90. You can get a copy from Peggy Cook or Rachel Osgood.
* You will keep a journal as you pursue your laboratory work. For your journal entries, imagine yourself to be akin to Latour & Woolgar’s fictional “observer” in the lab. You will be looking upon the lab as a stranger and observer, not merely a participant. Be attentive to what is unique, strange, familiar, comfortable, and remarkable about the lab. Describe in your journal: (1) what you observed or did; (2) your insights or reflections on what these activities and observations tell us about research culture, i.e. how this fictional “observer” might view them.
* Format: Document your observations and reactions in at least 8 journal entries, at least 4 of which address the cultural proofs below. Each entry should be at least 300 words. Each should be typed with a header that includes a title for the entry and the date of the entry. These journal entries should be written at regular intervals while your research experience is ongoing, not hastily compiled at the end.

**RESEARCH CULTURE PROOFS:**

Your journal entries should address at least 4 of the following (2 from each column):

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| --- | --- |
| Share research culture with a student conducting research in a different field. Discuss typical research activities, daily routines, greatest challenges, and social habits of peers. | Investigate the procedures and practices with respect to health, safety, and environmental protections |
| Volunteer to spend a couple hours in another lab. | Visit the office of technology transfer to learn more about ethics in research. |
| Explain the purpose and broader impact of the research to 3-4 non-experts, including at least one person who is not a scientist or engineer. | Review an article in the popular press related to the research and evaluate how effectively the research is presented to a general audience. |
| Work with the REU supervisor to fulfill a portion of the broader impacts component of the REU grant. | Describe the most bizarre piece of research equipment in the lab. |

Final Report:

Write two different articles that communicate the meaning and significance of your research. Each article will be written for a different audience.

1. **STEM Audience:** appropriate for someone with general expertise in science/engineering, though perhaps not in the actual field of your research (~1000 words)
2. **General Audience:** Appropriate for an educated person, but without expertise in science/engineering (~500 words)

Use IEEE format and cite all sources you consult.

**Research Program and Research Supervisor**

**Provide all applicable the information below:**

Name of Research Program (and host university, if applicable):

Brief Description of Research Program:

Research Supervisor Name:

Research Supervisor Title:

Research Supervisor **Complete** Street Address (including city, state & zip):

Research Supervisor Telephone:

Research Supervisor Email:

Research Program Website: