

# 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 Assistants:

Thanos Drivas: `tdriv060@u0ttawa.ca`  
Patrick Dumond: `pdumo057@u0ttawa.ca`  
She-Ming Lau-Chapdelaine: `slauc076@u0ttawa.ca`  
Geoffrey Maines: `gmain030@u0ttawa.ca`  
Steffen Pentelow: `spent038@u0ttawa.ca`

## 2 Locations

**Seminars:** Mondays, 13:00 - 14:30, LEE A131

**Tutorials:** Fridays, 14:30 - 15:30, STE A0150

### 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:** April 15, 2013, 14:00-17:00

## 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

<b>Experiment</b>	<b>Room</b>	<b>Instructor</b>	<b>TA</b>
1. Welding	CBY E012	M. Nganbe	T. Drivas
2. Pumps	CBY D06	S. Tavoularis	G. Maines
3. Turbine	CBY D06	S. Tavoularis	G. Maines
4. Dynamic Balancing	CBY B206	D. Spinello	P. Dumond
5. Controls	CBY B206	D. Spinello	P. Dumond
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, he/she must notify the instructor in advance. Unauthorized absence will result in the failure of the course.

## 8 Groups

The class is divided into 21 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 11 attend Laboratory Session 1 and Groups 12 to 21 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, except for Tuesday, April 9)

	Welding	Pumps	Turbine	Dynamic Balancing	Controls	Structural Sandwich	Sound
<b>Jan 7</b>	<i>No laboratory</i>						
<b>Jan 14</b>	1	10	9	7	5	3	2
<b>Jan 21</b>	2	11	10	8	6	4	3
<b>Jan 28</b>	3	1	11	9	7	5	4
<b>Feb 4</b>	4	2	1	10	8	6	5
<b>Feb 11</b>	5	3	2	11	9	7	6
<b>Feb 18</b>	<i>Study week</i>						
<b>Feb 25</b>	6	4	3	1	10	8	7
<b>Mar 4</b>	7	5	4	2	11	9	8
<b>Mar 11</b>	8	6	5	3	1	10	9
<b>Mar 18</b>	9	7	6	4	2	11	10
<b>Mar 25</b>	10	8	7	5	3	1	11
<b>Apr 9</b>	11	9	8	6	4	2	1

## 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
<b>Jan 10</b>				<i>No laboratory</i>			
<b>Jan 17</b>				<i>No laboratory</i>			
<b>Jan 24</b>	12	20	19	17	15	14	13
<b>Jan 31</b>	13	21	20	18	16	15	14
<b>Feb 7</b>	14	12	21	19	17	16	15
<b>Feb 14</b>	15	13	12	20	18	17	16
<b>Feb 21</b>				<i>Study week</i>			
<b>Feb 28</b>	16	14	13	21	19	18	17
<b>Mar 7</b>	17	15	14	12	20	19	18
<b>Mar 14</b>	18	16	15	13	21	20	19
<b>Mar 21</b>	19	17	16	14	12	21	20
<b>Mar 28</b>	20	18	17	15	13	12	21
<b>Apr 4</b>	21	19	18	16	14	13	12

Table 4: Tutorial schedule and oral presentation group assignments

Date	Topic	Groups presenting
<b>Jan 11</b>	Introduction to MCG 4340	
<b>Jan 18</b>	Roles and Responsibilities in the Workspace (Speaker: Paul Fortin)	
<b>Jan 25</b>	Measurement Uncertainty - Rounding of Reported Values ( <b>Assignment due on February 1</b> )	
<b>Feb 1</b>	Normality Tests - Removal of Outliers ( <b>Assignment due on February 8</b> )	
<b>Feb 8</b>	How to give an oral presentation (Speaker: William Hallett)	
<b>Feb 15</b>	Oral presentations: Pumps	10, 11, 20, 21
<b>Feb 22</b>	<i>Study week</i>	
<b>Mar 1</b>	Oral presentations: Turbines	1, 9, 12, 19
<b>Mar 8</b>	Oral presentations: Dynamic Balancing	7, 8, 17, 18
<b>Mar 15</b>	Oral presentations: Control Systems	5, 6, 15, 16
<b>Mar 22</b>	Oral presentations: Structural Sandwich	3, 4, 14
<b>Apr 5</b>	Oral presentations: Sound	2, 13
<b>Apr 8</b>	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.

---

<sup>1</sup>This is not a tutorial session. Students in Laboratory Session 1 attending the Session in April 9 should submit their logbooks to the TA on this date.

Table 5: Logbook due dates

	Welding	Pumps	Turbine	Dynamic Balancing	Controls	Structural Sandwich	Sound
<b>Jan 18</b>	1	10	9	7	5	3	2
<b>Jan 25</b>	2	11	10	8	6	4	3
<b>Feb 1</b>	3	1	11	9	7	5	4
	12	20	19	17	15	14	13
<b>Feb 8</b>	4	2	1	10	8	6	5
	13	21	20	18	16	15	14
<b>Feb 15</b>	5	3	2	11	9	7	6
	14	12	21	19	17	16	15
<b>Feb 18</b>	<i>Study week</i>						
<b>Mar 1</b>	6	4	3	1	10	8	7
	15	13	12	20	18	17	16
<b>Mar 8</b>	7	5	4	2	11	9	8
	16	14	13	21	19	18	17
<b>Mar 15</b>	8	6	5	3	1	10	9
	17	15	14	12	20	19	18
<b>Mar 22</b>	9	7	6	4	2	11	10
	18	16	15	13	21	20	19
<b>Apr 5</b>	10	8	7	5	3	1	11
	19	17	16	14	12	21	20
<b>Apr 8</b>	20	18	17	15	13	12	21
	21	19	18	16	14	13	12
<b>Apr 15<sup>1</sup></b>	11	9	8	6	4	2	1

**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)

<b>Group</b>	<b>Name</b>	<b>Group</b>	<b>Name</b>
<b>1</b>	Al-Robaee, Sammer Kadhim A. Al Shal, Ahmed Rageh Ahmed Andison, Christopher David Baribeau, Celine Jeannine Bellerive, André	<b>7</b>	Liscano, Monica Mercure, Maxime Nash, Michael Peter Nastic, Aleksandra Nguyen, Ngoc Phuoc Vien
<b>2</b>	Blouin, Charles Caron, Patrice Chawla, Dhruv Czyrnyj, Catriona Dennis, Kadeem	<b>8</b>	Oberholzer, David Neil O'Grady, Megan Theresa Paris, Ren Francois Joseph Passey, Ryan Pope, James
<b>3</b>	Derviskadic, Robert Desjardins, Adam Luc Joseph Edwards, Eric Alexander Fortier, Hélène Fox, Benjamin Michael	<b>9</b>	Ragusich, Xavier Rémillard, Antoine Roy, Alex Pierre Roy, Nicholas Jean Clemens, Kyle
<b>4</b>	Gomez, Peter Gravelle, Alexandre Guillot, Dominic Helal, Alexander Tristan Hepguvendik, Hasan Alper	<b>10</b>	Séguin, Nicolas Shanti, Inas Amin Souissi, Skander Sra, Jessicajeet Meszaros, Philippe Ernest
<b>5</b>	Hoftyzer, Robert J Holmer, Jacob Housseini, Ghayath Huffman, Joshua Jiang, Wei	<b>11</b>	Stevens, Philippe Vanasse, Rachel Zarzour, Tarek Zuliani, David John Potvin-Bernal, Julian
<b>6</b>	Karanja, Joseph Kamau Kartes, Avery Lynne Marshall Kukurin, James Wesley Lawrynczyk, Agata Legros-Jacques, Marc-André Khalaf, Wael		



Table 7: Groups attending Laboratory Session 2 (Thursdays)

<b>Group</b>	<b>Name</b>	<b>Group</b>	<b>Name</b>
<b>12</b>	Abraham, Joseph	<b>17</b>	Haley, Michael
	Ahlamine, Hicham		Leblanc, Louis
	Akram, Taimoor		Li, Xinlin
	Alawode, Mofiyinfoluwa		Li, Yue
	Alonso Rodriguez, Yanco		Liu, Xuanwei
<b>13</b>	Bakayoko, Gaoussou	<b>18</b>	Nadarajah, Parthipan
	Baskaran, Naviegaran		Ngalaho Founta, Henri
	Bouchard, Sébastien		Nikkel, Sarah
	Bourdon Lafleur, Steve		Nor Helmi, Herrmy
	Brassard, Alex		
<b>14</b>	Brassard, Carl	<b>19</b>	Pinkney, Jamie
	Campbell John		Rose, Jason Daniel Micheal
	Charette, Miguel		Shaw-Wood, Peter Oliver Wilson
	Alarafat, Ahmed		Sisson, Timothy Robert
	Coyle, Michael		
<b>15</b>	Djadi, Idir	<b>20</b>	Sylvain, Patrick Claude
	Finn, Matthew Ryan		Tareen, Emad
	Galvez, Kevin William		Terpstra, Andy
	Giguère, Brigitte		Toner, Stephen Michael
	Gomm, Geoffrey Robert		Atell, Johnathan
<b>16</b>	Gunabalasingam, Niruban	<b>21</b>	Villeneuve, Hubert
	Hands, Marc Andrew		Whitby, Mitch
	He, Dongsheng		Xu, Cheng
	Howe, Nicholas		Zhao, Zhiwei
	Kalyanaraman, Krishna		

