ENGR 210X  
Spring 2011 Course Syllabus

Course Description
There is a vision for the engineer of the future, an engineer who helps create a better world. That vision has been defined nationally by the Engineer of 2020 initiative and by the Iowa State College of Engineering initiative called the 2050 Challenge. The E2020 Scholars Program brings together these initiatives through National Science Foundation funding to support scholarships and educational program for engineering students. An E2020 Scholar will learn about leadership, become more globally aware, understand innovation and entrepreneurship, and see the bigger picture of interdisciplinary and systems design. This course focuses on gaining a better understanding of Innovation and Entrepreneurship, and the Global impact.

Course Information
Course Title: E2020 Scholars Program Seminar – Innovation/Entrepreneurship & Global Awareness
Course Number: ENGR 210X
Credit: 1 hour
Location: 1016 Coover Hall
Week day: Wednesday
Time: 5:10pm – 6:00pm

Contact Information
Pillar Instructors: Doug Jacobsen Innovation & Entrepreneurship  
Amy Kalitta-Forbes Global Awareness
Instructor of record: Mark Laingen
Office: TBA
Time: Wednesdays, 3:30pm – 4:30pm
Additional time is available on request.
Phone: (Cell) 309-235-3967
Email: mlaingen@iastate.edu

PILLARS OF E2020 SCHOLARS PROGRAM:

• Innovation and entrepreneurial aptitudes *
• Global awareness and understanding *
• Orientation to systems thinking
• Programmatic goals of leadership development

* covered in this course
Learning Outcomes

Innovation
An innovative engineer creates different and novel solutions to problems and opportunities. It’s about doing things differently and in a way that makes things better. An entrepreneur is an individual that sees an opportunity, commits to addressing it, gathers the information and resources needed, and implements a plan. New technology and the increasing complexity of the challenges society faces require engineers to be more innovative and entrepreneurial than ever before. E2020 Scholars have opportunities to learn about, develop, and demonstrate innovation and entrepreneurship in ways typical engineering students don’t, both in and out of the classroom. And these opportunities intersect with the other E2020 pillars to help develop a more “complete” engineer:

- Challenge paradigms
  - Identify implicit assumptions and see alternative ways to view or define problems without being constrained by the thoughts or approaches of others

- Leverage diverse resources
  - Draw upon multiple and diverse sources (individuals, disciplines, bodies of knowledge) for ideas and inspiration

- Think expansively
  - Explore different lines of thought, view situations from multiple perspectives, and brainstorm multiple approaches/solutions

- Evaluate multiple solutions
  - Examine numerous potential solutions and evaluate each before accepting any

- Ensure relevance
  - Target important areas for innovation and develop solutions that address meaningful issues

- Think entrepreneurial
  - Frame the solutions in a way to overcome the non-technical obstacles and gather resources and support for the solution

Global Awareness and Understanding
Today’s engineers need to recognize how global issues impact their own work, and how their own work impacts the world. They need to be able to work with a diversity of people to engineer solutions for a diversity of situations and environments. Activities to increase your global awareness at Iowa State include the following:

- Studying or working abroad
  - Engineering International Programs and Services (EIPS)
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• Taking courses to improve your global awareness
  o ME 484: Technology, Globalization, and Culture
  o AE/CE/EE 388: Sustainable Engineering and International Development
• Joining an organization or student club
  o Engineers for a Sustainable World
  o Engineers Without Borders
  o An international student organization

Overall Student Goals and Objectives:
1. Understand the concepts and challenges facing the engineer of year 2020.
2. Develop an understanding of how the four pillars will impact the E2020 scholar.
3. Focus on Innovation and Entrepreneurship ideas and concepts . . . .
4. Achieve an understanding of global demands and considerations during the engineering process . . . . . . . . . . taking into account multiple perspectives and factors, including broader aspects such as social, ethical, cultural, environmental, business and political issues.

Specific Student Goals and Objectives:
1. develop team building skills through group projects and team exercises
2. improve on communication skills through group study and class presentation
3. identify and describe engineering competencies related to pillar topics

Student Activities:
Please read all assigned reading material prior to class. Discussion is the preferred method of communication during class sessions. Compared to instructor-led lecture format, discussion offers a good deal of added value to the class.

Quizzes may be conducted based on material introduced in class, assigned readings, DVD/VCR’s viewed, and guest lecturers. Usual time allowed for quizzes is 15-30 minutes. Quizzes may be conducted in class, take home, or on-line through WebCT. Attendance based quizzes cannot be made up.

Class Attendance
Class attendance is extremely important and a requirement of your scholarship, and will be monitored. While it is understood that students may miss classes due to unavoidable constraints, it is very important that students attend all classes. Therefore, any student that accumulates three excused absences will suffer a full letter grade reduction (An A performance level will go to a B, etc.). Any excused absence must be cleared through the instructor prior to class. Any student who accumulated three or more unexcused absences will not be allowed to take exams, and the student’s grade will be dropped to F (fail), and information forwarded to the scholarship committee.

Late work – Late work is highly discouraged except where prior permission has been granted. Unexcused submission of work after the due date will result in a point reduction based on the
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assignment. Instructor will clarify penalty imposed for different assignments.

Special Notes
1. All written assignments should be produced electronically (no handwritten materials unless specified by the instructor).
2. In order to facilitate discussion of assignments in a timely manner, assignments must be submitted prior to in-class discussion.
3. All work used from the efforts of others should be cited according to APA 6th Edition.

Course Evaluation
Weekly Assignments ........................................33%
Class Participation ............................................33%
Final Projects ..................................................34%

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Total ..........................................................100%

Grading Scale
Final grades are based on the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Score Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93 and higher</td>
<td>73-76: C</td>
</tr>
<tr>
<td>A-</td>
<td>90-93:</td>
<td>70-72: C-</td>
</tr>
<tr>
<td>B+</td>
<td>87-89:</td>
<td>67 – 69: D+</td>
</tr>
<tr>
<td>B</td>
<td>83 – 86:</td>
<td>64-66: D</td>
</tr>
<tr>
<td>B-</td>
<td>80 – 82:</td>
<td>60-63: D-</td>
</tr>
<tr>
<td>C+</td>
<td>77 – 79:</td>
<td>Less than 60: F</td>
</tr>
</tbody>
</table>

Disability Concerns

If a student has a disability that qualifies under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act and requires accommodations, he/she should contact the Disability Resources (DR) office for information on appropriate policies and procedures. DR is located on the main floor of the Student Services Building, Room 1076-- phone 515-294-7220. General Email: disabilityresources@iastate.edu.

Academic Integrity

Academic misconduct in any form is in violation of Iowa State University Student Disciplinary Regulations and will not be tolerated. This includes, but is not limited to: copying or sharing answers on tests or assignments, plagiarism, and having someone else do your academic work. See the Conduct Code at www.dso.iastate.edu/ja for more details and a full explanation of the Academic Misconduct policies. You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with the ISU Student....
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Information Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures, as well as consequences with regard to this course.

Calendar

The calendar is provided as a guideline and is subject to change according to speaker availability, schedule conflicts, etc. Any revisions to the calendar will be announced and a new calendar provided. (Agenda is tentative and subject to change)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Assignment</th>
<th>Readings</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12-Jan</td>
<td>ENGR 210X Kick-off Introduction</td>
<td></td>
<td></td>
<td>Rower, Bruning, Jacobsen, Kalita</td>
</tr>
<tr>
<td>2</td>
<td>19-Jan</td>
<td>Innovation &amp; Entrepreneurship</td>
<td></td>
<td></td>
<td>Jacobsen</td>
</tr>
<tr>
<td>3</td>
<td>26-Jan</td>
<td>Innovation &amp; Entrepreneurship exercise</td>
<td></td>
<td></td>
<td>Jacobsen</td>
</tr>
<tr>
<td>4</td>
<td>07-Feb</td>
<td>Group Project workshop</td>
<td></td>
<td></td>
<td>Jacobsen</td>
</tr>
<tr>
<td>5</td>
<td>09-Feb</td>
<td>Group Project workshop</td>
<td></td>
<td></td>
<td>Jacobsen</td>
</tr>
<tr>
<td>6</td>
<td>16-Feb</td>
<td>Group Project workshop</td>
<td></td>
<td></td>
<td>Jacobsen</td>
</tr>
<tr>
<td>7</td>
<td>23-Feb</td>
<td>Innovation/Entrepreneurship - Group Presentations</td>
<td></td>
<td></td>
<td>Jacobsen</td>
</tr>
<tr>
<td>8</td>
<td>07-Mar</td>
<td>Innovation/Entrepreneurship - Group Presentations</td>
<td>Reflection</td>
<td></td>
<td>Jacobsen</td>
</tr>
<tr>
<td>9</td>
<td>09-Mar</td>
<td>Global Awareness &amp; Understanding</td>
<td></td>
<td></td>
<td>Kalita-Forbes</td>
</tr>
<tr>
<td>10</td>
<td>23-Mar</td>
<td>Global understanding exercise</td>
<td></td>
<td></td>
<td>Kalita-Forbes</td>
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<tr>
<td>11</td>
<td>30-Mar</td>
<td>Group Project workshop</td>
<td></td>
<td></td>
<td>Kalita-Forbes</td>
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<tr>
<td>12</td>
<td>06-Apr</td>
<td>Group Project workshop</td>
<td></td>
<td></td>
<td>Kalita-Forbes</td>
</tr>
<tr>
<td>13</td>
<td>13-Apr</td>
<td>Group Project workshop</td>
<td></td>
<td></td>
<td>Kalita-Forbes</td>
</tr>
<tr>
<td>14</td>
<td>20-Apr</td>
<td>Global Awareness - Group Presentations</td>
<td></td>
<td></td>
<td>Kalita-Forbes</td>
</tr>
<tr>
<td>15</td>
<td>27-Apr</td>
<td>Global Awareness - Group Presentations</td>
<td></td>
<td>Reflection</td>
<td>Kalita-Forbes</td>
</tr>
<tr>
<td>16</td>
<td>04-May</td>
<td>Final Reflection</td>
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Key Actions and Competencies

Outcomes in this class align with the College of Engineering learning outcomes that are outlined in the On-line Performance and Learning (OPAL) website located at https://opal.eng.iastate.edu/signon.asp?. To learn more about the competencies visit the OPAL website and work through the various exercises.

Dear E2020 Scholars,

The spring semester of ENGR210X is beginning and should prove to be as exciting and interesting as the fall semester. The Innovation & Entrepreneurship and Global Awareness pillars will complete our more indepth look into the four pillars of E2020. I am looking forward to the opportunity to share this learning experience with you. Good luck in your spring 2011 semester.

Best wishes,
Mark Laingen