University of California, Santa Barbara
Program Learning Outcomes

Masters in Environmental Data Science

Students graduating from the MEDS program should be able to:

1. Core Knowledge
Demonstrate the following, and apply to the solution of environmental problems:

- Broad knowledge of the mathematical and statistical foundations of data science.
- Broad knowledge of the concepts in data science necessary to address environmental
- issues.
- Broad knowledge of programming and database languages used in environmental data
- science, including Python, R, and SQL.
- A deep understanding of one or more areas of environmental data science, including data storage and management, interoperability, modeling, mining, analysis, and visualization.

2. Research Methods and Analysis
Identify and understand the following:

- The range of qualitative and quantitative methodologies used in environmental data sciences, including regression analysis, simulation, big data methods, and other relevant computational methods, applying relevant methods to environmental problems.
- Relevant academic and policy literatures; reviewing and cogently synthesizing this scholarship.
- The institutions and stakeholders that are relevant to current environmental problems, applying relevant methods to specific problems.
- Policy evaluation methods that are relevant to environmental problems.

3. Independent Research

- Formulate research questions and hypotheses that are relevant to environmental problems.
- Design, develop, and implement rigorous studies using data, methods, and techniques relevant to environmental data science.
- Analyze, organize, and visualize data using data science methods in order to solve environmental problems.

4. Communication & Dissemination

- Write research reports at a level and style appropriate for public dissemination.
- Create and deliver compelling, professional-quality public presentations of research results.

5. Professionalism

- Make effective contributions to a research team.
- Formulate and follow a work plan to advance a research project or other investigation.
- Cultivate and maintain strong professional relations with colleagues, professional
- associates, clients, and customers.
- Create environmental data science products and reports that satisfy employer, client, and customer needs.