Engineering Teaching Assistant Training

Chantel Millar and Connie Pelligra
Introduction
Intended Learning Outcomes

By the end of this workshop you should be able to:

- Describe and execute the various roles and responsibilities of a TA at McMaster
- Understand the importance of a teaching assistant knowing all aspects of being a TA (tutorial leader, lab leader, and marking)
- Identify good practices with respect to professionalism in TA-instructor, TA-student, and TA-TA relationships
- Develop the skills to efficiently and effectively grade and supply feedback for both technical and non-technical course material
- Develop lesson plans and rubrics that reflect learning outcomes of the course you are TAing
- Develop the skills to solicit feedback from the course instructor and students, complying with FIPPA and the Research Ethics Board
What does a Teaching Assistant do?
Think of a good TA from your time as a student, what made them a good TA?

- They are well prepared
- They are knowledgeable about the material
- They clearly defined the expectations
- They speak clearly and in an accessible manner
- They present themselves as someone who is approachable
- They are direct and concise in their delivery of the material
Some students arrive having not covered the material. How do you, as a TA, deal with students that are unprepared?

- Perform a quick recap covering the necessary theory
- Incentivise the students to participate
- Ask probing questions
- Have other students volunteer the information
- Make sure to reiterate the expectations
- Start a discussion around the background material amongst the students
- Sometimes the only option is to explain as the lab/tutorial progresses
Duties and Responsibilities of a TA

- Intermediary between faculty & students
- Roles of a TA**
  - Tutorial Leader
  - Laboratory Leader
  - Marking TA

**Your Role as a TA may change throughout the course of your TA term or graduate career

- Duties and responsibilities of your TA placement should be a priority
Professionalism

There are 3 main groups in which professionalism needs to be maintained (through communication, boundaries, etc.):

- TA-Student Relationships
  - Emails, Office Hours, Grading, Tutorials
- TA-Professor Relationships
  - Hours of Work Form, Emails, Academic Dishonesty, Rubrics
- TA-TA Relationships
  - Emails, Rubrics, Grading, Tutorials
Hours of Work Form

- Details how many hours a TA will devote to each duty
- Filled out at the beginning of the term with the instructor (within 5 days of contract start)
- It is the TA's responsibility to continuously monitor their hours
Scenario A:

- You are a 0.5 TA (65 hours)
- You have been asked to mark the final exam but have no hours left for grading: What do you do?

<table>
<thead>
<tr>
<th>Duties</th>
<th>Planned Hours</th>
<th>Spent Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leading Tutorials/Overseeing Labs</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Student Consultation</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>Grading</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Preparation</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Invigilating</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Scenario B:

- You are a full TA (130 hours)
- One month into the semester your hours of work are:
- What steps should you take?

<table>
<thead>
<tr>
<th>Duties</th>
<th>Planned Hours</th>
<th>Spent Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leading Tutorials/Overseeing Labs</td>
<td>45</td>
<td>15</td>
</tr>
<tr>
<td>Student Consultation</td>
<td>40</td>
<td>32</td>
</tr>
<tr>
<td>Grading</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Preparation</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Invigilating</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Emails

- Be professional and courteous
- Use McMaster email
- Emails are legal documents
- Set professional boundaries
What is Netiquette?

- Online etiquette = netiquette
- Standard for communicating and good behaviour on the internet
- Applies to all online communications (emails, online classroom, social media platforms)
- Take-away message: treat others with respect and act online as you would in person
Tips for Communicating Online

- Avoid writing in all capital letters
- Avoid using sarcasm or humour as it could be misinterpreted
- Ask for clarification if you would like help in understanding what an individual has written
- Be respectful
- Take breaks
Example Student Email

Midterm

Hello Dr. Pelligra,

I was very unhappy with my grade on last week’s midterm. I don’t think it was fairly marked at all. I followed all of the instructions the instructor gave us and I still did very poorly – are you sure you marked it right? It is just that I’m taking the class right now and I feel like I understand the material and I was wondering if maybe the class has changed since you took it?

Please respond to me immediately with details of my grade and why it wasn’t higher,

Charlie Smith
Hello Dr. Pelligra,

I was very unhappy with my grade on last week’s midterm. I don’t think it was fairly marked at all. I followed all of the instructions the instructor gave us and I still did very poorly – are you sure you marked it right? It is just that I’m taking the class right now and I feel like I understand the material and I was wondering if maybe the class has changed since you took it?

Please respond to me immediately with details of my grade and why it wasn’t higher,

Charlie Smith
Office Hours

- Encourage students to come to office hours
- Office Hours can be in person or remote; discuss with the course instructor to determine what fits the course best
- Office Hours can be held by appointment if the instructor approves
  - This can give you (the TA) more control over your time and may even make students more comfortable engaging with you (if they know the meeting will be private)
- What are some good/bad topics to discuss with students in office hours?
Office Hours Cont’d

- Some appropriate topics for discussion
  - Course material covered in lectures or tutorials
  - Homework or sample problems
  - Practical applications

- Some inappropriate topics for discussion
  - The content/format of the exam
  - Editing or proof-reading of upcoming assignments
Privacy

- PI is recorded information about an identifiable individual (i.e.; name*, address, email*, phone #, race*, skin colour*, image of student*, student number, religion, sexual orientation, etc…)
  - *PI may be captured in video recordings and should be protected under FIPPA
- The purpose for collection of PI must be provided before or at the time of collection and used for that purpose only
  - ONLY authorized purposes not personal purposes
Privacy

- As a university employee you have the responsibility to follow strict rules when collecting, using and disclosing personal information (PI)
  - FIPPA (Freedom of Information and Protection of Privacy act) consent-based legislation meaning that consent is required before collection, use or disclosure to PI
Scenario C:

- You are a TA holding in-person office hours on campus.
- A student comes into your office with their own marked assignment and one of their fellow students marked assignments asking to discuss the differences seen between the two papers. The other student is not present.
- In this scenario what should you do?
Scenario D:

▪ You are a marking/tutorial TA who has recently marked a set of assignments.
▪ A student who has come to your office hours for guidance and was struggling with the course got 100% on the assignment!
▪ You want to show how proud you are of the student and choose to publicize their mark on social media! Is this OK?
FIPPA

- Student Personal information (PI) must be kept private
  - ID#s, names, grades, email addresses

- Do not discuss one student’s work with another student

- Anything with PI (student assignments, etc..) need to be deleted from our computers after the semester ends
  - Professors need to keep files for 1 year in case a student appeals a grade
Web and Virtual Privacy

- Video files do include the PI of those captured in the recording.
- When conducting TA duties virtually, some students may not feel comfortable activating their camera with a view to their home, and, in some cases, family members may be at risk of capture in course video use
- Before starting a video recording, include a statement informing the students of the recording and whether the video will be posted internally or externally
  - This statement may also include acceptance of learners deactivating their camera and microphone to avoid video capture in the recording, and using chat functions instead
  - Internal Video (FIPPA compliant) posting includes: MacVideo, A2L; External Video posting includes: YouTube
Tips and Resources for Teaching Remotely

Adapted from the MacPherson Institute
Privacy and Security Settings

- Be aware of this in any virtual platform you plan to use

- For example: Know how to mute the virtual class, mute an individual student, remove an individual student, and abruptly end the session for all students if need be
Educational Technologies

- Avenue to Learn*
- MacVideo
- Echo360
- Zoom: Web Conferencing
- Microsoft Teams
- PowerPoint – Present Live
- More information regarding available educational technologies
  - https://mi.mcmaster.ca/educational-technology/
  - https://mi.mcmaster.ca/teaching-remotely/#tab-content-supported-tools
Avenue to Learn

- McMaster’s Learning Management System
- Serves as the course home:
  - Announcements
  - Course content
  - Discussion forums
  - Assignment submission folders
  - Grade assessment and feedback

- Online resources are available at: https://avenuehelp.mcmaster.ca/
Training Resources and Supports

- McMaster Teaching Assistant Guide
- Beginning of Term TA Q&As offered via the MacPherson Institute
- Online Workshops on the Professional Development in Teaching Hub (Avenue to Learn)
  - TA Professionalism, Rights, and Responsibilities
  - An Introduction to Avenue to Learn
  - Active Learning
  - Marking Efficiently and Effectively
- Forward with FLEXibility: A Teaching and Learning Resource on Accessibility and Inclusion: Modules 1, 2, 3 and 5
- E-Learning Section of McMaster’s Accessibility Hub
- University Library Support for Remote Teaching
- TA Guide for Remote Teaching via the MacPherson Institute
- CUPE 3906 Unit 1 Website
Academic Dishonesty

- Do not address students directly
- Bring any suspicion to the attention of the course instructor
- Academic Dishonesty is ultimately responsibility of the instructor
Health & Safety

- You have the right to refuse work if you have reasonable concerns
- The TA is responsible for knowing and following safety procedures
- TAs must know safety procedures and equipment
  - Location of emergency exits, fire extinguishers, emergency phones, first-aid kits, etc.
  - Fire alarm procedures
- Emergency phone numbers:
  - Calling from campus phone: 88
  - Calling from cell phone: 905-522-4135
Limits to Confidentiality

While you should maintain confidentiality whenever possible, McMaster’s Sexual Violence Response Protocol outlines instances in which you are obligated to break confidentiality:

- If someone is in immediate danger
- If you suspect the abuse of someone under the age of 16
- If the person causing harm is a McMaster employee

In these cases you should consult the Sexual Violence Response Coordinator. You are required to share the disclosure, but you should not share identifying information unless given permission to do so.
Harassment and Discrimination

- Online asynchronous anti-oppression training workshop (Equity and Inclusion Office) will cover topics relating to bias, discrimination, harassment, etc.

- Do not be afraid to report incidents
  - The university takes these issues seriously

- The Equity and Inclusion Office can help
  - Visit http://equity.mcmaster.ca/ for more information
Addressing Conflict Using the ACTION Model

- Ask clarifying questions to help with understanding
- Come from a place of curiosity rather than judgement and listen to their response
- Tell the student what you observed as problematic in a factual manner
- Impact exploration and state the potential impact of such a comment on others
- Own your own thoughts and feeling regarding the impact
- Next steps – request that appropriate action be taken
Resources

- Student Wellness Center
  - 905-525-9140 x27700

- Campus Security
  - 905-525-9140 x24281; “88” from a campus phone in an emergency

- MacPherson Institute
  - 905-525-9140 x24540

- Environmental & Occupational Health Support Services (EOHSS)
  - [http://www.workingatmcmaster.ca/eohss/](http://www.workingatmcmaster.ca/eohss/)

- Equity and Inclusion Office (EIO)
  - equity.mcmaster.ca

- Consultant on Sexual Violence Prevention and Response
  - svpro.mcmaster.ca and 905-525-9140 x20909

- Ombuds Office
  - [http://www.mcmaster.ca/ombuds/](http://www.mcmaster.ca/ombuds/)

- McMaster Student Support and Case Management
  - [https://sscm.mcmaster.ca/](https://sscm.mcmaster.ca/)

- Privacy Office, in the University Secretariat
  - privacy@mcmaster.ca
Break
Grading
What is grading aside from assessment?

- Form of communication
- Shows student how they are doing
- Shows course instructor/TAs how students are doing
- Course instructor can adjust teaching material accordingly
Feedback

- Short explanations on assignments and exams
- Helps students understand their mistakes and identify successes in understanding
- Provides rationale for mark awarded

💡 Quick tip: Save common feedback points to copy and paste when applicable to other students in order to save time on writing it out each time.
Consistency and Fairness in Grading

- Be consistent regardless of:
  - Your current situation
  - Your feelings about the course
  - Your feelings about a specific student
  - Messy vs. neat solutions
  - Electronic vs. Paper submissions

- Be open to review but stand by your marking scheme

- Speak with instructor regarding changing grades after posting
Grading Assignments vs Exams

Exams:
- High stress, little time
  - Worth more
  - Messy
  - Poorly structured answers
  - Calculation errors

Assignments:
- Ample time, lots of resources
  - Worth less
  - Neat
  - Professional
  - Double check answers

Grade according to expectations (i.e. the assessment being marked)
Grading Written Assessments

- Rubrics are used for consistency in grading lab reports, project reports, code documentation, presentations, etc.

- Create a rubric based on the purpose of the assessment
  - Rubrics should adequately reflect the expected learning outcomes from coursework

- A rubric defines a gradient between whether the purpose was achieved or not

- Marks should be proportionally weighted with greater allocation of marks to the most important area of the deliverable
# Sample Grading Rubric

<table>
<thead>
<tr>
<th>Conclusion</th>
<th>4</th>
<th>2</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student shows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>understanding of the</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>material presented</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>in the lab</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Student shows some</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>understanding of the</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>material presented</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in the lab</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student shows no</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>understanding of lab</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>material or report</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>contains no</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>conclusion</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title page, objective/procedure, references</td>
<td>Incomplete or unacceptable</td>
<td>Marginal</td>
<td>Accomplished</td>
<td>Excellent</td>
<td>Score</td>
</tr>
<tr>
<td>Missing one or all components (title page objective references or procedural changes).</td>
<td>Title page and objective present but missing a component or procedural changes not noted or missing appropriate references.</td>
<td>All components present.</td>
<td>All components present and clearly organized in a professional manner any changes to procedure clearly explained. References cited.</td>
<td>/2</td>
<td></td>
</tr>
</tbody>
</table>
## Sample Grading Rubric

<table>
<thead>
<tr>
<th>Grade</th>
<th>Ideas</th>
<th>Organize</th>
<th>Support</th>
<th>Style</th>
<th>Mechanics</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Excels in responding to each question of the assignment. Demonstrates thorough thought and understanding of concepts. Effort was used when answering questions.</td>
<td>Response to each of the outline questions and organized manner. Either by essay style or independent paragraph. Sophisticated transitional sentences are used to develop one idea to the next.</td>
<td>Provides evidence of a thorough literature review to provide excellent explanation of concepts and ideas. Sources are from reputable journals and textbooks etc.</td>
<td>Excellent choice of words uses appropriate language. Sentence style fits the audience and purpose. Sentences are structured and focused not long and rambling.</td>
<td>Entirely free of spelling, punctuation, and grammatical errors.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Excels in responding to some of the questions of the assignment, other questions are not as thought through. Demonstrates thought and understanding of concepts. Effort was used when answering most questions.</td>
<td>Responds to each of the outline questions in a somewhat organized manner. Either by essay style or independent paragraph. Transitional sentence is are sometimes used to develop one idea to the next.</td>
<td>Provides evidence of a good literature review to provide sufficient explanation of concepts and ideas. Most sources are from reputable journals or textbooks etc., a few are from other resources.</td>
<td>Generally, use is a good choice of words; Uses appropriate language. Sentence is style fits the audience and purpose. Sentence is are for the most part structured and focused not long and rambling.</td>
<td>Contains a few errors (1-3)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Effort in responding to some of the questions of the assignment, other questions are not as thought through. Demonstrates understanding of concepts. Some effort was used when answering most questions</td>
<td>Responds to most of the outlined questions in a somewhat organized manner. Either by essay style or independent paragraph. Transitional sentences are not used to develop one idea to the next.</td>
<td>Provides evidence of a few sources to make up a literature review to provide sufficient explanation of concepts and ideas period of few sources are from reputable journals or textbooks etc., many are from other sources.</td>
<td>Vague language used. May use some inappropriate language. Sentence style does not fit the audience and purpose. Sentences are for the most part poorly structured and not focused.</td>
<td>Contains a few errors (greater than 5).</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Minimum effort in responding to the questions of the assignment. Demonstrates understanding of some concepts. Some effort was used when answering most questions.</td>
<td>Responds to a few of the outline questions in a somewhat organized manner. Essay style, independent paragraph, some point form responses. Transitional sentences are not used to develop one idea to the next.</td>
<td>Provides little evidence of literature review to provide sufficient explanation of concepts or ideas. Most concepts are based on cliches or over generalized for support. Many sources not from reputable sources (ie. relying on Wikipedia).</td>
<td>Can contains a few awkward sentences, misuses words, employs inappropriate language.</td>
<td>Contains many errors causing confusion to the readers understanding.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Does not respond to the assignment questions.</td>
<td>No organization answering the questions, everything is in point form.</td>
<td>Lack supporting evidence entirely.</td>
<td>Contains many awkward sentences, misuses words, employs inappropriate language.</td>
<td>Contain so many errors that it is impossible for the reader to follow.</td>
<td></td>
</tr>
</tbody>
</table>
Faculty of Engineering Grading Philosophies

- “The solution’s method is most important”: McMaster default
- “A neat, well-prepared answer is most important”
- “The final result is most important”
“The solution’s method is most important”: McMaster default

The student gets a grade for relevant steps in the process and are only penalized once for miscalculations and errors in logic even if the errors impact later results
Faculty of Engineering Grading Philosophies

- "Error-carried-forward": the idea that past mistakes should not affect subsequent calculations in a question
  - Only penalize subsequent unrelated errors; mark as if the error resulted in the correct answer for the remainder
- In most cases, ECF should be used to avoid double-counting errors
Grading Activity 1

Long Form Technical-Based Assessment

Assign each Midterm Question a mark out of 10
Early mistake in FBD, but rest of problem in completed correctly (i.e. the error is carried through)

The conclusion is the same as the answer scheme, but wrong when the student’s error is carried forward
Question 1 – Answer 2

- Accelerations are incorrect
- Times are correct (How?)
Question 1 - Answer 3

\[ m = 0.1 \times 0.4 \times 0.4 \times 2 \times 1000 = 10.8 \text{ kg} \]

\[ F_N = \mu N = \mu (0.8)(4.81)(600) \]  
\[ = 0.78 \times 1000 \]  
\[ = 780 \text{ N} \]

\[ F_d = \mu N = \mu mg \cos \theta \]

\[ = 0.78 \times 1000 \]  
\[ = 780 \text{ N} \]

\[ F_g = mg \sin \theta \]

\[ E_g = mN = \mu mg \cot \theta \]

\[ = 32 \times 9.81 \times 0.6 \]  
\[ = 189.18 \text{ N} \]

\[ F = \frac{F_g - F_d}{m} \]

\[ a = \frac{F}{m} \]

\[ = \frac{(189.18)(600)}{10.8} \]  
\[ = 125 \text{ m/s}^2 \]

\[ t = \sqrt{\frac{2s}{a}} = \sqrt{\frac{2(1.2)}{125}} \]  
\[ = 1.018 \text{ s} \]
Grading 1

- Grading consistently
  - Grading schemes are our friend
- Mark the method, not the numbers
  - Difficult if students do not show work
- Give every piece of work a fair chance
- Academic dishonesty
Grading Activity 2

Short Form Technical-Based Assessment
[2 Marks] A 50 kg iron block at 80°C is dropped into an insulated tank that contains 0.5 m³ of liquid water at 25°C. Determine the temperature when thermal equilibrium is reached.

- You must assign each student a grade in only about 1 minute.
Sample Student Submission

\[ E_{in} - E_{out} = \Delta E_{internal} + \Delta E_{kinetic} + \Delta E_{potential} \]

The system is closed, so:
\[ \Delta E_{kinetic} = 0, \Delta E_{potential} = 0, \Delta E_{out} = 0, \Delta E_{in} = 0 \]
\[ \Delta E_{internal, system} = \Delta E_{internal, iron} + \Delta E_{internal, water} = 0 \]
\[ [mc(T_2 - T_1)]_{iron} - [mc(T_2 - T_1)]_{water} = 0 \quad [0.5 \text{ mark}] \]

Assume:
\[ \rho_{water} = 1000 \frac{kg}{m^3}, c_{water} = 4.18 \frac{kJ}{kg \, ^oC}, c_{iron} = 0.45 \frac{kJ}{kg \, ^oC} \]

So:
\[ m_{water} = 0.5m^3 * 1000 \frac{kg}{m^3} = 50kg \quad [0.5 \text{ mark}] \]

and:
\[ (50kg)(0.45 \frac{kJ}{kg \, ^oC})(T_2 - 80^oC) + (500kg)(4.18 \frac{kJ}{kg \, ^oC})(T_2 - 25^oC) = 0 \quad [0.5 \text{ mark}] \]
\[ T_2 = 30.3^oC \]

Closed system means change in energy is zero (i.e.; internal energy of system remains constant)
\[ \Delta E_{internal, system} = 0 \]

Must solve for \( T_2 \), assuming standard constants
\[ \rho_{water} = 1000 \frac{kg}{m^3}, c_{water} = 4.18 \frac{kJ}{kg \, ^oC}, c_{iron} = 0.45 \frac{kJ}{kg \, ^oC} \]

So:
\[ m_{water} = 0.5m^3 * 1000 \frac{kg}{m^3} = 500kg \]

and:
\[ (50kg)(0.45 \frac{kJ}{kg \, ^oC})(T_2 - 80^oC) + (500kg)(4.18 \frac{kJ}{kg \, ^oC})(T_2 - 25^oC) = 0 \]
\[ T_2 = 25.6^oC \]
Grading Activity 3

Written-Based Assessment
As part of your TA duties, you have been assigned 30 short-answer responses to mark. Your Hours of Work Form gives you an hour and a half to grade this assignment. This means that you have **3 minutes to spend marking each paragraph** (90 minutes / 30 assignments).

The question students were asked to answer is as follows:

“Explain what we can do as citizens to reduce the effects of global warming. Consider factors such as recycling, the impact of fossil fuels, and the impact of consumerism.”

- From the time we switch screens, you have **3 minutes to assign a mark out of 10**
Grading Activity 3

In the last years we are facing a really big problem called "Global Warming" because the humanity was not so carefull with the planet Earth. Global warming has many bad effect and it always an international environment problem that people want to solve. With the growing of earth population, global warming has become serious than ever. The citizens can reduce the effects of global warming if they recycle the material products like paper, glass, etc. If we will recycle the rubbish more than ever before we will get a better future. I could do many things like recycling. At home I will separate the trash into many categories. For example, papers, bottles, and garbages. So many people do not recycle or through the rubbish in the nature. Papers could reuse after the process of paper factories. Bottles could reuse after the process of factories too. Most people become really comfortable and (they forget to use the bikes) not careful with the environment. They forget the oxygen is an important resource for life and they continue to cut the forests. We However, these things have an influence on us. When the oil get fewer, the price get higher. Customers might ot pay more on many things and some people might not afford it. We all need to be better friends to our world and nature. We should start to pay more attention to the Earth needs if we want to live in a safe-way. To sum up, helping reduce the effects of global warming is not only good for yourself but the every one and our home planet Earth.

Assign a grade out of 10

*Student response adapted from MacPherson Institute
More Information

“Explain what we can do as citizens to reduce the effects of global warming. Consider factors such as recycling, the impact of fossil fuels, and the impact of consumerism.”

- This is a sustainability course where content matters, but so does communication!
- Upon a discussion with the professor, you learn that they want:
  - 6 grade points for content (i.e., discussion on global warming, fossil fuels, consumerism)
  - 4 grade points for communication (i.e., spelling mistakes, clear sentences)

- From the time we switch screens, you have 3 minutes to assign a mark out of 10
In the last years we are facing a really big problem called "Global Warming" because the humanity was not so carefull with the planet Earth. Global warming has many bad effect and it always an international environment problem that people want to solve. With the growing of earth population, global warming has become serious than ever. The citizens can reduce the effects of global warming if they recycle the material products like paper, glass, etc. If we will recycle the rubbish more than ever before we will get a better future. I could do many things like recycling. At home I will separate the trash into many categories. For example, papers, bottles, and garbages. So many people do not recycle or through the rubbish in the nature. Papers could reuse after the process of paper factories. Bottles could reuse after the process of factories too. Most people become really comfortable and (they forget to use the bikes) not careful with the environment. They forget the oxygen is an important resource for life and they continue to cut the forests. We However, these things have an influence on us. When the oil get fewer, the price get higher. Customers might ot pay more on many things and some people might not afford it. We all need to be better friends to our world and nature. We should start to pay more attention to the Earth needs if we want to live in a safe-way. To sum up, helping reduce the effects of global warming is not only good for yourself but the every one and our home planet Earth.

Assign a grade: 6
Content: 6
Communication: 4

*Student response adapted from MacPherson Institute
In the last years we are facing a really big problem called “Global Warming” because the humanity was not so careful with the planet Earth. Global warming has many bad effect and it always an international environment problem that people want to solve. With the growing of earth population, global warming has become serious than ever. The citizens can reduce the effects of global warming if they recycle the material products like paper, glass, etc. If we will recycle the rubbish more than ever before we will get a better future. I could do many things like recycling. At home I will separate the trash into many categories. For example, papers, bottles, and garbages. So many people do not recycle or through the rubbish in the nature. Papers could reuse after the process of paper factories. Bottles could reuse after the process of factories too. Most people become really comfortable and (they forget to use the bikes) not careful with the environment. They forget the oxygen is an important resource for like and they continue to cut the forests. We However, these things have an influence on us. When the oil get fewer, the price get higher. Customers might ot pay more on many things and some people might not afford it. We all need to be better friends to our world and nature. We should start to pay more attention to the Earth needs if we want to live in a safe-way. To sum up, helping reduce the effects of global warming is not only good for yourself but the every one and out home planet earth.

Assign a grade

Content: 4/6
Communication: 1/4

*Student response adapted from MacPherson Institute
In the last years we are facing a really big problem called "Global Warming" because the humanity was not so careful with the planet Earth. Global warming has many bad effects and it is always an international environment problem that people want to solve. With the growing of earth population, global warming has become serious than ever. The citizens can reduce the effects of global warming if they recycle the material products like paper, glass, etc. If we will recycle the rubbish more than ever before we will get a better future. I could do many things like recycling. At home I will separate the trash into many categories. For example, papers, bottles, and garbages. So many people do not recycle or through the rubbish in the nature. Papers could reuse after the process of paper factories. Bottles could reuse after the process of factories too. Most people become really comfortable and (they forget to use the bikes) not careful with the environment. They forget the oxygen is an important resource for like and they continue to cut the forests. We However, these things have an influence on us. When the oil get fewer, the price get higher. Customers might not pay more on many things and some people might not afford it. We all need to be better friends to our world and nature. We should start to pay more attention to the Earth needs if we want to live in a safe way. To sum up, helping reduce the effects of global warming is not only good for yourself but the everyone and out home planet earth.

Assign a grade

Content: 4/6
Communication: 1/4

- Lots of spelling and grammar errors.
- Good discussion on Global warming.

*Student response adapted from MacPherson Institute*
In the last years we are facing a really big problem called “Global Warming” because the humanity was not so careful with the planet Earth. Global warming has many bad effects and it always an international environment problem that people want to solve. With the growing of earth population, global warming has become serious than ever. The citizens can reduce the effects of global warming if they recycle the material products like paper, glass, etc. If we will recycle the rubbish more than ever before we will get a better future. I could do many things like recycling. At home I will separate the trash into many categories. For example, papers, bottles, and garbages. So many people do not recycle or through the rubbish in the nature. Papers could reuse after the process of paper factories. Bottles could reuse after the process of factories too. Most people become really comfortable and (they forget to use the bikes) not careful with the environment. They forget the oxygen is an important resource for life and they continue to cut the forests. We However, these things have an influence on us. When the oil get fewer, the price get higher. Customers might not pay more on many things and some people might not afford it. We all need to be better friends to our world and nature. We should start to pay more attention to the Earth needs if we want to live in a safe way. To sum up, helping reduce the effects of global warming is not only good for yourself but the every one and out home planet earth.

Assign a grade

Content: 4/6
Communication: 1/4

*Student response adapted from MacPherson Institute
Grading 3

- Always be clear on the intended learning outcomes, this will guide your rubric
- Be consistent with grading time (i.e., try not to spend 2 min on one student, but 15 min on another)
Teaching
Introduction to Teaching

- What is the difference between a lecture, tutorial and a lab?
  - Lecture: Heavily theory based, minimal interaction
  - Tutorial: Problem based, lots of interaction, application of theory
  - Lab: Real world application based, high student involvement, hands on
Teaching Roles and Functions

- Possible roles
  - Review material
  - Perform experiments
  - Review assignment/homework question
  - Introduce and/or reinforce course content

- Facilitate a discussion and get the students thinking critically

- Varying levels of knowledge
Preparing for First Lesson

Prepare a tutorial handout

• Physical or electronic
• Define your expectations
• Attendance and participation
• Your office number, office hours, and email address
• Your email policy
Learning Environment

- You set the tone
- Civil and inclusive classroom
  - It’s okay for students to say “I don’t know”
- Identify and discourage bad behaviour
- Please reference McMaster's Code of Student Rights and Responsibilities.
- Learn about student mental health and how to support students
  - Professor Hippo-on-Campus Mental Health Education Program - Mental Health at McMaster
Keeping Students Engaged/ Focused

- Visually survey the room and speak clearly
- Student’s attention span is limited to 15-20 minutes
  - Consider changing the format to keep things interesting
- Ask the students questions
  - Open-ended questions vs. closed-ended questions:
    'How did you arrive at a solution to this problem’ instead of ‘What answer did you get for this problem’
  - Survey questions: get students to raise their hand (low commitment engagement)
  - Probing questions: e.g. If I raise the temperature what happens to $c_p$?
Lesson Plans

- Not a script, but an outline for you to follow
- Helps keep time
- Helps you present material in a logical and easy to understand manner

Format
- Bridge
- Outcome(s)
- Pre-Assessment
- Participatory Learning
- Post-Assessment
- Summary
Lesson Plans

- This format is useful for not just “lessons”: seminars, explaining a lab, answering questions, etc.
- MacPherson institute has many more guidelines for developing lesson plans:
  - Inquiry based learning techniques
  - Instructional skills workshops
Lesson Plans: Bridge

5-10% of time

- Gain the class’s attention at the start of the tutorial
  - Gives students time to get settled

- Gain students’ interest
  - Personal anecdote, historical event, thought-provoking dilemma, real-world example, short video clip, practical application, probing question
  - Connect the topic to something they already know
Lesson Plans: Intended Learning Outcomes/Objectives

~1 minute

- Introduce the purpose/objective of the tutorial
  - Each objective should be one sentence statement

- What students will know/be able to do by the end of tutorial
  - “By the end of this lesson, you should be able to…”
Lesson Plans: Pre-Assessment

~10-20% of time

- Helps TA understand the current level of understanding
- Review previous tutorial/lab or content presented in class
- Limit to important equations and concepts
- Great opportunity to ask open-ended questions to get the class engaged
Lesson Plans: Participatory Learning
~60-70% of time

- Keep your original objective in mind

- Check for understanding
  - ask questions throughout and try not to continuously talk
  - have the students work in pairs to solve sample problems

- Tip: Before solving problems with students, write notes and questions on the solution to ask students
Lesson Plans: Post-Assessment

5%-10% of time

- Provide opportunity for questions from the students

- Check the students’ understanding
  - Open-ended questions
  - Polls/iClicker/TopHat/etc. can be useful for larger groups
Lesson Plans: Summary

< 5% of time

- Conclusion to lesson
- Review and reflect on material covered
Lesson Plans: Self-Assessment

- Perform immediately after tutorial/lab
- What went well? Why?
- What needs work? How can I improve on it?
- What should I review/reiterate at the start of the next lesson?

Note: McMaster conducts course evaluations containing feedback from students. If you want to be included, you need to ask your professor.
Thank you

Please complete the quiz and fill out the evaluation!

pelligc@mcmaster.ca
millac@mcmaster.ca