Course Syllabus

Northwestern Michigan College

EET260 – Systems Engineering in Practice
Spring 2020

Class Schedule

Days	Times	Room Location
Monday	3:10 PM – 5:10 PM	PS-218
Wednesday	3:10 PM – 5:10 PM	PS-218

Instructor Information

Instructor: Keith E. Kelly
Office: Parsons-Stulen PS156/Makerspace
Phone: 231-995-1312
E-mail: kkelly@nmc.edu

Office Hours:

Monday – Thursday 9:15 – 10:15 AM. Others by appointment.

Course Description

This class introduces students to the practice of system design and development. Students apply specific methodologies for problem-based learning and project management. Technical content from prior courses is applied to address challenges and create solutions. Student teams create prototypes and communicate results with classroom activities supporting teamwork, project planning, requirements analysis, design, development, testing, demonstration, and reporting. See topical outline for details. (3 Credit Hours /4 Contact Hours)

Prerequisite Courses / Placement:

EET 102, EET 103, RAM 155

Teaching Methods

We'll use lecture, homework, in-class exercises, group discussion and presentations, and team projects to understand and apply systems engineering and agile project management concepts. A significant portion of the course grade is based on a semester long team project. This project requires you to participate as a team member and creating a cohesive team is critical to your success. Your performance will be evaluated by both what you create and how you work.

Required Course Material:

Textbook: The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses Paperback – 2011, Eric Ries, ISBN-13: 978-0670921607

Supplies: A laptop computer or tablet device is also strongly recommended.

Course Objectives / Learning Outcomes:

Area	Learning Outcome	Assessment Tool
Knowledge	• Identify aspects of highly functional teams. • Describe project management methodologies. • Identify system design phases.	Team retrospectives Stakeholder presentation
Application	• Apply specific methodologies for problem-based learning and project management • Use problem solving to address challenges and create solutions • Function effectively as a member of a technical team • Solve engineering technology problems.	Scrum planning and review activities Product/Process development
Integration	• Use communication skills in both technical and non- technical environments. (Communications) • Select appropriate technical literature.	Stakeholder presentations and product documentation Concept and pitch activities
Human Dimension	• Describe professional and ethical responsibilities. • Create prototypes in teams	Team retrospectives Product/process development
Caring – Civic Learning	• Demonstrate a commitment to quality and timeliness.	Daily scrum, Scrum review
Learning How to Learn	• engage in self-directed learning. • Experience continuous improvement through iteration.	Product/Process development

General Education Outcomes:

None

Grade Determination:

Final grades will be determined as follows: Total of all deliverables including tests, quizzes, worksheets, homework, lab scores, and tests divided by the total possible points x 100%

Grading Scale:

4.0 = 93% or above
3.5 = 85 – 92%
3.0 = 80 – 84%
2.5 = 75 – 79%
2.0 = 70 – 74%
1.5 = 65 – 69%
1.0 = 60 – 64%
0.0 = below 60%

Proposed Assignments / Grading Criteria:

Assignment	***Points***	***Percentage of Final Grade***
Sprint 0 – Product concept/pitch (Individual)	80	13%
Sprint 0 – Product concept/pitch (Team)	40	7%
Sprint 1 – Product/Process/Team (Individual)	80	13%
Sprint 1 – Documentation/Review (Team)	40	7%
Sprint 2 – Product/Process/Team (Individual)	80	13%
Sprint 2 – Documentation/Review (Team)	40	7%
Sprint 3 – Product/Process/Lessons (Individual)	80	13%
Sprint 3 – Final Report/Final Presentation (Team)	40	7%
Sprint 4 – Product/Process/Lessons (Individual)	80	13%
Sprint 4 – Final Report/Final Presentation (Team)	40	6%
TOTAL	600	100%

Course Policies/Procedures

Attendance/Participation

You are expected to attend each class. Students are expected to actively participate in class by asking questions, working on in-class exercises, giving presentations as individuals or as part of their team projects, and sharing personal experiences and opinions related to the topics discussed. Students who do not participate in class or miss more than 4 in-class hours without a pre-approved excuse will have their final grades reduced by one grade (i.e. 4.0 to 3.5). Be sure to contact me BEFORE you miss a class, if possible. Extended or initial absence can result in the instructor dropping you from the course. Excessive tardiness can result in a reduction of one grade (i.e. 4.0 to 3.5).

Let me know about last minute emergencies via email or phone as soon as you can.

There are several mandatory outside of class time events. If you cannot participate an alternative assignment will be provided.

Late Work

Late work is not accepted. See the course web site for descriptions of homework assignments. If you have a special circumstance, let me know in advance.

Makeup Tests and Presentation Date Changes

Requests for makeup tests or presentation date changes must be made in advance with the instructor or the student will get no credit for that item.

Cell Phones / Smart Phones

Phones must be places in the "Quiet / Vibrate" mode. No texting or phone calls during class. All emergency calls should be taken in the hallway without disturbing other students.

Honesty

I'm very aware of how easy it is to share your work when it is in electronic form. Be sure you are aware of the Student Code of Conduct found in the Student available here. If you cheat, you fail.

How to Get the Most Out of This Learning Experience

Below are a few simple steps that will make this learning experience even better:

- Take charge of your own learning. Raise questions, prove, explore, go after what you need
- Be open. Use your imagination, consider new possibilities, and create something new
- Give as well as receive. Give liberally to co-learners and be prepared to receive a great deal from them
- Have fun!!! Plan to thoroughly enjoy this opportunity to learn and to grow in your professional competence and satisfaction
- Take advantage of all the great equipment we have in the lab and your chance to experiment.

Tentative Course Itinerary (subject to change):

The specific day-to-day activities, assignments and topics are located on the course Moodle page.

Week	Date	Phase	Activity
1.1	1/13	SP0.1	Introduction to course Introduction to Scrum
1.2	1/15	SP0.2	Problem investigation and research
2.1	1/20	SP0.3	Project selection
2.2	1/22	SP0.4	Project refinement, Pitch introduction
3.1*	1/25	SP0.5	Pitch development
3.2	1/29	SP0.6	Pitch development/Review
4.1	2/3	SP1.1	**Pitch to stakeholders,** Sprint 1 Planning
4.2	2/5	SP1.2	Sprint 1 Execution
5.1	2/10	SP1.3	Sprint 1 Execution
5.2	2/12	SP1.4	Sprint 1 Execution

6.1	2/17	SP1.5	Sprint 1 Execution
6.2	2/19	SP1.6	Sprint 1 Execution
7.1	2/24	SP1.7	**Sprint 1 Review Activity, Teamwork Reflection 1**
7.2	2/26	SP2.1	Sprint 2 Planning
8.1	3/2	SP2.2	Sprint 2 Execution
8.2	3/4	SP2.3	Sprint 2 Execution
9.1*	3/9	SP2.4	Sprint 2 Execution
9.2*	3/11	SP2.5	Sprint 2 Execution
10.1	3/16	SP2.6	**Sprint 2 Stakeholder Presentation, Teamwork Reflection 2**
10.2	3/18	SP3.1	Sprint 3 Planning
11.1	3/23	SP3.2	Sprint 3 Execution
11.2	3/25	SP3.3	Sprint 3 Execution
12.1	4/6	SP3.4	Sprint 3 Execution
12.2	4/8	SP3.5	Sprint 3 Execution
13.1	4/13	SP3.6	**Sprint 3 Review Activity, Teamwork Reflection 3**
13.2	4/15	SP4.1	Sprint 4 Execution
14.1	4/20	SP4.2	Sprint 4 Execution
14.2	4/22	SP4.3	Sprint 4 Execution
15.1	4/27	SP4.4	Final Report and Presentation Prep
15.2	4/29	SP4.5	**Final Presentation, Lessons Learned/Reflection Due**

Syllabus Changes

The instructor reserves the right to modify the syllabus and will inform the class of any changes.