Course Syllabus
The Science Blender – Honors 389

GE Area(s): Natural Science (7NI); Quantitative (7QI)
Instructor: Professor Andrew Lyon
Time and Place: TTH 8:30-9:45 am; Location TBD
Contact: lyon@chapman.edu
Office Hours: TBD
Restrictions: Registration by Permit Only

Course Overview
In the Science Blender, teams composed of ~5 students from disparate majors within Schmid and the Honors program will be coalesced around “grand challenge” projects designed to leverage their growing individual (disciplinary) knowledge bases, skill sets, and problem-solving abilities. As the teams delve deeply into their projects, identify the current knowledge gaps that prevent simple solutions to the grand challenges, and then develop strategies to address those gaps, the students will become more conversant in the languages of the different disciplines and will develop a highly sophisticated appreciation for how team-based problem solving can have a maximal impact on a specific scientific pursuit. Instruction and discussion will be augmented with frequent participation of guest speakers who will serve as mentors and guides for the student teams. 3 Credits

GE Outcomes
- Natural Science (7NI):
  - Students will learn the foundational scientific principles and reasoning needed to understand complex, interdisciplinary, and multidimensional challenges facing humankind. Students will obtain the tools necessary to distinguish science from non-science.
- Quantitative (7QI):
  - Students will use quantitative methods to help analyze problems in particular academic or social contexts; develop in-depth arguments supported by quantitative evidence; and communicate those arguments in both verbal form and quantitative displays (e.g., tables, graphs, mathematical equations, or other relevant format).

Student Learning Outcomes
- SLO 1: Critical Thinking
  - Students will be able to analyze scientific results and critically evaluate those data and associated conclusions.
- SLO 2: Conceptual Synthesis
  - Students will be able to combine disparate knowledge sets into a cohesive understanding of complex, multicomponent problems.
- SLO 3: Use of the Primary Literature
  - Students will be able to employ the primary scientific literature to discover and understand the knowledge gaps associated with current challenges faced by humankind.

Honors Program Learning Outcomes
Upon completing a course in the University Honors Program students will have:
- Obtained a starting point for integrative exploration of the development of cultures and intellectual achievements through a variety of disciplinary and interdisciplinary perspectives;
- Sharpened their ability to critically analyze and synthesize a broad range of knowledge.
through the study of primary texts and through engagement in active learning with fellow students, faculty, and texts (broadly understood);
c. Understood how to apply more integrative and interdisciplinary forms of understanding in the advancement of knowledge and in addressing complex challenges shaping the world;
d. Developed effective communication skills, specifically in the areas of written and oral exposition and analysis.

Texts (Mandatory)
- TBD
- Much of the course reading will be in the form of handouts and documents posted to Blackboard. Students are expected to complete the assigned reading prior to each class meeting time. This will be confirmed through brief concept check quizzes or in-class discussions.

Essential Facility
- Blackboard or whiteboard
- Projector or flat-screen TV for computer projection

Course Itinerary
Initially, the course discussion will surround introductory theories/philosophies of science, critical reasoning, and experimental design. Students will rank in order of preference a selection of “Grand Challenges” on which to work. From these rankings, the students will be assembled into small teams, which will be expected to act as small companies tasked by the “client” (the instructor) to solve those problems.

Teams will be expected to dissect the assigned challenge using the primary literature in order to understand the roots and complexities of the problem, the knowledge gaps that exist, and eventually be able to propose initial strategies to fill those knowledge gaps. Project progress will be evaluated via bimonthly project updates, project evaluations, and responses to those evaluations. Subject matter experts will be frequently invited to take part in these updates and evaluations to provide guidance and mentorship to the teams; the teams should treat these experts as company consultants.

The semester will conclude with a Blender Expo, at which the students will present the status of their “solutions” to the challenge, along with a discussion of proposed next steps. Team mentors/consultants will be invited to participate in the final evaluation and discussion of team progress.

Methods of Evaluation
1. (25%) Attendance and Participation
2. (25%) Project Research Presentations
3. (25%) Project Evaluation Responses
4. (25%) Blender Expo Presentation

Grading Scale:
A = 93-100
A− = 90-92
B+ = 87-89
B = 83-86
B− = 80-82
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C+ = 77-79
C = 73-76
C− = 70-72
D+ = 67-69
D = 63-66
D− = 60-62
F = 0-59

Note that students are evaluated individually for their work within the team environment.

Students with Disabilities
In compliance with ADA guidelines, students who have any condition, either permanent or temporary, that might affect their ability to perform in this class are encouraged to inform the instructor at the beginning of the term. Upon recommendation from the Center for Academic Success, adaptations of teaching methods, class materials, including text and reading materials or testing may be made as needed to provide for equitable participation.

Chapman University Academic Integrity Policy
Chapman University is a community of scholars that emphasizes the mutual responsibility of all members to seek knowledge honestly and in good faith. Students are responsible for doing their own work, and academic dishonesty of any kind will not be tolerated anywhere in the university.