ENG SCI 9501 – Engineering Business: Course Outline, Summer 2021

Objectives:

Take a leadership role in your engineering career. Learn to ‘speak the language’ of top management. Would you like to work for others? Would you like to run your own business? Both? Through examples of private- and public-sector, for- and non-profit organizations, you will discover what makes a business successful and sustainable. Research and write about business; make recommendations under pressure; resolve uncertainty; commit to leading and following others. Commit to creating economic value, providing social benefit and ensuring environmental accountability. Be innovative. Deliver results.

Topics:

The course consists of eleven modules over twelve calendar weeks, as detailed in the table on the next two pages. The first module begins with Business in Canada and the global economy. We continue with three modules on Finance and Accounting; followed by four modules on Marketing and Operations. The final three modules discuss Entrepreneurship, concluding with personal finance and self-marketing.

Graded work consists of two individual reports @ 30% each, and one team report with 2 parts @ 40% total. All reports include a ‘contribution to peers’ component. No final exam. Details and due dates are published in OWL. Formal instruction includes eleven 3-hour “Zoom” video meetings, which may be recorded; we recommend students attend in real time, to the extent possible.

Prerequisites:

This course is open to any M.Eng. student.

Course materials and textbook:

- No required text or cases to purchase. Essential and recommended readings are provided in OWL.
- Online materials include summary slides, concept models, recorded lectures, videos and examples.
- Any optional ‘guest speaker’ sessions, if scheduled, may be held outside regular classroom hours.
- Instructors may hold office hours by videoconference.

Schedule and Instructors:

**ES 9501L 650 GS21** Section One, Mondays 08:30 – 11:30, May 10 – July 26 (no class May 24).

**ES 9501L 652 GS21** Section Three, Thursdays, 13:00 – 16:00, May 27 – August 12 (no class July 1)
- David Sumpton, MBA, M.Eng., P.Eng., CISA, PMP  dsumpton@uwo.ca

**ES 9501L 651 GS21** Section Two, Fridays 08:30 – 11:30, May 28 – August 13 (no class July 2).
- Paul Lambrinos, BA, MA (Economics)  plambrin@uwo.ca

- 11 video classes @ 3 hours each: 33 hours class time. “Office hours” for Instructors are by appointment.
- Contact information for Teaching Assistants is published in OWL.
<table>
<thead>
<tr>
<th>Module</th>
<th>Topics</th>
<th>Learning objectives</th>
<th>Assessment</th>
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<tbody>
<tr>
<td><strong>Business in Canada and the global economy</strong></td>
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| One | S1: May 10  
S2: May 28  
S3: May 27 | • Economic value, social benefit, and environmental accountability  
• Industry, economy and labour markets  
• Business strategy and success factors  
• Analysis tools: SWOT, PESTLE, 5 forces  
• Physical asset management  
• International management behaviour: cultures, Indigenous context, personal diversity, cognitive diversity, team inclusion | • Discover how a business can be successful and sustainable  
• Identify, analyse and influence the stakeholders in a business  
• Apply ethics in business practices and decision-making  
• Integrate perspectives and abilities of other people to deliver better results | |
| **Finance and Accounting** | | | |
| Two | S1: May 17  
S2: Jun 4  
S3: Jun 3 | • Definitions: revenue, expense, capital  
• Four essential financial statements  
• Financial statement analysis | • Understand and analyze financial statements, and the environment in which they are prepared | Finance: Individual report  
30% grade weight  
Financial Statement analysis  
Cash flow projections  
Economic analysis  
The instructor provides the companies for you to research |
| Three | S1: May 31  
S2: Jun 11  
S3: Jun 10 | • Economic analysis (time value of money) and its limitations  
• Sensitivity analysis in cash flows  
• Activity-based costing  
• Project and program selection tools | • Forecast cash flows and financial statements  
• Evaluate & justify short and long-term project and operational investment decisions | |
| Four | S1: Jun 7  
S2: Jun 18  
S3: Jun 17 | • Business valuation  
• Organizational and tax structure  
• Company budgeting & planning  
• Cash flows, resources  
• Project Financing: debt & equity, sources, financier’s perspective, Islamic Finance | • Determine how companies are valued, including tax implications for entrepreneurs  
• Finance projects and operating activities, from internal company budgets, or from external financing sources | Marketing & Operations: Individual report  
30% grade weight  
Continued next page |
| **Marketing and Operations** | | | |
| Five | S1: Jun 14  
S2: Jun 25  
S3: Jun 24 | • Market segmentation & niches  
• Product lifecycle  
• Technology and physical asset lifecycle  
• Product and Technology innovation: ‘blue ocean’, hype vs reality, Design Thinking  
• Digital marketing and IT applications  
• Intellectual Property | • Determine existing and new market opportunities: in context of business strategy & objectives, and technology evolution |
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<td>Marketing and Operations, continued</td>
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<td>Six</td>
<td>- Marketing activities and influencing others</td>
<td>- Develop and apply targeted marketing plans</td>
<td>Market research</td>
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<td>- Price, profits &amp; Finance integration</td>
<td>- Improve company brand &amp; financial position</td>
<td>Analysis &amp; sustainability prognosis</td>
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<td>- Brand, quality, customer experience</td>
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<td>The instructor provides the companies for you to research</td>
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<td>Seven</td>
<td>- Organizational structure &amp; governance</td>
<td>- Determine one’s role and authority within an organization</td>
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<td>- Project governance: lifecycle and approvals, methods eg Agile, Design/Build</td>
<td>- Determine where value is added, and where it should be added</td>
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<td>- Operations Management: value stream mapping, process flow, Lean/Six Sigma</td>
<td>- Apply tools to deliver Projects, maintain and improve Operations</td>
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<td>- Change Management</td>
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<td>Eight</td>
<td>- Trade / value chains</td>
<td>- Integrate Marketing with Finance, Operations, Procurement and Supply Chain activities.</td>
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<td>- Procurement and Supply Chain Management, including Distribution</td>
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<td>- Tendering process, contracts, product &amp; professional liability, trade secrets</td>
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<td>Entrepreneurship</td>
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<td>Nine</td>
<td>- Entrepreneur and Intrapreneur</td>
<td>- Create a viable Team Charter</td>
<td>Business idea: Team project</td>
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<td>- Business Model Canvas; Business Case</td>
<td>- Formulate a plan using a Business Model Canvas</td>
<td>40% grade weight</td>
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<td>- Ideas: product, process, business model</td>
<td>- Produce and pitch the business idea with a BMC and a Business Case</td>
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<td>- Partners, activities and resources</td>
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<td>Ten</td>
<td>- Value Proposition</td>
<td>- Develop Discovery and Delivery skills</td>
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<td>- Competitive Advantage</td>
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<td>- Distribution channels, customer relations</td>
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<td>Eleven</td>
<td>- Cost structure and risk reduction</td>
<td>- If I am the solution: what is the problem (job) I could solve?</td>
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<td>- Revenue streams and customer segments</td>
<td>- Is there a problem (job) for which I could be the solution?</td>
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<td>- Entrepreneurship as a lifestyle choice</td>
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<td>- Personal finance: growing your money</td>
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<td>- Self marketing: social intelligence, mentors, motivation, serendipity</td>
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- Please ask your instructor if you would like a special topic to be discussed.
- Course grades are available later in August after individual results verified across all Sections.
Grading Standards:

**General Expectations**

- Student’s work and class contributions are evaluated on what would reasonably be expected of a Masters-level student who, upon graduation from their program, would demonstrate the skills shown in the Ontario Qualifications Framework [http://www.tcu.gov.on.ca/pepg/programs/oqf/certificate12.html](http://www.tcu.gov.on.ca/pepg/programs/oqf/certificate12.html).
- Students are evaluated on critical thinking, analysis and insight; following instructions; organization and grammar. Specific rubrics may apply on any particular report. Details are provided in OWL.
- The ‘contribution’ portion of the grade in each report, entails providing insights which may be useful to other students as they complete their work, or commenting on videos/presentations. This is an online course; there is no requirement for ‘in-class participation’.

**Team Project Grades**

- We provide guidance on how to be personally successful when working in ‘virtual teams’.
- When working on team projects, all individuals will normally receive the same grade.
- In the event students feel that another team member is not a positive contributor, students are requested to respectfully resolve matters with the team member. If after drawing someone’s attention to their ineffective contribution and their behaviour continues, students may discuss concerns with the instructor at the earliest opportunity.
- After consulting the students concerned and considering whether a student’s behaviour likely affected a team’s performance, the instructor may adjust course grades for any or all individuals in the team.

**Penalties - Written Reports and Presentations**

- Late reports or presentations are subject to penalties of 25% of assignment grade weight per calendar day. Reports or presentations which are five calendar days late or more, may receive a zero grade.
- Penalties are waived for legitimate and documented reasons such as illness.

**Penalties - Contributions**

- The Summer 2021 course is online; individual contributions to scheduled classes are optional and not formally assessed. However, interactions with others throughout the course must be professional; and the requirements for reports include making a contribution to the work of others.
- In the event of any concerns, students are requested to respectfully resolve matters with others, to the extent possible; and may discuss concerns with the instructor.
- After consulting the students concerned and considering whether a student’s behaviour likely affected the performance of others, the instructor may adjust course grades for any or all individuals.
- There is no penalty for disagreement or difference of opinion.

**Requests for Academic Consideration**

- If you are unable to meet your academic responsibilities, or cannot meet due dates for a legitimate reason, please discuss with your instructor if you feel comfortable doing so. We do not ask for any personal details.
- The formal process is available at [https://www.eng.uwo.ca/graduate/current-students/academic-support-and-accommodations/general-info.html](https://www.eng.uwo.ca/graduate/current-students/academic-support-and-accommodations/general-info.html).
Scholastic Offences:

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf

Plagiarism:

University policy states that plagiarism, defined as the “act or an instance of copying or stealing another’s words or ideas and attributing them as one’s own.” (excerpted from Black’s Law Dictionary, West Group, 1999, 7th ed., p. 1170) is a scholastic offence. In submitting any written work as part of the requirements for this course, students must ensure that this work is written in their own words. Whenever students take an idea or a passage of text from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism-detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Any student who is suspected of a scholastic offence in respect of any work submitted as part of the coursework requirements for this course will be dealt with according to the University policies. For the purposes of this course, the University official for handling the case will be the Director, Centre of Engineering Leadership and Innovation. A common penalty for a first-time offence is a grade of zero in the relevant assignment. A serious incident or repeated offences (at any time at Western) may result in suspension or expulsion from the University.

Attendance:

Any student who, in the opinion of the instructor, is absent too frequently from class, laboratory, or tutorial periods will be reported to the Dean (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Dean, the student will be debarred from taking the regular final examination in the course.

Accessibility:

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at 519-661-2147 for any specific question regarding an accommodation.
http://academicsupport.uwo.ca/accessible_education/index.html
Conduct:

Students are expected to arrive at lectures (including online sessions) on time, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others. Late comers may be asked to wait outside the classroom until being invited in by the Instructor. Please turn off your cell phone before coming to a class, tutorial, quiz or exam.

On the premises of the University or at a University-sponsored program, students must abide by the Student Code of Conduct: https://www.uwo.ca/univsec/pdf/board/code.pdf

Sickness and Other Problems:

Students should immediately consult with the Instructor or Department Chair if they have any problems that could affect their performance in the course. Where appropriate, the problems should be documented. The student should seek advice from the Instructor or Department Chair regarding how best to deal with the problem. Failure to notify the Instructor or Department Chair immediately (or as soon as possible thereafter) will have a negative effect on any appeal.

Notice:

Students are responsible for regularly checking their Western email, and the course OWL site for notices related to the course.