

Course Outline

1. COURSE INFORMATION

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| Session Offered | Fall 2021 | |
| Course Name | Technology Ethics and Sustainability | |
| Course Code | GENTECH 4TE3 | |
| Date(s) and Time(s) of lectures | C01: M: 12:30 -1:20pm; TH: 1:30 - 3:20 pm C02: M: 2:30 - 3:20 pm; TH: 10:30 am -12:20 pm C03: M: 10:30 am - 12:20pm; W: 12:30 - 1:20 pm | |
| Program Name | One of the following: Automotive and Vehicle Technology / Biotechnology / Process Automation Technology | |
| Calendar Description | The course explores the social implications and environmental impacts of technologies and the ethical challenges they impose on technology professionals. | |
| Instructor(s) | G. Zilberbrant | E-Mail: zilberg@mcmaster.ca Office Hours & Location: by appt, online |

2. COURSE SPECIFICS

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| Course Description | <p>This course incorporated the elements learned through General Technology business, sustainability, and ethics course elements with an application towards a real-life project. Each week will cover a broad area of sustainability including policy, sustainable design, measuring sustainability, communication in sustainability, social/ethic challenges, and emerging sustainability issues.</p> <p>The course examines all area of sustainability and, through class discussion and project application, encourages the students to consider their own actions in the position of public and private sector leaders.</p> <p>Students work as a team to address a real-life newsworthy sustainability issue of their choice. Acting as a specialized team of experts, the groups are expected to meet with client liaison representatives and present to the project client in structured business environment throughout the course.</p> | | |
| Instruction Type | Code | Type | Hours per term |
| | C | Classroom instruction | 39 |
| | L | Laboratory, workshop or fieldwork | |
| | T | Tutorial | |
| | DE | Distance education | |
| | Total Hours | | 39 |
| Resources | ISBN | Textbook Title & Edition | Author & Publisher |
| | ISBN: | None | None |
| | Other Supplies | Source | |
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| Prerequisite(s) | GEN TECH 3TS3, ENGTECH 4EE0, and registration in Level 4 of Automotive and Vehicle Technology, Biotechnology or Process Automation Technology | | |
| Corequisite(s) | None | | |

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| Antirequisite(s) | <i>None</i> |
| Course Specific Policies | <p><u>Weekly Quizzes (8) – worth 50% (6.25% each)</u></p> <p>Students are expected to complete all quizzes independently. All material will be provided electronically. Some course material is video based and may require a minimal fee (i.e. rental fee) to watch. Quizzes will test material from lectures and assignment readings/videos/etc. Quizzes may test material that was covered in previous weeks throughout the course. Students are expected to keep up with material and lecture notes. Quizzes will close at 11:59 pm each Sunday unless otherwise directed by the instructor.</p> <p><u>Project Report - worth 10%</u></p> <p><u>Project Background:</u></p> <p>Each group is a specialized consulting firm evaluating the environmental, social, and environmental impact of changes to technology, public policy, and business practices. The Government of Ontario (or Canada – depending on jurisdiction) has hired you to conduct an investigation of an emerging high-profile issue. The Government is being pressures by citizens, NGOs, and the business community to take a stance on a specific issue as each group has a vested interest in the outcome of the associated public policy.</p> <p><u>Scope of work:</u></p> <p>Review the existing public policy including regulation, guidelines, and government positions on the topic:</p> <ol style="list-style-type: none"> 1. Review positions of existing NGOs/academia 2. Review current practices of the business community in the field 3. Review actions/positions of other jurisdictions 4. Review the existing knowledge on the technology and/or practice 5. Review the relevant media coverage and public opinion 6. Evaluate the government's options on action (if any) as it related to public policy 7. Evaluate the metrics that are relevant and those that would be expected by stakeholders (if different) 8. Evaluate (quantify) the environmental, social, and economic impact of the processes change(s) or the impact of the "do nothing" approach 9. Evaluate the potential responses from stakeholders and potential media reaction 10. Provide recommendation on next steps including (but not limited to) a policy roll-out strategy and communication strategy <p>Project Report (worth 10%) is due on date of Final Presentation with one report being submitted per group to the dropbox on A2L.</p> <p><u>Progressive Project Meetings & Presentations (5) – worth 20%</u></p> <p>Each group will run three (3) meetings and deliver two (2) progressive presentations. Each engagement will be 30 minutes and worth 4% each for a total of 20% of your final mark. Specific expectation for each meeting and presentation will be outlined in the project description document available on A2L. All members earn the same as the group grade.</p> |

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| | <p><u>Final Presentation – worth 15%</u> A group presentation using PowerPoint is also required. Presentations will be delivered during class times in weeks 11 through 13 (and partially in week 14 if needed). All group members must participate in the presentation. Each group will have 50 minutes. All members earn the same as the group grade.</p> <p><u>Peer Evaluation – worth 5%</u> Each group member will evaluate their group members based on the level of contribution to Meetings, Presentations, and the Final Report. The normalized mark will be assigned to each student.</p> <p>Late submissions will receive an immediate 10% deduction from the assignment mark; plus a further 10% late penalty per day will be applied and deducted from the assignment mark. Assignments that have not been submitted within three (3) days after the due date will not be graded and will receive a mark of ZERO.</p> | |
| Departmental Policies | <p>Students must maintain a GPA of 3.5/12 to continue in the program.</p> <p>In order to achieve the required learning objectives, on average, B.Tech. students can expect to do at least 3 hours of “out-of-class” work for every scheduled hour in class. “Out-of-class” work includes reading, research, assignments and preparation for tests and examinations.</p> <p>Where group work is indicated in the course outline, such collaborative work is mandatory.</p> <p>The use of cell phones, iPods, laptops and other personal electronic devices are prohibited from the classroom during the class time, unless the instructor makes an explicit exception.</p> <p>Announcements made in class or placed on Avenue are considered to have been communicated to all students including those individuals that are not in class.</p> <p>Instructor has the right to submit work to software to identify plagiarism.</p> | |
| 3. SUB TOPIC(S) | | |
| Week 1 (Sept 7) | <p>Course Introduction</p> <ul style="list-style-type: none">• assignment format• project description and deliverables• presentation/meeting details and deliverables | |
| Week 2 (Sept 13) | <p>History or sustainable design and applicable knowledge for today's professionals</p> <ul style="list-style-type: none">• evolution of sustainability design primary addressing environmental concerns• onset of the environmental movement progressing to the concepts of environmental protection (P2) through to design for the environment | <p>Team selection completed</p> |

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| Week 3 (Sept 20) | The role of public policy in the sustainability movement <ul style="list-style-type: none"> • how public policy can (and has) influenced environmental, economic, and social aspects of sustainability • specific examples of public policy and political influences | First week of TA project meetings (Project Idea) |
| Week 4 (Sept 27) | The role of corporate and industry-wide policy in the sustainability movement <ul style="list-style-type: none"> • policies outside the public arena • how private policy can (and has) been implemented • specific examples of industry-wide initiatives such as ISO, FSC, and LEED Leaders vs laggards | First week of presentations (Project Rationale) |
| Week 5 (Oct 4) | Environmental and economic approach, tools and policy instruments, of sustainable design <ul style="list-style-type: none"> • environmental and economic approaches associated with sustainability • specific attributes of environmental & economic approaches and examples | |
| Week 6 (October 11) | Midterm Recess | |
| Week 7 (Oct 18) | Impact of public and media opinion in a technical advanced arena <ul style="list-style-type: none"> • interaction of technical and non-technical experts in the sustainability arena • highlight the role of technical experts (public, private, academic, and NGO) and the forums in which they must be ready to participate • regulatory integration of public consultation in the environmental assessment process, approvals and operations impact of public opinion and media | First week of TA project meetings (Project Review) |
| Week 8 (Oct 25) | The challenges of measuring sustainability. How to balance the environmental, social, and economic needs in valuation <ul style="list-style-type: none"> • the challenges in measuring sustainability • commonly accepted measurement tools • contrasting priorities between social welfare, environmental protection, and economic prosperity • specific examples of tools from Environmental Assessment to Social Impact Assessment | First week of presentations (Connection to policy/design) |
| Week 9 (Nov 1) | Tools and application of measured sustainability <ul style="list-style-type: none"> • specific regional examples such as: McMaster Sustainability Report; Code Red Hamilton health study; and product LCAs • focus will be placed not only on the data but the format, language, and media in which it is communicated | |

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| Week 10 (Nov 8) | What is it all for? Social impact as a measure of environmental and economic sustainability. <ul style="list-style-type: none"> emergence of social aspects of sustainability as an overriding theme of environmental and economic objectives community engagement/social enterprise | First week of TA project meetings (Evaluation) |
| Week 11 (Nov 15) | Review the environmental, economic, and social impact of an emerging sustainability issue. <i>The lecture will focus on a major emerging sustainability issue that are topical at the time of the course.</i> | First week of Final Presentations |
| Week 12 (Nov 22) | Final Presentations | |
| Week 13 (Nov 29) | Final Presentations | |
| Week 14 (Dec 6) | Final Presentations | |

Midterm Recess: Monday, October 11 to Sunday, October 17
Classes end: Wednesday, December 8
Final examination period: Thursday, December 9 to Wednesday, December 22
All examinations MUST be written during the scheduled examination period.

Note that this structure represents a plan and is subject to adjustment term by term.
The instructor and the University reserve the right to modify elements of the course during the term. The University may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes.

| 4. ASSESSMENT OF LEARNING *including dates* | Weight |
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| Quizzes (8) | 50% |
| Group Project Report | 10% |
| Progressive Project Meetings & Presentations (5) | 20% |
| Final Project Presentations (1) | 15% |
| Project Peer Evaluations (1) | 5% |
| TOTAL | 100% |

Percentage grades will be converted to letter grades and grade points per the University calendar.

| 5. LEARNING OUTCOMES |
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| 1. Distinguishes major current and emerging sustainability issues from a technological context |
| 2. Demonstrate an understanding of the interconnection of ethics, public policy, and engineering |
| 3. Demonstrate a “system thinking” approach to sustainability management that goes beyond the technical aspects of the problem that includes economic, social, political, environmental, cultural, and ethical impact. |
| 4. Demonstrate the ability to communicate (written & oral) sustainability issues in technical and non-technical environments. |
| 5. Demonstrate the ability to manage and successfully participate in a dynamic team project environment |
| 6. Implement a real-life sustainability project using a systematic approach that is tailored to the specifics of the situation; create recommendations and an action plan that follows from the analysis. |

6. COURSE OUTLINE – APPROVED ADVISORY STATEMENTS

ANTI-DISCRIMINATION

The Faculty of Engineering is concerned with ensuring an environment that is free of all discrimination. If there is a problem, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as soon as possible.

http://www.mcmaster.ca/policy/General/HR/Discrimination_Harassment_Sexual_Harassment-Prevention&Response.pdf

ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. It is your responsibility to understand what constitutes academic dishonesty.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

The following illustrates only three forms of academic dishonesty: The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

AUTHENTICITY / PLAGIARISM DETECTION

Some courses may use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to www.mcmaster.ca/academicintegrity.

COURSES WITH AN ON-LINE ELEMENT

Some courses may use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

ONLINE PROCTORING

Some courses may use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their

browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

COMMUNICATIONS

It is the student's responsibility to:

- Maintain current contact information with the University, including address, phone numbers, and emergency contact information.
- Use the University provided e-mail address or maintain a valid forwarding e-mail address.
- Regularly check the official University communications channels. Official University communications are considered received if sent by postal mail, by fax, or by e-mail to the student's designated primary e-mail account via their @mcmaster.ca alias.
- Accept that forwarded e-mails may be lost and that e-mail is considered received if sent via the student's @mcmaster.ca alias.
- Check the McMaster/Avenue email and course websites on a regular basis during the term.

CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the Code of Student Rights & Responsibilities (the "Code"). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, whether in person or online.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's Academic Accommodation of Students with Disabilities policy.

REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK

McMaster Student Absence Form (MSAF): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work".

ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students should submit their request to their Faculty Office normally within 10 working days of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests. <http://www.mcmaster.ca/policy/Students-AcademicStudies/Studentcode.pdf>

COPYRIGHT AND RECORDING

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, including lectures by University instructors

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

EXTREME CIRCUMSTANCES

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.