

Syllabus

MCG 4340 Mechanical Engineering Laboratory Manual

1 Teaching Staff

Instructors:

Catherine Mavriplis (seminar coordinator): Catherine.Mavriplis@uottawa.ca
Michel Nganbe: mnganbe@uottawa.ca
Davide Spinello (course coordinator): dspinell@uottawa.ca
Stavros Tavoularis: stavros.tavoularis@uottawa.ca

Teaching and Laboratory Assistants:

Amel Don: adon068@u0ttawa.ca
She-Ming Lau-Chapdelaine: slauc076@u0ttawa.ca
Ali Mansur: amans070@u0ttawa.ca
Brigitte Potvin: bpotv055@u0ttawa.ca
Hassan Shaban: hshab073@u0ttawa.ca

2 Locations

Seminars: Wednesdays, 14:30 - 16:00, CBY C03

Tutorials: Fridays, 14:30 - 15:30, STE G0103

Laboratories:

Session 1: Mondays, 14:30 - 18:30, CBY (see Table 2)

Session 2: Thursdays, 14:30 - 18:30, CBY (see Table 3)

Final Exam: TBD

3 Emergency Information

- The University emergency number is 613-562-5411 (or extension 5411 within the University). Do not call 911 for emergencies within the University.

- Nearest first aid kit locations:
for **B206** in the MCG secretariat on the second floor
for **D05, D06, and E012** in E012 (Mechanical Engineering workshop).

4 Safety Rules

- Know the locations of the nearest exit, fire alarm, and fire extinguisher.
- If it does not belong to you, don't touch it!
- Any accident must be reported immediately to the teaching assistant or to Dr. D. Spinello (course coordinator).

5 Course Outline and Organization

This course consists of seven laboratory experiments covering a number of different areas of mechanical engineering. Because of the interdisciplinary nature of the course, it is being “team taught”, with three different professors responsible for experiments in, or close to, their areas of expertise. Table 1 lists the experiments, their locations and the professors and teaching assistants responsible for each.

Table 1: Information concerning the experiments

Experiment	Room	Instructor	TA
1. Welding	CBY E012	M. Nganbe	A. Mansur
2. Pumps	CBY D06	S. Tavoularis	A. Don
3. Turbine	CBY D06	S. Tavoularis	A. Don
4. Dynamic Balancing	CBY B206	D. Spinello	B. Potvin
5. PD and PID Control	CBY B206	D. Spinello	B. Potvin
6. Structural Sandwich	CBY B206	M. Nganbe	S. Lau-Chapdelaine
7. Sound	CBY B206	D. Spinello	S. Lau-Chapdelaine

6 Grading Scheme

The mark for this course will be determined by the following contributions with corresponding weights:

Seminars	5%
Laboratory logbook	20%
Final laboratory report	20%
Tutorial assignments	10%
Oral presentation	10%
Final exam	35%

7 Attendance Policy

Each student has to attend all Tutorials, Laboratories and Seminars. If a student cannot attend due to a medical condition, to be certified by an authorized physician, she/he must notify the instructor in advance. Unauthorized absence will result in the failure of the course.

8 Groups

The class is divided into 20 groups according to the list of names in Tables 6 and 7 in the Appendix. Each student is assigned a group number and must follow this group in all activities of this course. Groups 1 to 10 attend Laboratory Session 1 and Groups 11 to 20 attend Laboratory Session 2.

9 Laboratory schedule

All experiments are located in CBY building; for specific rooms see Table 1. The dates for the laboratories for each group in the two sessions are given in Tables 2 and 3. Numbers in these tables correspond to group numbers.

Table 2: Dates for the laboratories in Session 1 (Mondays)

	Welding	Pumps	Turbine	Dynamic Balancing	Controls	Structural Sandwich	Sound
Jan 6	<i>No laboratory</i>						
Jan 13	<i>No laboratory</i>						
Jan 20	1	10	9	8	7	6	5
Jan 27	2	1	10	9	8	7	6
Feb 3	3	2	1	10	9	8	7
Feb 10	4	3	2	1	10	9	8
Feb 17	<i>Study week</i>						
Feb 24	5	4	3	2	1	10	9
Mar 3	6	5	4	3	2	1	10
Mar 10	7	6	5	4	3	2	1
Mar 17	8	7	6	5	4	3	2
Mar 24	9	8	7	6	5	4	3
Mar 31	10	9	8	7	6	5	4

10 Tutorial Schedule

Tutorials will be given weekly following the schedule in Table 4. Two of these tutorials will include an assignment with the due date indicated in the same table. Note that the marks for these assignments will contribute a total of 10% of the final grade.

Table 3: Dates for the laboratories in Session 2 (Thursdays)

	Welding	Pumps	Turbine	Dynamic Balancing	Controls	Structural Sandwich	Sound
Jan 9				<i>No laboratory</i>			
Jan 16				<i>No laboratory</i>			
Jan 23	11	20	19	18	17	16	15
Jan 30	12	11	20	19	18	17	16
Feb 6	13	12	11	20	19	18	17
Feb 13	14	13	12	11	20	19	18
Feb 20				<i>Study week</i>			
Feb 27	15	14	13	12	11	20	19
Mar 6	16	15	14	13	12	11	20
Mar 13	17	16	15	14	13	12	11
Mar 20	18	17	16	15	14	13	12
Mar 27	19	18	17	16	15	14	13
Apr 3	20	19	18	17	16	15	14

Table 4: Tutorial schedule and oral presentation group assignments

Date	Topic	Groups presenting
Jan 10	Introduction to MCG 4340	
Jan 17	Roles and Responsibilities in the Workspace (Speaker: Paul Fortin)	
Jan 24	Measurement Uncertainty - Rounding of Reported Values (Assignment due on January 31)	
Jan 31	Normality Tests - Removal of Outliers (Assignment due on February 7)	
Feb 7	How to give an oral presentation (Speaker: William Hallett)	
Feb 14	Oral presentations: Pumps	1, 10, 20
Feb 21	<i>Study week</i>	
Feb 28	Oral presentations: Turbines	9, 11, 12
Mar 7	Oral presentations: Dynamic Balancing	2, 3, 19
Mar 14	Oral presentations: Control Systems	8, 13, 18
Mar 21	Oral presentations: Structural Sandwich	4, 7, 14, 17
Mar 28	Oral presentations: Sound	5, 6, 15, 16
Apr 4	TBD	

11 Oral Presentations

Several tutorial sessions will be dedicated to oral presentations. A collective oral presentation will be delivered by each group, but all group members are expected to contribute to it and each should present a roughly equal portion of the material. The topic for each group will be related to a laboratory according to Table 4. Each presen-

tation will last 10 minutes with 3 additional minutes for questions. Oral presentations will be evaluated according to the following scheme:

Content (10/20)

- Technical level appropriate for audience
- Technical points properly explained
- Pertinence with respect to the assigned topic
- Understanding of the topic
- Logical organization (structure of the presentation)

Appearance (5/20)

- Style of the presentation
- Legibility
- Quality of graphics
- Slides deliver the message effectively

Delivery (5/20)

- Language
- Audibility
- Transition between members of the group
- Balance among all group members
- Timing
- Questions answering

12 Logbook Marking

The logbook should be updated every week and be available for inspection at all activities of this course, including all tutorials and experiments.

Pre-experiment checking: Just before each experiment starts, each laboratory assistant will collect the logbooks of the members of the corresponding group and will briefly inspect their contents concerning the experiment to be conducted. The assistant will initial each logbook, enter the rating “satisfactory” or “unsatisfactory”, and return it to its owner, providing comments orally, if necessary. An unsatisfactory rating will result in 20% reduction of the grade for this particular laboratory.

Table 5: Logbook due dates

	Welding	Pumps	Turbine	Dynamic Balancing	Controls	Structural Sandwich	Sound
Jan 24	1	10	9	8	7	6	5
Jan 31	2	1	10	9	8	7	6
	11	20	19	18	17	16	15
Feb 7	3	2	1	10	9	8	7
	12	11	20	19	18	17	16
Feb 14	4	3	2	1	10	9	8
	13	12	11	20	19	18	17
Feb 17	<i>Study week</i>						
Feb 28	5	4	3	2	1	10	11
	14	13	12	11	20	19	18
Mar 7	6	5	4	3	2	1	10
	15	14	13	12	11	20	19
Mar 14	7	6	5	4	3	2	1
	16	15	14	13	12	11	20
Mar 21	8	7	6	5	4	3	2
	17	16	15	14	13	12	11
Mar 28	9	8	7	6	5	4	3
	18	17	16	15	14	13	12
Apr 4	10	9	8	7	6	5	4
	19	18	17	16	15	14	13
Final exam ¹	20	19	18	17	16	15	14

¹ Students in Laboratory Session 2 attending the Session of April 4 should submit their logbooks to the TA at the beginning of the final exam.

Correction and grading: At the *beginning* of each tutorial session, each student will hand his/her updated logbook to the corresponding assistant according to the schedule in Table 5. The logbook will contain a full and final entry of all material concerning the corresponding past experiment. Each logbook will be graded by the assistant and returned to the student by the end of the tutorial session. A mark will be assigned to each entry according to the following scheme

70% for content.

30% for appearance and style.

If the pre-experiment rating was unsatisfactory 20% of the maximum mark will be deducted. A penalty will be assigned for a late submission during the tutorial time and a zero mark will be assigned to a logbook that was not submitted during the appropriate tutorial session. The mark will not be adjusted for improvements made after the initial mark was assigned, but such improvements are recommended for educational purposes. Failure to deliver the logbook to the TA will result to a zero mark for the specific laboratory. As a general rule, students attending Laboratory Session 1 on Monday will have their logbooks marked on Friday in the same week; students attending Laboratory Session 2 on Thursdays will have their logbooks marked on

Friday in the following week.

13 Final Reports

Each student will submit an individual final report on the same topic as the one assigned to his/her group for the oral presentation, as specified in Table 4.

Content: The Final Report should be written following the document *Technical Reports* in the Course Manual.

Due date: The due date for all reports is the date of the Final Exam. Submit your report to the teaching assistant before the beginning of the exam.

Correction and grading: Each report will be graded by a teaching assistant. The mark will be assigned according to the following scheme

70% for content.

30% for appearance and style.

Appendix: Groups

Table 6: Groups attending Laboratory Session 1 (Mondays)

Group	Name	Group	Name
1	Aleksandrov, Pavel Ashman, Marie Jeanne Laurin Bordeleau, Jason Phillip Boteler, Claire Irene	5	Jarjoura, Jason Jayakody, Kasun Khanam, Shanjida Latrémouille, Maxime Claude
2	Bryson, Samantha Lynn Caron, Lacy Renee Cox, Mitchell David Crête-Lavoie, Gabriel	7	Lavergne, Béatrice Vignola Lo, Mark Lovrenovic, Zlatko Lumingu Zola-Sinza, Bonheur
3	Damou, Mohamed Reda Dunn, Heather Fitzpatrick, Kyle Ryan Fodouop Tebeu, Elvis Josy	8	Mauracher, Kaitlyn Ashley Mupenda, Steve Najafali, John Nema Rashid, Nida
4	Fournier, Brandon Neron Galea, Nick Charles Killens Gilbey, Belinda Gordner, Alexander	9	Refaey, Rana Tarek Schulz, Kurt Peter Edward Spiegelberg, Marlee Kaitlyn Villeneuve, Jacques Henri
5	Griese, Adam Victor Hodak, Christian Leo Hoyi, Parfait Modeste Kodjo Huynh, Chi Chi	10	Walsh, David Daniel Sibay Warren, Erika Anne Yaraskavitch, John-Paul Martin York, Richard

Table 7: Groups attending Laboratory Session 2 (Thursdays)

Group	Name	Group	Name
11	Ahlamine, Hicham Akindele, Olawale Abiodun AAlsaadi, Ahmed Mohammed Badawi, Ahmad	16	Johnston, Owen Kandil, Zeyad Kline, Nathan Jeremiah Larose, Marc-André
12	Bjerring, Marc Frederic Boulerice, Xavier Vincent Bourne, Ewura-Abena Bryan, Nicholas Thomas	17	Levesque, Benjamin Machula, Taras Malette, Julien Bernard McLachlin, James
13	Celac, Eugeniu Chartrand, Marc-Andre Crossman, Michèle Celine Dumas, Xavier	18	Moisan, Martin Muzar, Dominic Phillipe Ngaleu Nouwe, Ivan Martial Oreskovich, Darik Thomas
14	Erscoi, Valentina Estephan, Ralph Fournier, Philip Gaudreau, Jérémie Jean-Paul	19	Pollock, Carson Samiee-Zafarghandy, Mahban Sangwa, Victor Scott-Harston, Lionel
15	Germann, Karl Guzman, Ricardo Haas, Joel Hurtubise, Sébastien	20	Sinn, Simon Suletic, Stefan Trottier, Jérémie Marc Ungar, Adam Joseph Albert

