

Cover Sheet: Request 11051

EGS 4XXX

Info

Process	Course New Ugrad/Pro
Status	Pending
Submitter	Mcelroy, William J mcelrowj@eng.ufl.edu
Created	8/5/2016 11:49:42 AM
Updated	10/17/2016 10:55:04 AM
Description of request	This course focuses on student acquisition of divergent thinking skills to support the engineering design process. It emphasizes the importance of student practices such as observing, questioning, learning and experimenting, and stresses cultivating an openness to new experiences, in order to generate ideas and devise solutions to complex design problems.

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Engineering - General 011940001	van Oostrom, Hans		8/22/2016
Added EIN 4905_ESI 6900_DivergentThinking_8 6 2016_EA.pdf					8/5/2016
College	Approved	ENG - College of Engineering	Caple, Elizabeth		10/17/2016
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			10/17/2016
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

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Submitter: Mcelroy, William J mcelrowj@eng.ufl.edu

Created: 8/5/2016 12:08:51 PM

Form version: 3

Responses

Recommended PrefixEGS

Course Level 4

Number XXX

Lab Code None

Course TitleDivergent Thinking

Transcript TitleDivergent Thinking

Effective Term Spring

Effective Year2017

Rotating Topic?No

Amount of Credit3

Repeatable Credit?No

S/U Only?No

Contact Type Regularly Scheduled

Degree TypeBaccalaureate

Weekly Contact Hours 3

Category of Instruction Joint (Ugrad/Grad)

Delivery Method(s)On-Campus

Course Description This course focuses on student acquisition of divergent thinking skills to support the engineering design process. It emphasizes the importance of student practices such as observing, questioning, learning and experimenting, and stresses cultivating an openness to new experiences, in order to generate ideas and devise solutions to complex design problems.

Prerequisites Junior/Senior standing or instructor approval

Co-requisites none

Rationale and Placement in Curriculum This is alternative course is offered to improve the skills and mindset of undergraduate engineers. The course has been previously taught as a section under EIN 4905.

Course Objectives This course develops student's divergent thinking abilities to develop creative solutions to challenging engineering problems. By the end of this course, the students are expected to: (1) interpret different forms of intelligence; (2) identify their own thinking and learning processes; (3) demonstrate a set of skills that allows them to discuss topics, generate ideas, and devise solutions from multiple perspectives; and (4) exercise divergent thinking skills with intent and work in interdisciplinary teams to conceptualize and develop solutions to design problems.

Course Textbook(s) and/or Other Assigned Readingnone

Weekly Schedule of Topics Wk Topic

Activity

- 1 Introduction How do we do this?
- 2 Observing What's in your bag? Be a....
- 3 Observing Whose life? Be a...
- 4 Observing Who would you observe?Be a.
- 5 Questioning

- 10+ Questions Why?
6 Questioning

- Whose point of view?
Six Thinking Hats
7 Questioning Question Formulation Technique
8 Learning Fast sketching; Blind contours
9 Learning Ask any question
10 Learning Smell this; feel this
11 Experimenting

- Dance with me
12 Experimenting

- Play with me
13 Experimenting Choreograph a piece
14 Analogical Thinking

- Which is the tallest?
15 Analogical Thinking
16 Final Challenge

Grading Scheme Expand Activities

10%

Reflections portfolio

15%

Assignments

32%

Mini Challenges

25%

Final Design Challenge

18%

Research Challenge

-

Additional Links and Policies18. Grading Scale: Final grade averages will be rounded off to the nearest integer, and assigned on the standard scale as follows:

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

For undergraduate students, a grade of C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit:
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Graduate students need an overall GPA of 3.00 truncated and a 3.00 truncated GPA in their major (and in the minor, if a minor is declared) at graduation." For more information on grades and grading policies, please visit:
<http://gradcatalog.ufl.edu/content.php?catoid=4&navoid=907#grades>

19. Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

20. Honesty Policy – UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Note that failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures.
See <http://www.dso.ufl.edu/sccr/procedures/honorcode.php>

21. Accommodation for Students with Disabilities – Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

22. UF Counseling Services –Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, <http://www.counseling.ufl.edu/cwc/Default.aspx>, counseling services and mental health services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.
- University Police Department 392-1111

23. Software Use – All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

24.

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

Instructor(s) Dr. Elif Akcali, Associate Professor, Department of Industrial and Systems Engineering

Syllabus
Divergent Thinking
(currently EIN 4905 and ESI 6900)

- 1. Catalog Description:** This course focuses on student acquisition of divergent thinking skills to support the engineering design process. It emphasizes the importance of student practices such as observing, questioning, learning and experimenting, and stresses cultivating an openness to new experiences, in order to generate ideas and devise solutions to complex design problems.
- 2. Credit Hours: 3**
Graduate students will not receive graduate credit for taking the undergraduate version of the class. They are allowed to enroll in the undergraduate section, but the credits will then not count toward the degree.
- 3. Pre-requisites and Co-requisites:** For EGS 4XXX, Junior/Senior standing or instructor approval is required. For EGS 6XXX, there are no pre- or co-requisites.
- 4. Course Objectives.** This course develops student's divergent thinking abilities to develop creative solutions to challenging engineering problems. By the end of this course, the students are expected to: (1) interpret different forms of intelligence; (2) identify their own thinking and learning processes; (3) demonstrate a set of skills that allows them to discuss topics, generate ideas, and devise solutions from multiple perspectives; and (4) exercise divergent thinking skills with intent and work in interdisciplinary teams to conceptualize and develop solutions to design problems.
- 5. Contribution of course to meeting the professional component:** N/A as course is not specific to a major under ABET purview.
- 6. Relationship of course to program outcomes:** N/A as course is not specific to a major under ABET purview.
- 7. Instructor:** Dr. Elif Akcali, Associate Professor, Department in Industrial and Systems Engineering
 - a. Office location: Weil Hall 303
 - b. Telephone: 352 294 7726
 - c. E-mail address: akcali@ufl.edu
 - d. Class Web site: Canvas
 - e. Office hours: W 8:30am-10:30am (or by appointment)
- 8. Teaching Assistant: N/A**
 - a. Office location: N/A
 - b. Telephone: N/A
 - c. E-mail address: N/A
 - d. Office hours: N/A
- 9. Meeting Times:** W 7-9

10. Class/laboratory schedule: The course will be delivered weekly in the 3-hour segments typically through class discussions/exercises/workshops regarding key topics facilitated by the instructor, and supported by selected guest presenters, class lectures and presentations. Students will have access to an updated course schedule that outlines the expected coverage of topics each week, as well as the reading requirements and expected classroom discussions and activities for that week.

11. Meeting Location: NEB 101

12. Material and Supply Fees: \$3

13. Textbooks and Software Required: N/A (course notes are developed by the instructor)

- a. Title: N/A
- b. Author: N/A
- c. Publication date and edition: N/A
- d. ISBN number: N/A

14. Recommended Reading: N/A

15. Course Outline: This is a tentative outline and the instructor reserves the right to make changes as she sees necessary.

Week	Topic	Activity	Due
1	Introduction	How do we do this?	Mini Challenge 1 Reflection 1
2	Observing	What's in your bag? Be a...	A1a: Recording A1b: Observing Reflection 2
3	Observing	Whose life? Be a...	E1: Explore Reflection 3
4	Observing	Who would you observe? Be a....	E2: Theater A2: Interpreting Reflection 4
5	Questioning	10+ Questions Why?	Mini Challenge 2 Reflection 5
6	Questioning	Whose point of view? Six Thinking Hats	A3: Asking Reflection 6
7	Questioning	Question Formulation Technique	E3: Dance Reflection 7
8	Learning	Fast sketching Blind contours	Mini Challenge 3 A4: Questioning Reflection 8
9	Learning	Ask any question	A5: Empathizing Reflection 9

10	Learning	Smell this Feel this	E4: Learn Something Reflection 10
11	Experimenting	Dance with me	A6: Abstracting Reflection 11 Mini Challenge 4
12	Experimenting	Play with me	A7: Recognizing Reflection 12
13	Experimenting	Choreograph a piece	E5: Dance Reflection 13
14	Analogical Thinking	Which is the tallest?	A8: Bio-mimicking Reflection 14
15	Analogical Thinking		Mini Challenge 5 Reflection 15
16	Final Challenge 28B: 10:00am-12:00pm		

16. Attendance and Expectations:

Classroom Guidelines. Let the following principles guide you throughout the course:

1. Give yourself permission to push your own boundaries.
2. Bring your “whole” self to everything you do for this class.
3. Say “Yes, and...” instead of “Yes, but...”
4. Be adventurous and playful.

Required Supplies. A sketchbook (No smaller than is 9”X11” in size with blank pages. No grid or ruled paper.) as well as two 3” x 3” post-it notepads are required (for brainstorming, diagramming, idea generation and sketching).

Attendance. This class is highly experiential and requires each student to come prepared to participate actively. Attendance will be taken. Given the nature of the course, it is virtually impossible to make up for the activities and challenges completed during the missed sessions.

- There will be a 5-minute grace period for late arrivals. If you arrive more than 15 minutes late, you will be counted as absent for the day.
- Leaving early is equivalent to a tardy.
- Two tardies equal one unexcused absence.
- Each unexcused absence will result in a 2-point deduction in your final grade.
- Each unexcused tardy will result in a 1-point deduction in your final grade.
- Excused absences (those that can be documented) will be made up by an approved event attendance or a written assignment.
- Student are still responsible for material covered during their absence. In-class work missed for absences covered under UF attendance policies

(<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) can be made up by alternative activities/assignments approved by the instructor.

Safe Education Environment Guidelines. *Divergent Thinking* is a combined lecture, discussion and experiential course. This means that, in part, all students are responsible for participating in their own and one another's learning through open dialogue. Because each student's contributions of questions and answers are essential, any behavior or language that makes others feel unsafe or unwelcome in this classroom can and will not be tolerated. Examples range from simply interrupting or ignoring others while they are talking to overt harassment or intimidation with reference to race, gender identity, sexual identity, religion, ethnicity, nationality, or ability.

Expand Activities. You will be asked to engage in several activities outside of class. In particular, you will be asked to

1. Attend several cultural events sponsored by UF Performing Arts Center and the School of Theater and Dance, such as dance performances and theater plays. Remember to keep your ticket and submit an essay to answer the questions specific to the performance.
2. Pair up with another person in the classroom, and share with him/her something that you love doing that they have never tried. You will write a short photo essay reflecting on your experience.
3. Go to a place (e.g., Harn Museum of Art) to explore patterns that you observe. You will write an essay capturing your observations and highlighting the patterns that emerge.

Reflections Portfolio. Each week, you will submit a brief on Canvas on what you have learned in the course, how it helped you think differently, and how you think will help you in the future.

Assignments. Up to 8 Assignments will be given throughout the semester. You are expected to submit your work by the deadline. Late submissions may be accepted by the instructor for partial credit, subject to the policies of the undergraduate (<https://catalog.ufl.edu/ugrad/current>) or graduate (<http://gradschool.ufl.edu/students/catalog.html>) catalogues, as appropriate. Details will be posted on Canvas.

Mini Challenges. A total of 5 Mini Challenges will be give throughout the semester. You will be working in teams or individually under a time constraint (45- or 60-min) during the class period. The class will end with a review of outcomes and reflections on the process. Details will be announced in class.

Final Design Challenge. There will be a design challenge at the end of the semester instead of the final exam for the course.

Research Challenge. If you are a graduate student, you will have to do some additional work. You have two choices:

- Conduct some additional research on a contemporary engineering topics, use divergent thinking strategies/exercises to generate ideas and write a paper of about 3-5 pages.
- Frame a challenge based on your research and work on it as well per instructor’s approval, if you are actively conducting research towards an MS or a PhD degree.

17. Grading – methods of evaluation:

This is a dual enrollment class. Your final grade for the class will be calculated according to your classification as follows:

	Section: 16HH (UG)	Section: 028G (G)
Expand Activities	10%	10%
Reflections portfolio	15%	15%
Assignments	32%	22%
Mini Challenges	25%	25%
Final Design Challenge	18%	18%
Research Challenge	-	10%

18. Grading Scale: Final grade averages will be rounded off to the nearest integer, and assigned on the standard scale as follows:

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

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