

Proposal Submission to the UCI Undergraduate Research Opportunities Program

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< *Proposal Title* >

1 Motivation

The document is a template for students to use in preparing a UROP research proposal. This template uses \LaTeX , and it can be used in the Overleaf typesetting environment.

Use this section to make a persuasive case for the important problem that will be addressed in this project. Alternatively, the narrative can make a case for a gap in existing knowledge and/or the the potential and opportunity to advance cutting edge tools.

This section should include citations to previous work demonstrating that the proposed project is framed by existing knowledge. Some students may wish to dedicate a subsection to a literature review that frames the research question/topic.

Here are examples of two commonly used citation styles.

- The parenthetical style. Matching with a mentor requires consideration of a number of different factors [1].
- Crone [1] describes a number of factors to consider when matching with a research mentor.
- Moftakhari et al. [2] reports on compound flood hazards from river floods and rising sea level.

Note that this template can be adjusted so citations appear in either author-year format, numerical format, or superscript format.

1.1 Research Objectives

Persuasive writing often relies on a distinct writing structure to set apart a key idea such as the proposed research objectives. In this case, use of a subsection is suggested as a way to focus the reader and gather his or her attention on this very important information. Alternatively, writers may wish to set apart their research objectives *with a distinct writing such as a slanted font* or alternatively **use of a bold font** or possibly use of underlined text or even ***a combination of bold and italicized text.***

2 Research Plan

This section is used to describe how the proposed research will be carried out. Researchers commonly divide up their projects into a set of Tasks, and explain the methods that will be used in each task.

2.1 Task 1: Data Collection

Describe task 1 and how it will be completed.

2.2 Task 2: Analysis and Modeling

Describe task 2 and how it will be completed.

For the sake of providing useful examples for preparing technical documents in L^AT_EX, Figure 1 presents an example of a figure embedded in a proposal and Table 1 presents an example of a table embedded in a proposal.



Figure 1: Undergraduate Research Opportunities Program

| | x | y |
|---------|-----|-----|
| Point 1 | 1.0 | 1.0 |
| Point 2 | 1.5 | 0.5 |

Table 1: Coordinates of points.

3 Project Management

Use this space to describe how the project will be managed, including plans to hold regular meetings or attend research group meetings where an update can be shared and feedback can be provided by other group members. Focus on the describing the responsibility of the undergraduate student researcher and the commitment demonstrated by the faculty advisor and associated research lab.

A Gantt chart is suggested showing the tasks of the project and the progression of activity by month or academic quarter. Here is an example of a Gantt chart that was prepared in a spreadsheet (MS Excel) and saved as a graphic file (*.png) that was uploaded to Overleaf.

| Table 1. Project Schedule Activity | Year 1 | | | | Year 2 | | | | Year 3 | | | |
|--|--------|---|----|----|--------|---|----|----|--------|---|----|----|
| | F | W | Sp | Su | F | W | Sp | Su | F | W | Sp | Su |
| Task 1: Model Development and Parameter Estimation | ■ | ■ | ■ | ■ | | | | | | | | |
| Task 1: MCMC Simulation of WULF Hazards | | | | | ■ | ■ | ■ | ■ | | | | |
| Task 2: Survey Planning | ■ | ■ | ■ | ■ | | | | | | | | |
| Task 2: Survey Implementation | | | | | ■ | | | | | | | |
| Task 2: Hydrodynamic Modeling/Mapping of Flood Hazards | | | | | ■ | ■ | | | | | | |
| Task 2: Analysis of Survey Data | | | | | | ■ | ■ | ■ | | | | |
| Task 3: Annual Meetings | ■ | | | | ■ | | | | ■ | | | |
| Task 3: WULF Risk Modeling and Meeting Decision Needs | | | | | | | | | ■ | ■ | ■ | ■ |
| Synthesis, Zoom Meetings, and Paper Preparation | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

Figure 2: Project schedule. Note the inconsistency here in name (Table 1 vs. Figure 2.) This would need to be resolved in a proposal submission.

4 Expected Outcomes

This section is optional. If space allows, it gives the proposer the opportunity to make a brief compelling statement about the likely benefits of the proposed project. The National Science Foundation, the federal agency where many faculty submit proposals for research funding, requires that two specific outcomes be explained:

1. Intellectual Merit. This is the new knowledge that is expected to be produced by this work.
2. Broader Impact. These are the societal impacts that are likely to result from the project. Examples include educational experiences for students, increased diversity, expanded professional networks, outreach to high school students and importantly - aspects of the project that may have direct societal value such as discovery of a new source of energy that would allow for massive reductions in green house gas emissions.

The UROP program does not require a section such as this, but it is not a bad idea for undergraduates to contemplate and report what they think will likely be accomplished by this project.

5 Budget

If funds are being requested, use this section to list out specific costs and provide a budget justification in a narrative form. UROP typically provides support in the \$250-1000 range although larger budgets may be possible in summer.

References

- [1] W. C. Crone. Introduction to engineering research. *Synthesis Lectures on Engineering, Science, and Technology*, 2(4):1–232, 2020.
- [2] H. R. Moftakhari, G. Salvadori, A. AghaKouchak, B. F. Sanders, and R. A. Matthew. Compounding effects of sea level rise and fluvial flooding. *Proceedings of the National Academy of Sciences*, 114(37):9785–9790, 2017.