

Course Name: Research and Development from Concept to Communication
Term Year: Fall 2016

Course ID: ECE 900 Research and Development from Concept to Communication
Academic Requirements Fulfilled: ECE MS EE, MENG EE 900-level course, ECE Online Certificate elective course

Term Start and End Dates: August 29, 2016 to December 17, 2016

Instructor name: Andrew Kun

Email: andrew.kun@unh.edu

Course Overview

Generating new knowledge, as well as communicating the results of such activities, are critical both in technical development and in scientific research. This course will introduce students to skills that are necessary to undertake and lead efforts that consistently result in generating new knowledge, and that effectively communicate results to different types of audiences.

Textbook

None.

Course Description

The course will introduce students to the general tools of scientific research and technical development. The course will also introduce students to tools and practices for reading, writing and reviewing documents that describe completed or proposed scientific research and technical development, as well as to tools and practices for giving oral presentations about such documents to different types of audiences.

Learning Objectives

Upon completion of this course students will:

- Be able to discuss topics related to the general tools of creating new knowledge, such as defining problems, goals, and hypotheses;
- Be able to describe a specific development or research project in terms of problems, goals, hypotheses, and approaches to testing the hypotheses;
- Be able to support their arguments on their research project using the arguments presented in others' work;
- Be able to communicate their ideas on how to initiate a development or research project both verbally and in writing.

Learning Outcomes

- Students will be able to apply the general tools of creating new knowledge in research and development.

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Course Schedule

<i>Week</i>	<i>Date</i>	<i>Topics Covered</i>	<i>Assignments</i>
1	August 29 – Sept. 4	Course organization, and expectations Generating new knowledge	<ul style="list-style-type: none"> • Review lecture on syllabus, course organization, and course expectations • Review syllabus and Canvas site • Review lecture on generating new knowledge • Set up meeting with instructor
2	Sept. 5-11	Research problems	<ul style="list-style-type: none"> • Review lectures on science and research problems • Read required reading • Discuss required reading • Discuss examples of science • Discuss example research problem
3	Sept. 12-18	How to give an excellent talk?	<ul style="list-style-type: none"> • Review lectures in John Krumm’s workshop • Discuss how to give an excellent talk • Tentatively identify a research or development problem for this course
4	Sept. 19-25	Research goals	<ul style="list-style-type: none"> • Review lecture on research problems • Read required reading • Draft research problem(s) and goal(s) for your work • Identify problem(s) and goal(s) in a paper
5	Sept. 26 – Oct. 2	Presenters and audiences at research talks	<ul style="list-style-type: none"> • Review lectures on participants at research talks • Identify problem(s) and goal(s) in a paper
6-7	Oct. 3-16	Reading, and reporting on, scientific and technical publications	<ul style="list-style-type: none"> • Review lecture on scientific and technical publications • Read required reading • Draft introduction to your paper
8-9	Oct. 17-30	Hypotheses	<ul style="list-style-type: none"> • Review lectures on hypotheses • Read required reading • Write second draft of introduction
10-11	Oct. 31 – Nov. 13	Drafting an introduction to a paper	<ul style="list-style-type: none"> • Focus on writing the introduction to your paper • Read required reading • Write third draft of introduction
12	Nov. 14-20	Examples of inspiring technical presentations	<ul style="list-style-type: none"> • Review videos of inspiring lectures • Discuss videos
13	Nov. 21-27	Review	<ul style="list-style-type: none"> • Submit fiction book report and video presentation • Submit paper introduction and video presentation

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14-15	Nov. 28 – Dec. 9	Student presentations	<ul style="list-style-type: none"> • Provide peer reviews for fiction book video presentations • Provide peer reviews for introduction videos • Create final version of paper introduction (by the end of the semester)
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Grades

Grades are broken down as follows. See schedule for due dates.

Item	%	Requirements
Assignments	55%	<ul style="list-style-type: none"> • Complete weekly or bi-weekly assignments
Fiction book report and presentation	15%	<ul style="list-style-type: none"> • Create fiction book report. • Create video based on your book report. • Comment on other students' video reports.
Paper introduction document and presentation	30%	<ul style="list-style-type: none"> • Create paper introduction document. • Create video based on your introduction. • Comment on other students' video introductions.

Policy on Late Submissions

Late submissions will not be accepted. Exceptions will be made in special cases such as sickness, family emergencies, and work-related issues.

Class Participation

Participation in online discussion is required. Participation will be graded based on the following criteria and values. Review this carefully.

Quality of postings

Below are desired attributes for a posting.

- Ability to synthesize the main concepts from instructor, course content, external resources and class community.
- Use of proper grammar.
- Ideas are organized, persuasive and elevate the overall dialogue.
- Opinions are substantiated.
- Demonstration of critical or creative thinking.
- Evidence of preparation.

Etiquette

- Divergent opinions. Academic debate and differences are embraced in higher education and the forums in this course. Be mindful and respectful of *how* you articulate a difference or divergent opinion.

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- 'I agree' statements. Unsubstantiated 'I agree' posts will not count to final participation grade without articulated rationale to support opinion.
- Off-topic postings. Discussions occasional veer off-topic. This is normal. These posts will not count and students are asked to stay on-topic.
- Long responses. Grades will be influenced by an ability to demonstrate an understanding of the topic or question and on one's ability to be concise.

Student to Instructor Communication Expectations

My Schedule

Unless otherwise announced, I will be active in the Canvas class area daily, Monday through Friday. I will log in once in the morning and once in the afternoon. If you post a question for me in a forum, anticipate a response within 24-hours. On Saturday and Sunday, I may not log in at a regular time. If you post late on Friday or anytime on the weekend, I might not respond until Monday evening.

How to Reach Me

Questions related to assignments or learning should be posted in the respective discussion forums. The use of email is reserved for questions of a private nature, and if you would like to schedule (virtual) office hours. My contact information is as follows:

Email: andrew.kun@unh.edu

Physical office hours: By appointment in Kingsbury W219

Technical Requirements and Technical Support

See website listings for current recommendations and requirements related to this course - <http://unh.edu/eunh/technical-requirements> For technical assistance please call (603) 862-2431 or fill out an online support form at <https://itsupport.unh.edu/onlinelearning/>

University Disability Accommodations

The University is committed to providing students with documented disabilities equal access to all university programs and facilities. If you think you have a disability requiring accommodations, you must register with Disability Services for Students (DSS). Contact DSS at (603) 862-2607 or disability.office@unh.edu. If you have received Accommodation Letters for this course from DSS, please provide me with that information privately in my office so that we can review those accommodations.

Academic Honesty

Students are required to abide by the UNH Academic Honesty policy located in the [Student Rights, Rules, and Responsibilities Handbook](#).

Plagiarism of any type may be grounds for receiving an "F" in an assignment or an "F" in the overall course. Plagiarism is defined as "the unattributed use of the ideas, evidence, or words of another person, or the conveying the false impression that the arguments and writing in a paper

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are your own.” (UNH Academic Honesty Policy, 09.3) Incidents are reported to the school dean and may be grounds for further action. If you have questions about proper citation refer to your department’s writing guidelines. You can contact me at any time on this issue. Additional resources are located below:

<http://libraryguides.unh.edu/unhmcitingsources>

<http://www.library.unh.edu/reference/citation.shtml>

Note: This syllabus is subject to change. Students will be promptly notified of any changes.