

**AGENDA ITEM NO:**

UNIVERSITY COUNCIL  
**ACADEMIC PROGRAMS COMMITTEE**  
**REPORT FOR INFORMATION**

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**PRESENTED BY:** Terry Wotherspoon; Chair, Academic Program  
Committee

**DATE OF MEETING:** January 18, 2018

**SUBJECT:** **Engineering Entrepreneurship Option– program  
change with tuition implications**

**COUNCIL ACTION:** **For Information Only**

**SUMMARY:**

The Academic Programs Committee approved the program change for the Engineering Entrepreneurship Option at its December 13, 2017 meeting. APC is required to approve changes to the overall number of credit units for an approved program when this change affects tuition.

The College of Engineering determined that a 0 credit unit capstone class for the Engineering Entrepreneurship Option should be replaced by one with 3 credit units to reflect more accurately both the workload associated with the course and the expectations of students. This would increase the number of required credit units in the option by three c.u., effective May, 2018. Since tuition is assessed on a per-credit unit basis for this course, the tuition for students in the Engineering Entrepreneurship Option is affected.

**ATTACHMENTS:**

- Proposal for curricular change – Engineering Entrepreneurship Option



## Memorandum

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To: Dr. Terry Wotherspoon  
Chair, Academic Programs Committee of Council

Cc: Dr. Sean Maw  
Associate Professor and Jerry G. Huff Chair in Innovative Teaching

From: Dr. Bruce Sparling  
Associate Dean Academic

Date: December 8, 2017

Subject: **Curricular Changes - Engineering Entrepreneurship Option**

Dr. Wotherspoon:

I am writing to inform the Academic Programs Committee of Council of recently approved curricular changes in the College of Engineering. I am additionally writing to express my support for these changes and to request that they be further reviewed and considered for final approval at the university-level.

The Undergraduate Academic Programs Committee in the College of Engineering convened on December 8, 2017. During this meeting, a motion was carried that approved amending the program requirements of the Engineering Entrepreneurship Option. The approved curricular change involved removing a "GE 430.0" and adding a "GE 431.3" requirement. In turn, this resulted in increasing the number of required credit units in the option by three units, effective May 2018.

All undergraduate students who complete the Engineering Entrepreneurship Option had been historically required to complete GE 430.0: Engineering Entrepreneurship Capstone. The intent behind the proposed curricular change is to more accurately account for the course content and associated workload. The revised three credit unit course is more reflective of the actual workload associated with the course.

A copy of the revised program galley for the Engineering Entrepreneurship Option is attached. Please consider this memorandum and proposal so that it can be added to the 2018-19 Course and Program Catalogue publication. Please do not hesitate to contact me directly should you have any further comments, questions, or concerns.

Sincerely,

Bruce Sparling, Ph.D., P. Eng., FCSCE  
Associate Dean Academic  
College of Engineering  
Email: [enr.academicdean@usask.ca](mailto:enr.academicdean@usask.ca)  
Phone: 306-966-4190

*Enclosed: Program Galley – Engineering Entrepreneurship Option*



**UNIVERSITY OF  
SASKATCHEWAN**

## **New Course Proposal Form**

**This form can be used by any college which does not already have a course proposal form.**

1. Approval by department head or dean:
2. Information required for the Catalogue
  - 2.1 Label & Number of course: GE 431.3
  - 2.2 Title of course: Engineering Entrepreneurship Capstone
  - 2.3 Total Hours: 36 Lecture Seminar Lab Tutorial Other
  - 2.4 Weekly Hours: 3 Lecture Seminar Lab Tutorial Other
  - 2.5 Term in which it will be offered:  T1 T2 T1 or T2 T1 and T2
  - 2.6 Prerequisite: COMM 349 and 9 credit units from COMM 200-399
  - 2.7 Calendar description: This course integrates entrepreneurship with engineering design, in equal measure. Students will be tasked with identifying an entrepreneurial opportunity in the technology environment, pursuing it in terms of defining the opportunity (needs analyses, problem definition, market analysis), and developing a value-added solution to the problem.
  - 2.8 Any additional notes n/a
3. Rationale for introducing this course. GE 430.0 already exists and has been running for many years. The rationale for changing the course to GE 431.3 is to give it some gravitas. As a zero-credit course, serious homework, assignments, and deliverables cannot be expected. As such, the current course is a lost opportunity to truly have a “capstone” experience for the Engineering Entrepreneurship Option. This change would allow the course to become substantial. It would also prepare the course for its hoped integration into the Technological Innovation Option in the coming year.
4. Learning Objectives for this course. Students would learn how to identify a good engineering design problem and make it their own. They would learn how to characterize and define it thoroughly, and to develop several alternative solutions to the problem. They would learn how to select the best problem and the best conceptual solution to that problem, given their unique, personal, entrepreneurial context.
5. Impact of this course.
 

Are the programs of other departments or Colleges affected by this course?	No.
If so, were these departments consulted? (Include correspondence)	
Were any other departments asked to review or comment on the proposal?	No.
6. Other courses or program affected (please list course titles as well as numbers).
 

Course(s) to be deleted?	None, at this time. GE 430.0 will stay on the books, in case we need to return to it at some point.
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Course(s) for which this course will be a prerequisite? None. This is a capstone course.  
Is this course to be required by your majors, or by majors in another program? No. It will only be required of those completing the current Engineering Entrepreneurship Option. However, within the next year, a new option (the Technological Innovation Option) will be proposed, and GE 431.3 will be part of it if the TIO is approved

7. Course outline.  
(Weekly outline of lectures or include a draft of the course information sheet.)  
See attached.
8. Enrolment.  
Expected enrollment: Averaging about 5 per year, recently. Hope to see it grow slightly with time (and with the eventual change to the Technological Innovation Option).  
From which colleges? Engineering, although it could accommodate Business students easily.  
This may be something we'll want to pursue in the future, as a multidisciplinary facet of this course.
9. Student evaluation.  
Give approximate weighting assigned to each indicator (assignments, laboratory work, mid-term test, final examination, essays or projects, etc.)  
This will become a (design) project course. As such, a midterm and exam will not be necessary or desirable. However, there will be a quiz on design theory knowledge (10%). Every 3 weeks there will be a hand-in assignment (total of 55%). The assignments will build up to a Project Proposal document at the end of the term (30%). There will also be an end-of-term short reflection essay on the entire EEO experience (5%).
10. Required text: None.  
Include a bibliography for the course.
11. Resources.  
Proposed instructor: The (Acting) La Borde Chair in Engineering Entrepreneurship.  
How does the department plan to handle the additional teaching or administrative workload? It is not an additional load, as GE 430.0 is taught now. The only difference will be the marking load.  
Are sufficient library or other research resources available for this course? Yes.  
Are any additional resources required (library, audio-visual, technology, etc.)? No.
12. Date of Implementation: Fall 2018  
To be offered: annually                      biennially                      other



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## SESD: Course Creation Information Form

(version: November, 2015)

To be completed by the College following approval of the course.

Required information is grouped in appropriate blocks to correspond with the data fields of the student information system, SiRIUS. Course details will be reflected through the student self-service features of SiRIUS and are key to system and registration functionality. Information provided on this form will be used in collaboration with required information provided to the Academic Programs Committee of Council through Course Challenge. **For additional information about this form or SiRIUS, the Student Information System, contact Academic Services & Financial Assistance, SESD (phone Seanine at 1874).**

### Main Block

Subject:

**General Engineering**

Course Number:

**431.3**

Term from which this course will become effective:

Month:

**May**

Year:

**2018**

### Information Block

What is the academic college or school to which this course belongs?

**Engineering**

What is the department or school that has jurisdiction over this course?

### School of Professional Development

If there is a prerequisite waiver, who is responsible for signing it?

**I – Instructor Approval**

What is the academic credit unit weight of this course?

**3 credit units**

Is this course supposed to attract tuition charges? If so, how much? (use [tuition category](#))

**Yes, tuition category 7.**

Does this course require non-standard fees, such as materials or excursion fees? If so, please include an approved "Application for New Fee or Fee Change Form" (<http://www.usask.ca/sesd/info-for-instructors/program-course-preparation.php#course-fees>)

**No**

Do you allow this course to be repeated for credit?

**No**

How should this course be graded?

**N – Numeric/Percentage**

*(Grade options for instructor: grade of 0% to 100%, IP in Progre*

## Schedule Types

Schedule Types that can be used for sections that fall under this course:

(Indicate – highlight - all possible choices)

Code	Description	Code	Description
CL	Clinical	PRB	Problem Session
COO	Coop Class	RDG	Reading Class
FLD	Field Trip	RES	Research
ICR	Internet Chat Relay	ROS	Roster (Dent Only)
IHP	Internet Help	SEM	Seminar
IN1	Internship - Education	SSI	Supervised Self Instruction
IN2	Internship - CMPT & EPIP	STU	Studio
IN3	Internship - General	SUP	Teacher Supervision
IND	Independent Studies	TEL	Televised Class
LAB	Laboratory	TUT	Tutorial
LC	Lecture/Clinical (Dent Only)	WEB	Web Based Class
LEC	Lecture	XCH	Exchange Program
LL	Lecture/Laboratory (Dent Only)	XGN	Ghost Schedule Type Not Applicable
MM	Multimode	XHS	High School Class
PCL	Pre-Clinical (Dent Only)	XNA	Schedule Type Not Applicable
PRA	Practicum	XNC	No Academic Credit

## Detailed Information

What attributes would be assigned to this course (would apply to all sections under the course)? Please highlight the attributes you want attached to the course

**No attributes need to be added to the course.**

## Course Syllabus

Long Title

**Engineering Entrepreneurship Capstone**

Course Long Title (maximum 100 characters)

**Engineering Entrepreneurship Capstone**

Course Short Title (maximum 30 characters)

**Engineer Entrepreneur Capstone**

## Course Description

Course Description (please limit to 150 words or less)

**This course integrates entrepreneurship with engineering design, in equal measure. Students will be tasked with identifying an entrepreneurial opportunity in the technology environment, pursuing it in terms of defining the opportunity (needs analyses, problem definition, market analysis), and developing a value-added solution to the problem.**

## Registration Information

Formerly:

**GE 430.0**

Permission

required:

Restriction(s): course only open to students in a specific college, program/degree, major, year in program

**Only open to students registered in the Engineering Entrepreneurship Option (EEO)**

Prerequisite(s): course(s) that must be completed prior to the start of this course

**COMM 349 and 9 credit units from COMM 200 - 399**

Prerequisite(s) or Corequisite(s): course(s) that can be completed prior to or taken at the same time as this course

**COMM 357 and COMM 447**

Corequisite(s): course(s) that must be taken at the same time as this course

**None**

Exam Exempt

**Yes**

## Equivalent Courses

Please list the course(s) that you consider to be equivalent to this course. To be considered equivalent, the course must meet the following criteria: **GE 430.0**

Note:

- 1) If a student has received credit for the equivalent course, s/he should not be eligible to register for the course for which this form is being completed.
- 2) The equivalent course must be able to be used in place of the course for which this form is being completed when the system does prerequisite checking and degree audit checking.



Colleges must specify how DegreeWorks should handle equivalent courses with unequal credit units through the University Course Challenge process. If this is not specified, DegreeWorks will automatically enforce the following:

**The 0-credit unit course (GE 430.0) is considered equivalent to the 3-credit unit course (GE 431.3). It will fulfil the 3-credit unit requirement and the student will not have to complete another 3 credit units towards the overall number of required credit units in the Engineering Entrepreneurship Option.**

Mutually-Exclusive Courses  
**GE 430.0 and GE 431.3.**

**Information For Display In The Catalogue Only**

Catalogue Credit Units (e.g. 110.6):  
**3**

Catalogue Term Hour Listing

**1(3L)**

Note

**Students with credit for GE 430.0 will not receive credit for this course.**

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## GE 431.3 Engineering Entrepreneurship Capstone

Ron and Jane Graham School of Professional Development  
Fall 2018



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**Instructor:** Dr. Sean Maw, Associate Professor, Huff Chair in Innovative Teaching  
ENG 2A20.1  
Phone: 966-3200  
Email: [sean.maw@usask.ca](mailto:sean.maw@usask.ca)

**Lectures:** Mondays - Sept 11, 18, 25, Oct 2, 16, 23, 30, Nov 6, 20, 27, and Dec 4  
17:00-19:50 (5:00-7:50 pm) ENG 2C88

**Website:** <http://bblearn.usask.ca>

**Textbook:** None required; online readings will be provided during classes

**Assessment:** This is a (design) project course. As such, a midterm and exam will not be part of the assessment. However, there will be a quiz on design theory knowledge (10%), every 3 weeks there will be a hand-in assignment (total of 55%), and the assignments will build up to a Project Proposal document at the end of the term (30%). There will also be an end-of-term short reflection essay on the entire EEO experience (5%).

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**Prerequisites:**

- COMM 349 and 9 credit units from COMM 200-399

**Co-requisites:**

- COMM 357 and COMM 447

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**Calendar Description:**

This course integrates entrepreneurship with engineering design, in equal measure. Students will be tasked with identifying an entrepreneurial opportunity in the technology environment, pursuing it in terms of defining the opportunity (needs analyses, problem definition, market analysis), and developing a value-added solution to the problem.

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**Detailed Course Outline:**

Topic	Approximate Lecture Hours
Course Introduction <ul style="list-style-type: none"><li>• Getting familiar with classmates/teacher, and course objectives</li></ul>	3
Opportunity and Problem Identification/Characterization/Selection <ul style="list-style-type: none"><li>• Finding, identifying, selecting and characterizing your own design problem</li></ul>	15
Conceptual Solution Generation and Selection <ul style="list-style-type: none"><li>• Developing and selecting the best conceptual solution to your design problem</li></ul>	12
Course Wrap Up <ul style="list-style-type: none"><li>• Reflecting on what has been learned from the EEO experiences</li></ul>	3

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**Assignments:**

There will be 5 (five) hand-in assignments over the course of the term. The first will cover Problem Selection (15%). The second will cover Problem Definition (25%). The third will cover Ideation (15%). At the end of the term, a compilation of these assignments with the addition of an identified conceptual solution, will constitute a Project Proposal (30%). At the same time, a brief Reflection Essay (5%) will be handed in.

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**Tutorials/Labs:**

There are no tutorials or labs in this course.

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**Exams and Quizzes:**

There will be no exams in this course, but there will be a quiz on design theory knowledge at the end of term. It will be worth 10% of the term mark.

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**Academic Dishonesty and Academic Appeals:**

Academic dishonesty will not be tolerated in this class. All presented work must be either original or cited appropriately. For more information on what constitutes academic misconduct and on appeals of final grades or other academic matters, please consult the University Council documents on academic misconduct and on academic appeals ([www.usask.ca/honesty](http://www.usask.ca/honesty)).

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**Important Dates:**

Sept. 11	Introductions/Course Intro
Sept. 18	Problem Generation
Sept. 25	Problem Selection Criteria
Oct. 2	Problem Selection
Oct. 9	Thanksgiving - no class
Oct. 16	Problem Statements/Acceptance
Oct. 23	Scope/Design Criteria/Constraints
Oct. 30	Ideation I
Nov. 6	Ideation II
Nov. 13	Reading Week - no class
Nov. 20	Conceptual Solution Selection I
Nov. 27	Conceptual Solution Selection II
Dec. 4	Course Wrap-up/Dinner

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**Learning Outcomes:**

1. An appreciation of the work and challenges involved in identifying a “good” design problem
  2. Development of skills in problem definition, solution generation, and evaluation of solutions
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**Attribute Mapping:**

*Level of Performance<sup>‡</sup>*

Learning Outcome	Attribute <sup>†</sup>											
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
<b>1</b>	1	4	4	4			4	4	4	4	4	4
<b>2</b>	1	4	4	4	4		4	4	4	4	4	4

<sup>†</sup>Attributes:

- A1** A knowledge base for engineering
- A2** Problem analysis
- A3** Investigation
- A4** Design
- A5** Use of engineering tools
- A6** Individual and team work
- A7** Communication skills
- A8** Professionalism
- A9** Impact of engineering on society and the environment
- A10** Ethics and equity
- A11** Economics and project management
- A12** Life-long learning

<sup>‡</sup>Levels of Performance:

- 1 - **Knowledge** of the skills/concepts/tools but not needing to directly apply them to solve problems.
- 2 - **Using** the skills/concepts/tools to solve directed problems. (*“Directed” indicates that students are told what tools to use.*)
- 3 - **Selecting** the skills/concepts/tools to solve non-directed, non-open-ended problems. (*Students have a number of S/C/T to choose from and need to decide which to employ. Problems will have a definite solution.*)
- 4 - **Applying** the appropriate skills/concepts/tools for open-ended problems. (*Students have a number of S/C/T to choose from and need to decide which to employ. Problems will have multiple solution paths leading to possibly more than one acceptable solution.*)

# Engineering Entrepreneurship Option

The Engineering Entrepreneurship Option (EEO) consists of eight courses as an optional addition to any of the eight Bachelor of Science in Engineering (B.E.) degrees. Six, and up to seven, courses are delivered through the Edwards School of Business. The program capstone course ([GE 431.3](#), Engineering Entrepreneurship Capstone) is taught within the College of Engineering.

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It is imperative to note that Engineering students must have completed a course which covers elementary probability and statistics (such as GE 210, EE 216, or ME 251) before they will be permitted to register in COMM 205 (for which COMM 104 is a prerequisite). Additionally, please note that [GE 430.0](#) is a seminar course which requires two corequisite courses ([COMM 357.3](#) and [COMM 477.3](#)) to be completed in the same term

Undergraduate students typically complete one additional course per term in their third and fourth year of studies, as well as stay for one additional term after they complete their Bachelor of Science in Engineering degree program requirements, to complete the Engineering Entrepreneurship Option. For exceptions to this schedule, please consult an Academic Advisor within the Engineering Student Centre. Alternatively, please consult the Engineering Entrepreneurship Option Coordinator within the School of Professional Development.

To register in the Engineering Entrepreneurship Option, undergraduate students are encouraged to contact the Engineering Student Centre via telephone (306-966-5274) or [email](#).

## Program Requirements

### [Suggested Terms for Required Courses](#)

#### [Year 3](#)

##### [Term 1](#)

- [COMM 201.3](#)

##### [Term 2](#)

- [COMM 204.3](#)

#### [Year 4](#)

##### [Term 1](#)

- [COMM 349.3](#)

Term 2

- [COMM 304.3](#)

Year 5

Term 1

- ~~GE 431.3~~
- [COMM 357.3](#)
- [COMM 447.3](#)

EEO Elective

Select one additional course:

- [COMM 205.3](#)
- [COMM 210.3](#)
- [COMM 493.3](#)
- any 400-level RCM course

**Commented [MC1]:** UAPC Approval: 2017-12-08  
APC Approval: 2017-12-13

**Deleted:** <#>[GE 430.0](#)

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