HON 2030: Scientific Inquiry and Society

## Contact Information

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## Course Description

Students are introduced to the scientific method and the characteristics of science versus pseudo-science or unscientific claims about the world. Students engage with one research question about the social world and attempt to answer it via careful observation/data collection, concrete experiment, and data analysis. Signature assignment artifact: One structured poster encapsulating group work attempting to answer the research question.

## General Education: Social Science

This course is part of a three-course series that fulfills the Social Science requirement for the General Education Program at Salt Lake Community College. They are designed not only to teach the information and skills required by the discipline, but also to develop vital workplace skills and to teach strategies and skills that can be used for life-long learning. General Education Regardless of your major, General Education courses builds a foundation of broad knowledge and skills that help you in your further career and life.

<http://www.slcc.edu/gened>

## Student Learning Outcomes

Salt Lake Community College intends for your education here to help you develop “essential capacities that all students should possess regardless of academic major or career plans, for they will serve you well in all aspects of your life.” (See <http://www.slcc.edu/gened/learning-outcomes.aspx>.) These Learning Outcomes are:

|  |  |
| --- | --- |
| 1. Acquire substantive knowledge | 5. Become a community engaged learner |
| 2. Communicate effectively | 6. Work in a professional & constructive manner |
| 3. Develop quantitative literacies | 7. Develop computer & information literacy |
| 4. Think critically & creatively | 8. Develop lifelong wellness |

This course will help you meet some of those Learning Outcomes. In the table below, you will see the Student Learning Outcomes (SLOs) for the course and how they compare with the SLOs for the College numbered above:

|  |  |
| --- | --- |
| **Course SLOs** | **College SLOs** |
| Apply the scientific method to the world through inquiry and data analysis. | 1, 2, 3, 4 |
| Compare and contrast scientific vs. pseudo-scientific claims about the social world. | 4 |
| Identify how science is used to inform arguments about current events affecting them. | 1, 2, 4 |
| Understand the history and relevance of the scientific method. | 1, 4 |

## Diversity and Inclusivity Statement

We at Salt Lake Community College believe diversity enhances the richness of the educational experience and leads to the understanding of and appreciation for the differences and commonalities in each of us. It is imperative that we actively seek and welcome a student body, faculty, and staff who represent the diversity of our region, nation, and the world to prepare students to participate as global citizens. Salt Lake Community College strives to create an equitable climate of learning, teaching, and working for all demographics, cultures, and abilities. We challenge and commit ourselves to identify and address inequality with civility and mutual respect to continually improve campus climate.

Inclusivity is the active, intentional and ongoing commitment to ensuring that all members of the campus community can fully and meaningfully participate in and contribute to all aspects of campus life (i.e., in the curriculum, programs, and resources, and practices and processes). It is the involvement and empowerment of all members of Salt Lake Community College, where the inherent worth and dignity of all people are recognized and valued.

Learn more about inclusivity and diversity at SLCC by clicking here.

## Technology Requirement

The assignments in this course use a web-based mapping platform called [ArcGIS Online.](http://www.arcgis.com) Students will nt need to purchase any software for the course.

## Reading Resources

This course will use a variety of reading resources that students can access either online or using SLCC’s [Markosian Library](https://libweb.slcc.edu/) research databases. Because of the nature of the course, there will be a core of reading material the class will be required to read, along with individualized readings based on the student projects. Below is a list of reading resources the class will use, but is not limited to them in scope.

* Bandoni Muench, S. The Mystery of the Blue Death: A Case Study in Epidemiology and the History of Science. Available at <http://www.oercommons.org/courses/the-mystery-of-the-blue-death-a-case-study-in-epidemiology-and-the-history-of-science/view>.
* Blackstone, A. *Principles of Sociological Inquiry: Qualitative and Quantitative Methods*. Available at as an online book at <https://saylordotorg.github.io/text_principles-of-sociological-inquiry-qualitative-and-quantitative-methods/> or as a PDF file at <https://www.saylor.org/site/textbooks/Principles%20of%20Sociological%20Inquiry.pdf>.
* Burnett, T. What is Scientism? Available at <https://www.aaas.org/programs/dialogue-science-ethics-and-religion/what-scientism>.
* Egger, A. E. Visualizing Scientific Data: An Essential Component of Research. Available at <http://www.oercommons.org/courses/visualizing-scientific-data-an-essential-component-of-research-2/view>.
* Egger, A. E. & Carpi. A. *Process of Science*. Available at <https://www.visionlearning.com/en/library/Process-of-Science/49>.
* EOR Commons, *Introduction to Sociology*. Available at <https://www.oercommons.org/courseware/module/11760/overview>.
* Hansson, S. O., Science and Pseudo-Science. Available at <https://plato.stanford.edu/entries/pseudo-science/>.
* Horne, C. S. A Quick, Free, Somewhat Easy-to-read Introduction to Empirical Social Science Research Methods. Available at <https://scholar.utc.edu/cgi/viewcontent.cgi?article=1003&context=oer>.
* Rowe, M. P. Tragic Choices: Autism, Measles, and the MMR Vaccine. Available at <http://www.oercommons.org/courses/tragic-choices-autism-measles-and-the-mmr-vaccine/view>.
* Somerville, R. C. J. & Hassol, S. J. Communicating the Science of Climate Change. Available at <https://www.climatecommunication.org/wp-content/uploads/2011/10/Somerville-Hassol-Physics-Today-2011.pdf>.
* Zimmerman, S. D. The Raelians: Visionary Science or Quackery? A Case Study Exploring the Scientific Method and Human Cloning. Available at <http://www.oercommons.org/courses/the-raelians-visionary-science-or-quackery/view>.

### Other materials:

* ArcGIS Online Resources. (n.d.). Retrieved from <https://www.esri.com/en-us/arcgis/products/arcgis-online/resources>
* Saylor, Philosophy of Science. Available at <https://legacy.saylor.org/phil202/Intro/>

## Course Information

This syllabus represents an “agreement” between you the student and the instructor. It is designed to ensure course integrity, and fairness as well as provides students with a clear understanding of course expectations. The instructor and students are expected to use the syllabus and schedule as a guide for the semester. Any deviation from the syllabus or schedule will be discussed and agreed upon by the instructor and students.

* Attendance within the first week of the semester is mandatory. If you do not attend at least one of the first two lectures without notifying your instructor beforehand, YOU ARE AT RISK OF BEING DROPPED from the course. In online courses, this means logging into Canvas a minimum of at least once within the first week.
* A grade of “I” (Incomplete) is the instructor’s option and is not given except only in the most extenuating of circumstances for which there is verifiable written documentation. To receive an incomplete grade for the course, nearly all coursework must have been completed (e.g., ~75%) with a passing grade. It is the responsibility of the student to drop/withdraw from this class, not the instructor.
* Cheating and plagiarism are not tolerated in all forms and modalities as outlined in the college’s Student Code of Conduct. Cheating will be dealt with as harshly as allowed by the college. The first violation will include a zero score on the activity in question and a second violation will cause the student to fail the course.
* Students are expected to turn in all assignments and discussions to be turned in on time. Late work may be accepted, but with a lower graded score.

## Coursework and Grading

This semester, you will be learning about and applying the principles of scientific inquiry. Working with your classmates, you will engage in a semester-long project that applies what you are learning to a research question within the social sciences. I will provide you with data sets that contain social science information. Your group will use the data for your group project.

This project will be broken down into separate steps that coincide with what we are studying. As we study each step of the process, your group will complete the step using your chosen data set, as follows:

* Reading Quizzes: Students will submit weekly Reading Assignments on Canvas every week based on the reading for that upcoming week. Details will be discussed on the first day of class. No late submissions or makeups are accepted.
* Video Quizzes: Each module will contain a series of videos that focus on research issues directly related to the class. The instructor will provide directions on how the videos will be used within the course.
* Participation Points: It is essential students come to class prepared and willingly participate. This part of your grade is measured through in-class activities and discussions.
* Signature Assignment: The bulk of what we do in the class will be building up to a signature assignment where you will conduct original data analysis to test a hypothesis of your group’s choosing. There will be some smaller assignments (both in-class and homework) building up to the final product. Details will be discussed in class.

|  |  |
| --- | --- |
| **PROJECT STEPS: REWRITE AS INDIVIDUAL-BASED STEPS** | **POINTS** |
| **Study Plan**  Your group will examine the data sets and select a research question that could be investigated using the data. You will submit a 1-pagraph description of your research question, the data set you will be analyzing, and which variables you will be using to address your research question. | 10 |
| **Hypothesis Draft**  Your group will submit a hypothesis based on your research question and a brief description of the rationale behind your hypothesis, addressing theory and previous research. I will provide feedback on the hypothesis in light of the available data. | 10 |
| **Final Hypothesis**  Your group will submit a revised hypothesis based on the feedback you received. | 5 |
| **Data Analysis**  Your group will analyze the data, based on your research question. You will submit a 1-paragraph summary/explanation of your findings. In addition, you will include both a numeric display (data table) and a graphic display (chart, graph, etc.) of your findings. | 10 |
| **Elevator Pitch—Multimodal/Creative (Infographic, YouTube video)**  Each group member will prepare a 90-second “elevator pitch” of your research question and findings. The pitch should be interesting and engaging. The student will submit video clips of themselves giving the pitch to 5 different people. | 5 |
| **Project Draft**  Your group will create and submit “artifacts” related to your project. This will include:   1. a 1-2 page research report, 2. a research poster, and 3. a recorded video presentation of your findings.   This draft should be a near-final rough draft. | 25 |
| **Revised/Final Project**  Based on the feedback you receive, your group will submit a revised version of your artifacts, along with a written description of how you addressed the feedback. | 10 |
| **ePortfolio Submission and Reflection**  Each will add the group’s artifacts to their ePortfolio, along with a 2-paragraph reflection on the project, focusing on how the project affected their achievement of the College SLOs indicated above. | 5 |
| **PROJECT TOTAL** | **100** |

Students will receive individual scores for their work on each step of the project. Where submissions are made by the group, each will receive the same score. Those scores may then be adjusted based on the Contribution Reports.

Grades will be based on the following scale:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 94% - 100% = A  90% - 93% = A- | 87% - 89% = B+  83% - 86% = B  80% - 82% = B- | 77% - 79% = C+  73% - 76% = C  70% - 72% = C- | 67% - 69% = D+  63% - 66% = D  60% - 62% = D- | 59% or less = E |

# Course Schedule

This is tentative. It may change, but we will follow this approximate roadmap. All changes and further detail will be posted on Canvas and announced in class. It is your responsibility to pay attention to what we are covering next. You will be held accountable for doing the reading before class.

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| --- | --- | --- | --- |
| **Week** | **Notes** | **Themes** | **Due** |
| 1 | Intro to the Course | Class Activity: Introduction | View Canvas Course |
| 2 | Science vs. Pseudoscience; | Class Activity: Raelians and Autism case studies (Rowe; Zimmerman) | RA 1: E&C: Scientific Controversy |
| 3 | Nature of Science; Ethics | Class Activity: Cholera Case Study (Bandoni Muench) | RA2: E&C: The Culture of Science & “East versus West” infographic |
| 4 | Information Literacy; Literature Review | Class Activity: Library Services | RA3: Library website  Project Topic Due |
| 5 | Project Topics – Theory & Hypothesis | Class Activity: Hypothesis Polishing | RA4: E&C: The Process of Science, E&C: The Practice of Science  SA: Hypothesis Draft |
| 6 | Theory & Hypothesis | Class Activity: Sharing Study Plans | RA5: E&C: Theories, Hypotheses, and Laws  SA: Study Plan |
| 7 | Measurement | Class Activity: Analysis planning | RA6: Lit Reviews  SA: Final Hypothesis |
| 8 | Methods/Design | Class Activity: Analysis | RA7: Horne, Jhangiani |
| 9 | Methods/Design | Class Activity: Peer Review of Analysis |  |
| 10 | Descriptive Statistics; Quantitative vs. Qualitative research | Class Activity: Project Work Week | RA8: E&C: Description in Scientific Research  E&C: Data Analysis and Interpretation |
| 11 | Communicating Science | Class Activity: Communicating science to the public | RA9: Somerville & Hassol  Egger  SA: Data Analysis |
| 12 | Communicating Science | Class Activity: Peer Review communication assignment | RA10: E&C: Using Graphs and Visual Data  SA: Elevator Pitch |
| 13 | Rough Draft Review | Class Activity: Peer Review |  |
| 14 | Project work week | Class Activity: Project work week | SA: Rough Draft |
| 15 | Final Draft | Class Activity: Poster Session | SA: Final Draft |
| 16 | Finals |  | SA: ePortfolio Submission |