Syllabus

Engineering Strategies and Practice (ESP) is a foundational design course sequence that uses the engineering design process as a context for developing skills essential to the practice of engineering:

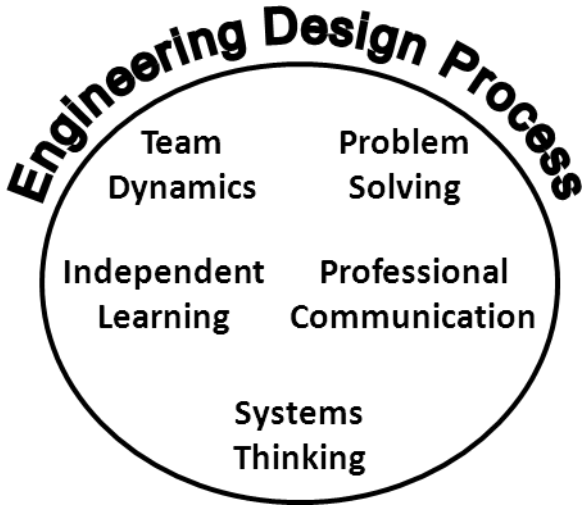

Figure 1: ESP Skills

This two-course sequence – ESP I in the fall term and ESP II in the winter term - will challenge you to design engineering solutions for your client's everyday problem. You will learn to problem solve with creativity, methodology and credibility. In conducting background research for your project you will practice independent learning skills. You will be required to take into account factors outside of the technical such as environmental, societal, ethical, and human factors and in doing so you will develop a systems thinking approach in your work. In reporting your solution you will make use of effective written, oral, and graphical professional communication. Finally you will achieve all of this while working efficiently in a team. These abilities will make you a better engineer.

ESP I

ESP I introduces the design process through a set of design projects. In your assigned team will select one of three projects to design an engineering solution for a fictitious client. This term you will not have direct contact with your client. The end deliverable for the first half of the course will be a conceptual design. You will grapple with the challenges of an engineering design problem while working efficiently in a team. Writing and reading, as engineering activities, are introduced. You will learn how to identify and take into account frontline design factors such as economics, environment, society, and human factors.

In the second half of the course, you will participate in a seminar. In small groups you will discuss a topic unique to your seminar that in addition to engineering content requires broader

considerations when making a professional recommendation. You will be assigned readings on the topic and required to express your opinion through an oral presentation.

ESP II

Now that you have experience with the engineering design process you will be assigned your own unique design project, completed with a real client. You will learn the basics of project management, how to approach a complex problem and break it down into solvable parts, and how to acquire and use information in the design process. Working in a team with a real client, you will go through a complete design process to develop an initial workable solution to meet a client's need. The end result will be a written final design specification, an oral presentation, and for teams that excel a prototype, proof-of-concept model, or simulation.

Lectures

Tuesday 9:10 – 10:00 am, Convocation Hall

Thursday 9:10 – 10:00 am, Convocation Hall

Friday 9:10 – 10:00 am, Convocation Hall

Attendance at lectures is mandatory. The first lecture is on Thursday, September 5, 2013 – it is a two-hour plenary lecture, 9:10am–11:00am in Convocation Hall. Any classes scheduled for Thursday, September 5, 2013 from 10:10 am to 11:00am are cancelled for that one day. Regular one-hour lectures start on Friday, September 6, 2013, 9:10am–10:00am in Convocation Hall. Teaching team members will be available for 10 minutes before and after lecture to answer questions.

Tutorials: Weeks 3 to 10

Attendance at tutorials is mandatory. Check ROSI for the day, time and location of your tutorial. There is no tutorial in Week 1 (September 2-6) or Week 2 (September 9-13), however there is a tutorial agenda that lists things you are expected to have completed before your Week 3 tutorial. Tutorials start in Week 3 (September 16-20). On the Blackboard course portal, check the course schedule for details about tutorial activities and the tutorial agendas for specific expected deliverable for each tutorial.

Seminars: Weeks 11 to 13

Attendance at seminars is mandatory. Seminars will be held during regular tutorial times, but in a different room and with different students than your tutorials. Information about your assigned seminar will be emailed to you and posted on Blackboard closer to the start of seminars. In the seminars you will be meeting with a small group of students and a seminar leader to discuss an engineering-related topic that requires broader considerations, such as economics, environmental, societal, and human factors. A set of assigned readings will form the

basis of the discussion. You are expected to have completed those readings prior to attending your seminar.

Textbooks

Two books are required for ESP I. You are responsible for readings assigned from these two books and any additional readings posted on Blackboard. Content from these readings will be tested on the midterm and final exam even if the material was not covered directly in lecture. It is important to keep up with the readings. Consult with the course schedule for the assigned reading list.

- ***Designing Engineers: An Introductory Textbook (S. McCahan, P. Anderson, M. Kortschot, P. Weiss, and K.Woodhouse)***
  This textbook is a pre-publication version of a design textbook being written by members of the ESP teaching team and other experts in the field. This textbook will not be available in hard copy and instead an e-book version will be available for purchase for a nominal fee. Purchasing the textbook online requires a credit card. If you do not have access to a credit card then you can purchase an a redemption code from the U of T Bookstore. The e-book version is downloadable to a single computer (PC or MAC). After the initial download the book is available offline. The book file is only viewable through the VitalSource viewing software, which can be downloaded from this link:

  http://www.vitalsource.com/index/wiley

  This viewing software allows for highlighting text and notations. If you buy a new computer, you can contact VitalSource Technical Support who can help you move the e-book to your new computer. Copy protection restricts you to printing 10 pages at a time or copying up to two pages at a time. Those who have purchased the e-book will also be able to access it via a browser from any computer with internet access. Finally there are free apps for both iOS and Android that allow mobile access to purchased books.

  To purchase the e-book online, please go to this direct link for the correct textbook:

  http://store.vitalsource.com/show/9781118843956

  If you go to the general Vital Source website and search for the e-book instead of using the direct link above, you might encounter older versions of the e-book that are different and incomplete. The current correct version of the e-book is: ***Designing Engineers: An Introductory E-Text*** **by McCahan for $39.95 US E-ISBN: 9781118843956**

  If you had purchased a redemption code from the U of T Bookstore, please note that you will need to first install the VitalSource Bookshelf software. After you had

successfully installed the software, do the following to redeem and download the textbook:

1. Launch the VitalSource Bookshelf.
2. Under the "Help" menu (at top), select "activate new content."
3. Login (or register if this is your first time)
4. Enter your redemption code.
5. Click "Redeem."
6. Go to "All Titles. Select the title you just redeemed.
7. Click "Download"

Once downloaded, your Wiley E-Text will appear in the VitalSource Bookshelf on your computer. You can access your digital text anytime since an internet connection is not required.

Note: If you had purchased a redemption code from the Bookstore, it takes 24 hours from the time of purchase for the code to be activated. You must wait for the 24 hours to pass before you can redeem your code on VitalSource.

- ***The Human Factor (Kim Vicente)***

  This book is available for purchase in hardcopy from the U of T Bookstore, Engineering Store, and Discount Textbooks. The same book has been used for years, so there are likely many used copies available. Additionally an e-book version is available for purchase from Amazon.ca or from Chapters.ca (Kobo format. There are free .azw and epub readers available for PC, Mac, iOS, and Android.

Special Supplies

Besides your textbooks and standard stationary there are some special supplies required for ESP. These are described below.

Engineering Notebook

You must document your progress on your project. Standard practice in industry is to use a hardcover notebook. It is recommended you use a standard bound lab notebook such as a black or blue physics or chemistry lab book. The size, color, and/or page format (ruled or quad) does not matter. A loose-leaf binder or spiral bound notebook is not recommended. An example of a notebook is available here:

http://bit.ly/engnotebook

If you always have your laptop / tablet with you, you may prefer to use a digital solution for your engineering documentation. If you opt for this you should have some organizational structure such as OneNote, Evernote, Google Docs, etc. You should also have a means of capturing sketches for inclusion in your documentation. This could be a stylus on a tablet or a cell phone camera with high enough resolution.

Google Account

Assignments in this course are required to be written using Google Docs (Google Drive). This requires you to have a Google account. A Google account is different from a Gmail account. If you already have a Google account using your Gmail address, please set your mail.utoronto.ca address as your alternate email address in your Google account, or sign up for another Google account with your mail.utoronto.ca address. If you don't have a Google account, sign up free of charge using the link below. (Click on "I prefer to use my current email address" to set up an account using your mail.utoronto.ca address.)

http://tinyurl.com/6s6vya

Top Hat (TH) Account

Your Professional Development grade requires you to answer in lecture course concept questions using the TH system. You must be registered with Top Hat (http://www.tophat.com) to earn these marks. The registration fee has already been paid for you by the Faculty. Course instructors will ask course concept questions in lecture to gauge students' understanding of course material. As well, students may ask instructors questions via TH in lecture. See the Top Hat Instructions posted on Blackboard for more information on registration. See the Professional Development grade section below for more details about the marking.

SMS Text-Capable Cell Phone

To participate in the in lecture course concept questions via Top Hat you will need an SMS text-capable cellular phone. Currently, Convocation Hall does not have WiFi access for you to connect to TH on your laptop. Regular SMS text costs will apply. You can expect to send approximately 60-180 text messages in total for ESP I and ESP II. If you do not have an SMS text-capable cellular phone, you may contact the ESP Office for assistance.

Marking

Evaluation	% of final mark
Design Project Assignments: Problem Statement & Questions – 4% Project Requirements – 6% Conceptual Design Specification – 20% Research Worksheets – 5%	35%
Engineering Notes	5%
Seminar Participation & Oral Presentation	5%
Professional Development (Lecture participation, Piazza participation, other activities as posted)	5%
Midterm Exam	20%
Final Exam	30%
Total	100%

Exams

The midterm exam is currently scheduled to be held the evening of Thursday 24-Oct-2013. Check Blackboard closer to that date to confirm the time and location of the exam.

The final exam time and location will be announced closer to the end of the term.

Both the midterm and the final exam are Type-A exams as defined in the Faculty Calendar. This means that no printed materials can be used as an aid during the tests. They are closed-book and closed-notes. Electronic devices (i.e. calculators, cellular phones, and electronic dictionaries) are not permitted at the exams. Translation paper dictionaries are allowed, but only those without definitions. If you have any doubt about whether your translation dictionary is eligible, bring it to the ESP Office for approval.

Professional Development (PD)

Professional behaviour is a series of habits that you must start developing immediately. You will not be able to "switch on" professionalism once you graduate. It is just as important for you to project a professional image in your lectures and tutorials as it is in client meetings and interviews. A portion of your course grade will be allocated based on indicators of your professional behaviour.

The greatest input into this grade is your ability to attend and follow along in ESP lectures. In most lectures the instructor will ask multiple course concept questions through the Top Hat system. If you answer those questions correctly you will earn marks towards your PD grade. At

the end of the term your number of correct questions divided by the total number of questions asked will determine your grade. For example if there were 100 questions asked throughout the term and you answered 64 of them correctly you would get 3.2 PD marks (64/100*5) out of 5.

NOTE: To answer in lecture questions you must be physically present. Attempting to answer without being physically present is an academic offense.

Throughout the term there will be opportunities to earn "bonus PD points." These opportunities may simply be calculations at the end of the term (I.E. top contributors to the Piazza Q&A's) or specific activities that will be posted in Blackboard. To continue the example above, if you attended a professional networking event that was pre-endorsed by the course you might earn 2 PD bonus points and for being the top contributor of in-lecture questions you might earn 5 PD bonus points. This would change your grade to 3.6 (71/100*5).

Your ability to collect PD marks will depend on registering for a TH account and having access to an SMS capable cell phone (see the Special Supplies section above and the Top Hat Instructions posted on Blackboard).

Attribution Table

For all team assignments an attribution table must be completed and signed by all team members. The attribution table must be reviewed by all of the team members prior to the document debrief session to make sure that all members agree on the information given in the table. The information must be fair and accurate.

If the table indicates a substantial discrepancy in contribution (i.e. a large difference in the contributions among the team members) then the marks assigned to individual team members may be reduced to reflect this discrepancy. The TA will give an overall "team mark" on the assignment. The TA will then use the attribution table, the document revision history, team members engineering notes, and the assignment debrief meeting to ascertain the contribution of each member to the development of the document. If the TA determines an imbalance in contribution, he or she will decide on a reduced mark for the under-contributing team member(s). These marks are simply lost. They are NOT redistributed to the other team members. This is because one of the learning objectives of these team assignments is to mange to work effectively in a team. Under-contributing team members mean that the team has failed to achieve this learning objective.

Course Communication Mechanisms

It is important that you keep in contact with the ESP Teaching Team. These lines of communication are maintained in a number of different ways:

Blackboard

This site can be accessed through the U of T portal. Go to the U of T homepage and click on "Portal." You will need your UTOR ID and password to login.

The site is where we will post class announcements and all course documents and where you can access your term marks as they become available. This is the primary mode of course communication outside of lecture and tutorial. It is expected that you will check Blackboard frequently for information.

Public Course Website

The public ESP website (www.esp.engineering.utoronto.ca) is for the general public, such as ESP II clients, and not students. All student information will be found on Blackboard as mentioned above.

Email

Do not email questions on course content, instead post the question on Piazza (see below). Only in exceptional cases will course content questions be answered via email.

If you do send an email to a member of the teaching team consider it a professional email. This means that you must adhere to the Professional Email Style Requirements posted on Blackboard. Failure to do so may result in no response to your email.

Do not put an automatic forward on your U of T email. We have had difficulty in the past with Hotmail and other providers filtering out U of T originated messages. If your email provider has this compatibility problem with the U of T system, you will miss important course information. A missed email will not be considered sufficient justification for the granting of petitions. Be sure you are getting all the course notices.

Piazza

We will be using Piazza for class discussion. The system is intended help you get answers to your questions as fast and efficiently as possible. The tool allows you to post your question to all your peers and members of the teaching team. We can then collaboratively answer your question. If you are not satisfied with your peers answers you can keep the question unresolved and a member of the teaching team will either answer it themselves or endorse a student's answer.

If you prefer you can use the tool to send a question privately to the teaching team.

You are strongly encouraged to use this tool to ask your questions rather than email. Only in exceptional circumstances will a question be answered via email.

You can enroll in our class Piazza page at:

https://piazza.com/utoronto.ca/fall2013/aps111/home

Later in the term exceptional contributions to the Piazza discussion may be rewarded with PD bonus points.

Twitter

Prof. Bazylak will be relaying important ESP announcements on his twitter account "@ProfBazylak" using the hashtags #APS111 and #APS112. This service is done as a courtesy and you should still check Blackboard frequently. Students in APS113 should use the hashtags #APS111 in the Fall and #APS112 in the Winter.

Cheating and Plagiarism

This course has both team and individual assignments. Check the instruction sheet for each assignment to identify whether it is an individual assignment or a team assignment. When working collaboratively with other members of the class, as with all professional communication, reports must bear all of the names of all the people who contributed to them, and acknowledge their contribution. It is considered plagiarism to submit a paper solely under your own name (i.e. take credit for it) if the content was written all or in part by someone else. While it is acceptable to re-use your own material in the iterative process within a given project, it is considered plagiarism to re-use your own material for another project. If you are ever in doubt whether something constitutes plagiarism **ask a member of the teaching team**.

When submitting assignments that are to be written individually, you must never copy even a portion of another student's paper, or let another student copy yours. Failure to adhere to this rule is considered to be cheating – by both parties involved. Do not allow another student to borrow a draft of your assignment and do not leave a copy of your assignment where others may use it. **The University takes cheating of any kind very seriously**. Possible penalties for cheating include a negative mark on an assignment, zero in the course, annotations on your transcript, or even expulsion from the University. It is simply not a risk worth taking, no matter how desperate you may feel. It is far better to submit a substandard assignment than take the chance of incurring the kinds of academic penalties that the University will impose. For more information on the definition of academic and non-academic offences, procedures and penalties, please review the University of Toronto Faculty of Applied Science and Engineering Calendar.

If your workload is such that you are feeling totally overwhelmed, please talk to the Course Coordinator, the Course Administrator, First-Year Counsellor, or the Academic Success Centre (Koffler Centre). There are programs to assist you in learning how to cope with the University workload.

In this course you will be submitting your assignments to Turnitin.com, a software package licensed by the University of Toronto that is designed to detect plagiarism. Students agree that by taking this course, all required papers will be subject to submission for textual similarity review to Turnitin.com for detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com website.

Submitting a document to Turnitin that is different than the version you submit for grade evaluation is an academic offense.

Sharing Work outside Your Team

Giving another team access to documents that you or your team has created constitutes academic offence (cheating):

- Because you are enabling plagiarism to occur;
- Because for team written documents you, individually, do not have sole ownership of the intellectual property (ideas and words) contained in the team document. It is unethical and illegal to give away intellectual property that does not belong to you without the permission of the owner, in this case the whole team.

Sharing Work within Your Team

Assignment feedback from a member of the teaching team belongs to the entire team. It is not acceptable for a member of the team to refuse to share this feedback. Also, it is the responsibility of each team member to make available to their team-mates the written work they have prepared for the shared project. This includes meeting minutes, notes from client interviews, drafts of reports, etc. Withholding work that pertains to the team project, or feedback, from your team-mates is considered academic dishonesty and demonstrates poor team skills.

If you are frustrated by the dynamics within your team, and/or your team-mates' behaviour, it is important to address this in an appropriate and effective way. Your TA and CI can help you resolve these issues and help you, as a team, develop strategies for working successfully with each other. Remember: most projects do NOT fail for technical reasons they fail because of planning and team problems.

Late Assignments, Missed Activities and Requests for Re-Marks

This course will give you an idea of the professional environment you will likely be working in when you join the workforce. As such we have strict policies in place to govern adherence to deadlines and re-marking of deliverables (i.e. assignments).

Late Assignments and Missed Activities

Deadlines for course assignments are strictly enforced. Extra time to work on an assignment is not fair to others in the class who have not had the same opportunity.

For each portion of 24 hour period past the deadline there is a 10-mark (out of 100) penalty on that assignment. Late assignments will not be accepted beyond 72 hours past the deadline. After that point, a grade of "zero" will be assigned and the assignment will not be evaluated. The weekend counts toward these penalties.

> *Example: If the deadline is Wed Sep 18 at 12:10pm and you submit your assignment on Fri Sep 20 at 12:11pm, your assignment will be accepted but with a 30-mark penalty. If you try to submit your assignment on Sat Sep 21 at 12:11pm, it will NOT be accepted and you will receive zero on the assignment.*

An assignment is only considered submitted once ALL components, as per the assignment instructions, of the assignment are submitted. An assignment with an incomplete submission will continue to accrue late penalties until the additional components are submitted or the 72 hour maximum late period passes.

Late penalties for team assignments apply to the entire team regardless of who was responsible for submitting the document. You are expected to have a team process in place so that all members of the team can verify that the assignment has been submitted.

If you have a reason for a late assignment, missed midterm exam or missed seminar, etc. (other than a missed final exam), you must submit a Petition for Consideration in Course Work with supporting documentation to the ESP Office within a week of returning to class from illness, or a week from the assignment deadline. (Petitions for final exams are submitted through the Registrar's Office Engineering Portal: http://uoft.me/apscportal)

If you know in advance that you will miss a deadline for a mandatory course activity, such as an assignment, midterm exam or seminar, you must submit the petition before the date of the activity. In addition, you must apply before the deadline or activity to determine if there is a possibility for you to make up the work, or if an extension can be granted. Note: a petition does not excuse you from work.

If you are missing mandatory course activity due to religious observances, you must submit a petition to the ESP office **at least three weeks** before the date of the activity. The three-weeks advance notice is in accordance with the University of Toronto's policy on Accommodations for Religious Observances as students would normally be aware of upcoming religious observances and course activities in advance.

Course work petitions for ESP are submitted as follows:

- Fill out the *Petition for Consideration in Course Work – Fillable* PDF form posted in the Course Documents folder on the Blackboard course portal.
- Email the completed petition form to ESP: esp@ecf.utoronto.ca
- Include supporting documentation as applicable:
    - Absence due to:
        - Illness: Email to ESP a completed petition form, and bring to the ESP Office in GB149 a *Verification of Student Illness* form (http://www.illnessverification.utoronto.ca/) signed by a registered medical physician.
        - Participation in athletic or other types of competition: Email to ESP a completed petition form, and bring to the ESP Office in GB149 an official letter from the coach.
    - Other types of supporting documentation may be submitted to ESP by email (esp@ecf.utoronto.ca) or in the office (GB149) as appropriate.

Re-marking of Assignments

Requests for a remark due to an error in the grading will be heard by one of the course coordinators within one week of the return of an assignment to all tutorial sections. Students may request a 10-minute meeting in person at the ESP Office to give evidence of the error and to explain the problem. Potential errors could include:

- TA misinterpreted a course concept
- Disagreement between the rubric and the comments on the document

In the week of the return of an assignment, if there is an error in the marking, go to the ESP Office in GB149 to sign up for a meeting slot. Prior to the meeting, share your Google Docs assignment file with esp@ecf.utoronto.ca (give us the "can edit" access to look at your revision history). Bring to the meeting the assignment's marked rubric; a note with your name, student number (and team mates' names and numbers if applicable) and brief descriptions of the marking errors; and any other supporting documentation/evidence to make your case.

The results of the meeting will be provided to you by email. The results are final. Your grade may be raised OR lowered as a result of the remark request. For team assignments only one member of the team must attend, but all team members must have signed a letter indicating their desire to have a remark done.

Re-marking of Midterm Exam

If, after seeing your grade and the midterm exam solutions posted on Blackboard, you feel that there has been an error in your mark: 1) First, request a copy of your midterm exam by emailing esp@ecf.utoronto.ca. 2) Check your copy against the solutions. 3) If you feel there is an error, you may request a remark by booking a 10-minute meeting with one of the course coordinators. This booking must be done in person at the ESP Office and completed within one week of the grades being posted. You cannot book the meeting via email. At the meeting you are to give evidence of the error and to explain the problem.

The results of the meeting will be provided to you by email. The results are final. Your grade may be raised OR lowered as a result of the remark request.

Re-marking of Final Exam

If you feel there has been an error in the marking of your final exam you may request a re-check through the Registrar's Office Engineering Portal: http://uoft.me/apscportal