

# Creating an EPC/ESP Capstone Proposal

## Guidelines for Formulating a Research Proposal

*(for the workshop portion of the 'Creating an EPC/ESP Capstone Proposal Workshop')*

1. **State your problem** that you want to research (*or, if you are proposing a model, business plan, or white paper, what are you attempting to solve here?*). Why are you proposing this study? Be able to articulate why is this significant. How will your research contribute to what has already been done? How will this work help scholars? How will this work help practitioners? **Systematically review the literature and see what has already been done.** Use that to guide you in the framing of your study as to the direction you should take.

*(Workshop estimated time: 10 minutes) – Free-write your responses to these questions while the facilitator answers any questions.*

- a. Who are you going to research?
  - b. What are you going to research?
  - c. Where (sites) are you going to research?
  - d. When are you going to research?
  - e. How are you going to research?
  - f. Why are you going to research this?
  - g. Have you reviewed the existing literature on this topic? How has it guided you to refine your topic further?
  - h. Will your study require any human research (i.e. interviews, surveys, etc.)?
2. Refine #1 down and now explicitly state, in one sentence, what is your **research purpose**? This sentence should begin with "The purpose of this research is to...". To borrow examples from past researchers:

Here are some examples of the Purpose Statement for different types of research projects:

**Social Science (Quantitative):** *The purpose of this research is to evaluate the relationship between cultural worldview and the occurrence of climate science misconceptions among undergraduates attending Johns Hopkins University.*

**Social Science (Qualitative):** *The purpose of the research is to determine the requirements necessary and the challenges to be overcome in order to make microgrids feasible for U.S. military installations.*

**Comparative Case Study:** *The purpose of this research is to provide a rigorous analysis of high-level indicators of geographies, policies, development, and outcomes for Norway and Nigeria to identify factors that may be contributing to different development paths in spite of similarly abundant resources.*

**Integrative Literature Review:** *The purpose of this review is to enhance connectivity within the field of wolf biology and exemplify the importance of conservation as we enter the Anthropocene.*

**Modeling Research:** *The purpose of this study is to develop a model of major carbon sinks for Fairfax County, Virginia, and to demonstrate how the model may be used to identify management practices that maximize carbon sequestration in urban sinks under current and future energy source regimes.*

**Business Plan:** *This paper presents a business plan to develop an off-grid gas turbine/solar electrical generation station on San Andres Island. We present the business plan model, including the financial tables and the proposed operation expectations.*

(Workshop estimated time: 10 minutes) – Free-write your research purpose while the facilitator answers any questions.

3. Now state your **research question(s)** based on what you wrote for #1 and #2. This is the simple question or questions that your research will answer. You can have more than one research question.

Here are some examples of the research questions for different types of research projects:

**Social Science (Quantitative) RQ:** *To what extent does cultural worldview relate to the occurrence of climate science misconceptions, scientific knowledge, or lack of knowledge among undergraduates?*

**Social Science (Qualitative) RQ:** *What is the case for microgrids among deployed U.S. Army troops in Afghanistan?*

**Comparative Case Study RQs:** *How is oil able to help one nation (Norway) but conspire against another (Nigeria)? What factors are driving positive change in Norway that do not exist in Nigeria?*

**Integrative Literature Review RQ:** *To what extent can a review of the literature address and clarify the debate about the evolution, diversification, and genetic profiles of North American wolves through the lens of genetics and conservation?*

**Modeling Research RQ:** *What is the potential carbon removal a city can achieve by enhancing the sequestration potential of its direct and embodied carbon sinks?*

**Business Plan:** *N/A*

(Workshop estimated time: 10 minutes) – Free-write your research question(s) while the facilitator answers any questions.

4. State the **research hypotheses** associated with each research question that will be tested to answer the RQ. For a quantitative study, each hypothesis will indicate what the independent variable is and what the dependent variable is. The wording will also indicate the statistical test to be used. Hypotheses are not typically used in qualitative studies. You can have more than one hypothesis per research question.

Here is an example of the hypotheses for different types of research projects:

**Social Science (Quantitative) RQ:** *To what extent does cultural worldview relate to the occurrence of climate science misconceptions, scientific knowledge, or lack of knowledge among undergraduates?*

*H1) Individuals with an egalitarian communitarianism worldview are more likely to exhibit a misconception about the magnitude of global warming.*

**Comparative Case Study RQs:** *How is oil able to help one nation (Norway) but conspire against another (Nigeria)? What factors are driving positive change in Norway that do not exist in Nigeria?*

*H1) High rates of population growth and population heterogeneity result in increased pressure to use oil revenue to meet 'urgent' needs and diminished capacity to utilize oil revenue for wealth creation.*

*(Workshop estimated time: 10 minutes) – Free-write your hypotheses while the facilitator answers any questions.*

5. Choose the **methodology** that aligns with the RQs and hypotheses that you have composed.
  - a. **Quantitative** -- Tell us exactly what quantitative data will be collected (list it) and how. What statistical tests do you plan to use?
  - b. **Qualitative** -- Tell us the qualitative data that you will collect and how (i.e. via interview).
  - c. **Mixed methods** – Tell us which quantitative and which qualitative data you will be collecting. For example, a case study might involve analysis of both types of data.
  - d. **Integrative literature review** – This is a distinctive form of research that generates new knowledge about the topic reviewed. It reviews, critiques, and synthesizes representative literature on a topic in an integrated way such that new frameworks and perspectives on the topic are generated. Tell us what you will be integrating and synthesizing.
  - e. **Modeling** – Tell us what you will be creating a model for and why.
  - f. **Business Plan/Proposal** – Tell us what you are proposing, the details, how you will analyze this proposal, the deliverables, the budget, etc.

The data you collect should make sense with the research question(s) you are asking.

- Make sure everything **ALIGNS!** If you have a quantitative RQ, then you should have quantitative hypotheses and methodology. If you are doing a qualitative study (based on your Research Statement and RQ), then you would not be gathering quantitative data. **Alignment, alignment, alignment!**
- Determine if you need to seek **IRB/HRPP** approval for testing on human subjects. You will need to complete the **CITI Program Training**. This is necessary if you are conducting any interviews or surveys. It is not hard to do. Just make sure you start the process early with your capstone mentor.

*(Workshop estimated time: 10 minutes) – Free-write your methodology while the facilitator answers any questions.*