

Department of Mechanical & Mechatronics Engineering

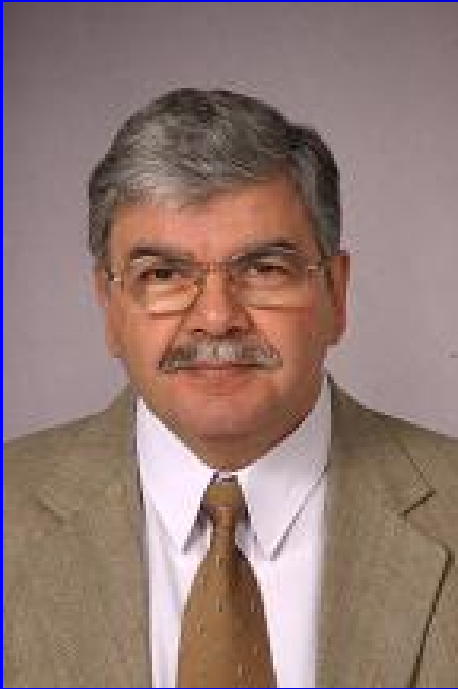


1B Students in Mechanical Engineering

So What's Ahead?

Mechanical Engineering Degree
Requirements,
Electives, Options, etc.

Some People in Mechanical & Mechatronics Engineering You Should Know



Professor Fathy Ismail
Interim Department Chair



Professor David Weckman
Associate Chair U/G Studies
ME 482 Project Coordinator

Your Most Frequent Contact in 2nd, 3rd & 4th year Mechanical Engineering



Lynn Crema, ME Academic Advisor
E5 – 3106, ext. 33625 lcrema@uwaterloo.ca

Communications is Important !

- Please review the **Information for current ME Students web page** for important information and deadlines, lecture schedules, term, midterm & final exam schedules, work report guidelines, etc., before you start 2A in Winter 2013.
- This is accessible from the **Mechanical Engineering home page:** www.mme.uwaterloo.ca
 - => Undergraduate Students
 - => Mechanical Engineering
 - => Current Students

Communications is Important !

- The Department of Mechanical & Mechatronics Engineering **Student/Faculty Committee** consists of two class reps and one class Professor from each class. It meets every second Thursday to gather and distribute information and to resolve problems.
- Each class elects **one Class-Professor**
- Each class elects **two Student Reps.**

Safety Lecture

- The Safety Lecture by your Class Professor is the second Tuesday each term at 11:30 am in your Class/Professor Hour
- **The Safety Lecture is Compulsory**
- You will be required to sign a form acknowledging that you have read the Department of Mechanical & Mechatronics Engineering Safety Manual and have attended the Safety lecture.

1st Year Mechanical Engineering

- 1st Year Office looks after your 1A and 1B terms
(Note: MME Profs. teach ME 100, GEN E 121 & ME 115)
- Major interaction with Mechanical Engineering professors and courses starts in 2A
- 1st year Mechanical Engineering is very structured.
- You should expect a significant change from 1B to 2A

The Mechanical Engineering Curriculum

- Meets Canadian Engineering Accreditation Board (CEAB) requirements
- Is fully described in the online calendar at:
<http://ugradcalendar.uwaterloo.ca/page/ENG-Mechanical-Engineering>
- Graduation from a CEAB certified Engineering program satisfies the academic requirements for Licensing as a Professional Engineer in Ontario
- **Note:** You get up to 12 months credit towards your 4 year work experience requirement for your work terms after 2B provided you fill out the required PEO form.

The Mechanical Engineering Curriculum

1A

MATH 115
Linear Algebra
for Engineering

MATH 116
Calculus for
Engineering

PHYS 115
Mechanics

CH E 102
Chemistry for
Engineers

ME 100
Commun'n &
Profess'ism

1B

MATH 118
Calculus 2

GEN E 121
Digital
Computation

PHYS 125
Physics for
Engineers

GENE 123
Elec. Eng. for
Mech. Eng's.

ME 115
Materials 1

M SCI 261
Managerial &
Eng. Econ'ics

2A

ME 201
Advanced
Calculus

ME 230
Materials 2

ME 202
Statistics for
Engineers

ME 269
Elec'mech Dev
Power Proc'ing

ME 219
Deformable
Solids 1

CSE #2

2B

ME 203
Ordinary Diff'l
Equations

ME 212
Dynamics

ME 220
Deformable
Solids 2

ME 262
Microproc's &
Digital Logic

ME 250
Thermo-
dynamics 1

3A

ME 303
Advanced
Eng. Math

ME 354
Thermo-
dynamics 2

ME 351
Fluid
Mechanics 1

ME 321
Kinematics and
Dynamics

ME 340
Manufacturing
Processes

3B

ME 322
Mechanical
Design 1

ME 353
Heat Transfer 1

ME 360
Control
Systems

ME 362
Fluid
Mechanics 2

ME 380
Mech. Eng.
Design Work'p

CSE #3

4A

ME 481
Mech. Eng.
Design Proj. 1

Technical
Elective 1

Technical
Elective 2

Technical
Elective 3

CSE #4

4B

ME 482
Mech. Eng.
Design Proj. 2

Technical
Elective 4

Technical
Elective 5

Technical
Elective 6

Technical
Elective 7

CSE #5

Mechanical Engineering Core Courses

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Microproc's &
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Thermo-
dynamics 1

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Eng. Math

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Thermo-
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ME 321
Kinematics and
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Design Work'p

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Elective 4

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Elective 5

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Elective 6

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Elective 7

CSE #5

Note: new 8-month compulsory capstone design project

Mechanical Engineering Complementary Studies Electives

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Design Proj. 2

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Elective 4

Technical
Elective 5

Technical
Elective 6

Technical
Elective 7

CSE #5

Complementary Studies Elective (CSE) Courses

- 5 CSE Courses are required:
- (see <http://www.ucalendar.uwaterloo.ca/ENG/cse.html>)
- 1 “List A” course (Impact)
- 1 “List B” course (Economics)*
- 2 “List C” courses (Humanities and Social Sciences)
- One additional CSE (from List A, C or D)

* MSCI 261 is a “List B” CORE course

Mechanical Engineering Technical Electives (7 Req'd)

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Elective 1

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Elective 2

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Elective 3

CSE #4

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Design Proj. 2

Technical
Elective 4

Technical
Elective 5

Technical
Elective 6

Technical
Elective 7

CSE #5

Technical Elective (TE) Courses

- 7 TEs (ME 4xx and ME 5xx level) are required
- A minimum of 5 TEs must be from Mechanical Engineering, i.e., ME 4xx or ME 5xx
- A wide variety of TE courses are available within Mechanical & Mechatronics Engineering

Mechanical Engineering Technical Elective Theme Areas

- Automation and Control
- Fluid Mechanics
- Machine Design and Solid Mechanics
- Materials Engineering and Processing
- Thermal Engineering

... you can choose to take most of your courses from one or two of these theme areas, diversify, or ...

Some Designated Faculty Options

- Biomechanics Option
- Management Sciences Option
- Mechatronics Option (is coming back),
- etc.

Mechanical Engineering Specialization

- Welding & Joining Specialization

Some require extra course load ... all require planning.

Talks about each Option or Specialization will be organized for you the term before the option starts.

The Welding & Joining Specialization in Mechanical Engineering

Objective

- to train Mechanical Engineers who are more knowledgeable about the science and technology of welding and joining



Welding Specialization Requires:

- Mechanical Engineering Core Courses
- 5 of 7 Technical Electives (TEs)
 - 2 of 3 TEs in 4A
 - 3 of 4 TEs in 4B
- 1 Optional/Recommended Technical Elective
 - 1 in 4B (ME 547 – Robotic Manipulators)
- No “Extra” Courses !

Mech. Eng. Curriculum with the Welding & Joining Specialization

1A

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Linear Algebra
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PHYS 115
Mechanics

CH E 102
Chemistry for
Engineers

ME 100
Commun'n &
Profess'ism

1B

MATH 118
Calculus 2

GENE 121
Digital
Computation

PHYS 125
Physics for
Engineers

GENE 123
Elec. Eng. for
Mech. Eng's.

ME 115
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ME 230
Materials 2

ME 202
Statistics for
Engineers

ME 269
Elec'mech Dev
Power Proc'ing

ME 219
Deformable
Solids 1

CSE #2

2B

ME 203
Ordinary Diff'l
Equations

ME 212
Dynamics

ME 220
Deformable
Solids 2

ME 262
Microproc's &
Digital Logic

ME 250
Thermo-
dynamics 1

3A

ME 303
Advanced
Eng. Math

ME 354
Thermo-
dynamics 2

ME 351
Fluid
Mechanics 1

ME 321
Kinematics and
Dynamics

ME 340
Manufacturing
Processes

3B

ME 322
Mechanical
Design 1

ME 353
Heat Transfer 1

ME 360
Intro. Control
Systems

ME 362
Fluid
Mechanics 2

ME 380
Mech. Eng.
Design Work'p

CSE #3

4A

ME 481
Mech. Eng.
Design Proj. 1

ME 435
Industrial
Metallurgy

ME 436
Weld. & Join.
Processes

Technical
Elective #3

CSE #4

4B

ME 482
Mech. Eng.
Design Proj. 2

ME 535
Welding
Metallurgy

ME 538
Weld. Design,
Fab. & QC

ME 526
Fatigue &
Fracture

Technical
Elective #7 or
ME 547

CSE #5

International Exchanges

- 4 or 8 month International Exchange experiences at Universities around the world
- Mechanical Engineering students normally do this in 3rd year
- must be in good standing with $> 70\%$ GPA
- Much pre-planning is required!
- See the Faculty of Engineering International Exchange web pages for more information

Registering for Courses on Quest

- the Lynn Crema and the Registrar's Office will assign your **core courses** on Quest each term

do not drop core courses on Quest

- It is your responsibility to register for CSEs, and TEs, etc. on QUEST
 - it is your responsibility to make sure you have the core, CSE and TE courses you need to graduate
 - the Undergraduate Office does not always double-check your work on Quest

Quest & “Extra” Courses, etc.

- The “**Extra**” course designation is usually done automatically by Lynn Crema, but you must check.
- Normally, we will assign “Extra” status to Faculty Option courses with a requirement designation of **DRNA** (**Degree Requirement, Not in Average**); no action is required by you, but you should check that it is correct on Quest.
- Also, **NRNA** (**Not a Degree Requirement, Not in Avg.**)

See Lynn Crema for the “Extra” course designations

Quest & Important Deadlines, etc.

- Important Deadlines:

- Check the Calendar or the web for deadline dates
(eg., see **Information for Students** in Mech. Eng. web pages at: <http://www.mme.uwaterloo.ca>)
- **Course Add/Drop** Note: Penalty deadlines are different
- **WD grade** – Drop Penalty 1 Period; Withdrew after drop deadline, no credit granted
- **WF grade** – Drop Penalty 2 Period; Withdrew/failure, no credit granted (Grade = 32 is included in the transcript and the term average)

Quest, etc.

- You will receive instructions for enrollment each term
- You will be pre-enrolled in your core courses each term. You only need to add CSEs, TEs or “extra” courses on QUEST.
- If you miss your Quest appointment during your work term, do not worry about it, and do not call Lynn. You will have another opportunity later during open enrolment.

Cooperative Education & Career Services (CECS)

- CECS Department looks after work terms
- Co-op jobs are very important experiences !
- 6 work terms (COOP1-6) are built into the program
(Note: at least 5 work terms are required to graduate)
- Back-to-back 8-month work terms may be possible with approval using a CECS Stream Switch form (usually in upper years).

Professional Development for Engineering Students

- You must complete 5 WatPD web-based (CR/NCR) courses **during** your work terms
 - Two core courses (you will be enrolled in PD 20):
 - PD 20: Engineering Workplace Skills I (during COOP 1)
 - PD 21: Engineering Workplace Skills II (during COOP 2)
 - Choose 3 electives from (you must select and enroll in these yourself on QUEST):
 - PD 3: Communication
 - PD 4: Teamwork
 - PD 5: Project Management
 - PD 6: Problem Solving
 - PD 7: Conflict Resolution

Work Reports

Three (3) work term reports are required (WKRPT 200/300/400/).

- 8-stream students – 1st work report is due in 3A
- 4-stream students – 1st work report is due in 2B
- Check for other term submission times in the calendar!
- See “Guidelines for Writing Work Reports” on the ME Current Student web page

Other Work Report Deadlines

- Work reports are due in the Mechanical Engineering U/G Office (Lynn Crema) by 4:00 pm, one week after the first day of lectures
- Late reports will be stored and marked the next term
 - a failed grade (38%) stays on your transcript and SUPP S appears when you clear the work report.

Assignments & Midterms in 2nd & 3rd Year

- Marks are not given for assignments in 2nd and 3rd year Mechanical Engineering
- There are no lectures during midterm week (usually week 7)
- Midterms are usually M-F, 4:30 - 6:30 pm
- There will be 3 make-up lectures for each course throughout the term (see term schedule)

Personal Problems or Extenuating Circumstances ?

- Personal problems or extenuating circumstances that interfere with your academic studies, e.g., hospitalization, death in the family, study skills, learning disabilities, etc.?
- Seek help; do not try to handle it yourself.
- Counselling Services:
 - group sessions
 - individual sessions
 - study skills
 - exam anxiety workshops
 - contact the First-Year Office (CPH)
- University of Waterloo Office for Persons with Disabilities (Needles Hall)

Documenting Personal Problems

Documentation is extremely important!

If you have difficulty such as illness or a death in the family during the term, make sure you inform the Mechanical Engineering Undergraduate Office (Lynn Crema) immediately – and be sure to obtain documentation such as letters from counsellors or doctors immediately. **Print out and give your doctor the Health Services “Verification of Illness” form from their web site to fill out.**

Never miss or not show up for a mid-term or final exam, i.e., you will get a grade of DNW (Did Not Write). Always inform the instructor &/or Lynn Crema before the exam. **Bring documented evidence.**

Good Luck with your coming
Final Exams and your
Second Work Term!

Questions?