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**Western University**
**Faculty of Engineering**
*Department of Mechanical and Materials Engineering*

MME 2221b – "Computational Methods for Mechanical Engineers"

Final Examination – April 20, 2021

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**CLOSED BOOK**          **3 HOURS**          **ZOOM-PROCTORED**

**FINAL EXAM TIME BREAKDOWN:**
- Sections I + II + III: 180 min + 15 min upload time (continuous timespan)
- No break will exist between Sections I + II and III; uploading the answers to Sections I + II will automatically result in your advancement to Section III

**GENERAL EXAM POLICIES:**
- All three sections of the exam will be released under the "Tests and Quizzes" tool in OWL.
- No form of communication (oral or electronic) is permitted during the examination.
- No other person is allowed to be present in your room for the duration of the exam.
- The use of virtual backgrounds in Zoom is not permitted.
- No documentation (textbooks, formula sheets, etc.) other than your own **blank** or your **printed exam** paper is permitted in your work area for Sections I & II of the exam.
- Any evidence of cheating will result in a grade of 0% on the entire exam.
- You will need to have access to a computer (Windows or Mac-based) with a functional camera. The lack of a functional camera invalidates your exam and you will need to contact the instructor for further steps.
- The exam will be proctored much like our quizzes, with breakout rooms and TA proctors.
- **Sections I & II will be released to you in full first**
  - These sections must be completed without the assistance of a computer.
  - If you have a printer, you will be permitted to print these sections. If not, you will be permitted to scroll on your computer screen using one hand only.
  - These sections are completely closed book.
  - Section I will be completed on a blank piece of paper, and Section II can either be completed on the printed exam paper, or on blank paper if desired.
  - **Once you have completed both sections**, you will be permitted to access a phone or scanner to scan your work, and upload both sections to OWL. Please announce when you start this to the proctor by showing the 'green checkmark' found under 'reactions'.
  - Once you have started this, you are not permitted to go back and change anything.

- **Section III will require the use of MATLAB on your Computer**
  - This section will be released to you once you submit Sections I & II to OWL.
  - This section is <u>limited open book</u>, meaning you can refer to your course notes, past examples, etc. You are <u>not permitted</u> to communicate with anyone, nor look at any other extraneous material such as the results of 'google' searches.
  - The questions in Section III will be completed in MATLAB and uploaded to OWL. <u>Be sure you upload all your work</u> as anything that is not included at the time of submission will not be graded.
- The use of mobile devices of any kind (cell phones, tablets, iPads, etc.) is not permitted during the exam except for the time when you will be uploading the solutions. Again, <u>announce when you start this to the proctor by showing the 'green checkmark' found under 'reactions'</u>. Please note that the proctor will record the time needed for upload and abnormally long upload times will be reported to the instructor for further action.
- Microphone and speakers are required if you need to talk to the instructor during the exam.
- Please do not speak to your breakout room proctor as that will be disruptive for anyone else working on the exam in the same breakout room.
- Monitor your Zoom chat regularly in case that the proctor is attempting to reach you.
- If you are out of the Zoom meeting for more than 5 minutes (over the entire duration of the exam), your exam will be invalidated, and you will need to contact the instructor for further steps.
- **The maximum 5 minutes blackout period** also applies to late arrivals into the Zoom meeting. This means that if you are late by more than 5 minutes, your exam will be invalidated, and you will need to contact the instructor for further steps.
- Please note that your connection into the Zoom meeting is automatically recorded by Zoom servers so while it might not be checked by proctors in real-time, it will be checked after the completion of the exam.
- If you need to leave the field of view of the camera (to collect printed pages, bathroom break, etc.), please announce the proctor by using the **"raise hand"** icon in Zoom. Please note that the proctor will record the time when you were out of the field of view and abnormally long times will be reported to the instructor for further action.
- Write your name on all submitted documents.
- Make sure you submit all your work via OWL. Answers to Sections I and II will be uploaded together whereas the answer to Section III will be uploaded at the end of its section. Anything submitted outside of OWL will not be marked.
- Please join the Zoom meeting **10 minutes before the exam starts at the latest.**

**CHEATING:** University policy states that cheating, including plagiarism, on an examination is a scholastic offense. The commission of a scholastic offense is attended by academic penalties which might include expulsion from the program. If you are caught cheating, there will be no second warning.

**<u>Section I.</u>** *True or False Questions* **(30% total, 1% each)**.

<u>Directions</u>: Record the answers to each question below on a blank page in a simple and clear manner: "1 - TRUE, 2 - FALSE, etc." Please note that unanswered questions and/or unclear answers will receive no marks. If any of the questions appears to be missing information, state your assumption and proceed with a "TRUE" or a "FALSE" answer based on your assumption.

Section Notes:
- This section is self-explanatory; 30 T/F questions.
- Will be a mix of Excel and MATLAB.
- Shouldn't take more than 30 minutes at the most.

**<u>Section II.</u>** *Elaborated Problems (Computer Unassisted, Closed Book)* **(25% total)**.

<u>Directions</u>: Attempt each of the 3 questions below. The value of each part is indicated at its end.

Section Notes:
- This section will ask you do write some simple commands for both Excel and MATLAB.
- You will be asked to debug a simple MATLAB code that you have seen before. The number of each type of error will be provided (ie: there are 3 syntax errors and 1 missing command, etc.)
- You will also be asked to write a very simple function for a given problem. This will not be longer than 12 lines total.

**<u>Section III.</u>** *Elaborated Problems (Computer Assisted using MATLAB, Open Book)* **(45% total)**.

<u>Directions</u>: Attempt each of the 4 questions below. The value of each part is indicated at its end.

Section Notes:
- This section will be like a quiz.
- There are 4 questions, but they are simpler and more straightforward than typical quiz questions. I did this so the questions don't 'build' on themselves too much.
- Past quizzes (this years and last years) are good study tools for this section.