Mech 473/573 Lectures

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Course Content

Mech 473 will be comprised of the following:

- **2/3 Ferrous Alloys**
- **1/3 Nonferrous Materials**

Supplemental lectures involving supporting materials to help you understand the core material will be given at the appropriate times.

Text Book

There is no text book assigned to this course.

Lectures

There will be ~18 lectures, which will be posted on the MECH 473 web site. Lectures can be downloaded to your computer.

The source of the lectures are derived from

1) **Ferrous and Nonferrous Metals by Dr. H. W. King**
2) **The Science and Engineering of Materials (6th Edition) by Donald R. Askeland, Pradeep P Fulay and Wendelin Wright**
3) **The Principles of Materials Selection for Engineering Design by Pat Mangonon**
4) **personally generated information**
5) **published literature**
6) **guest lecturers and their material**

Lectures

There are two lectures per week.

Lectures will be held Monday and Thursday from 11:30 to 12:50 in DSB C118.

Mech 473 Website

To obtain the lectures, homework assignments, announcements, etc, please go to:

http://moodle.uvic.ca/my/index

Marking - Undergraduates

Your grade will be determined by the following scheme:

2 assignments 40 marks

1st assignment Ferrous Metals – 25 marks*

2nd assignment Nonferrous Metals – 15 marks

2 mid-terms 60 marks

1st mid-term Ferrous Metals – 40 marks

2nd mid-term Nonferrous Metals – 20 marks

*** - There will be two parts to assignment #1 to help speed up the marking process.**

Marking - Graduates

Your grade will be determined by the following scheme:

2 assignments 40 marks

1st assignment – 25 marks*

2nd assignment – 15 marks

2 mid-terms 40 marks

1st mid-term – 25 marks

2nd mid-term – 15 marks

1 report - 10 marks

1 presentation - 10 marks

*** - There will be two parts to assignment #1 to help speed up the marking process.**

Assignments

There will be two major assignments to help you prepare for the mid-terms.

The assignments will be given to you early in the lecture series so you can answer their questions during the class when the material is being presented and discussed.

Mid-term Tests

There will be two mid-terms. The first will be held sometime between towards the end of February and the other test will be held at the end of March or early April. The tests for the undergraduates will be the same as for the graduate students.

The first mid-term will cover ferrous materials.

The second mid-term will cover nonferrous materials.

Most of the questions on the mid-terms will come from your assignments although there will be at least one or two questions per topic, worth ~10 – 20%, that will concern an aspect of materials science and engineering discussed in class.

Report + Lecture
(graduate students)

There will be a major research report for each graduate student covering an agreed upon subject.

Towards the end of the semester, each graduate student will present to the class a lecture concerned with their research report.

TA

The TA for Mech 473 is:

Mana Norouzpour

Her office is EOW 241 and email address is mananrp@uvic.ca

Ph no. 721-6510

Missed Classes

You are allowed to miss two classes for good reasons only. Follow UVic guidelines. Attendance will be taken from time to time. Weddings, concerts, camping, hiking, partying, etc., are not good excuses to miss class.

Missed Tests

Have a doctor's note if you are/were sick.

Have a really good excuse otherwise. Weddings, concerts, camping, hiking, partying, etc., are not good excuses.

Office Hours

The best time to come to my office is during the daytime on Tuesday, Wednesday and Friday afternooons.

I teach most of the day on Monday and Thursday so it's difficult for me to meet with you then.

Friday mornings I meet with my graduate students and research group so I will not be available.

Please do not come at the end of the day as I have family commitments.

Laboratories

There are no labs for this course.

Tutorials

There are no tutorials for this course although if you need help please come to see me.

Clickers

If everyone has an *i*clicker, we'll use them for this course.

Mech 473 Course

January - April, 2012

LECTURES

Lecture 1	Introduction – Future Materials Engineering
Lecture 2	Historical Perspectives – The Ages of Mankind
Lecture 3	Methods of Materials Characterization
Lecture 4	Cubic Crystal Directions & Planes - Review
Lecture 5	Phase Diagrams - Review
Lecture 6	The Making of Steel
Lecture 7	Ferrous Alloys – Cast Irons
Lecture 8	Quenched & Tempered Martensite and Plain Carbon Steels
Lecture 9	HSLA Steels
Lecture10	Medium Carbon Steels (Making Steel Stronger & Tougher)
Lecture 11	Eutectoid Steels
Lecture 12	Tool Steels
Lecture 13	Stainless Steels + High-Strength Steels
Lecture 14	Aluminum and its Alloys
Lecture 15	Welding – Al + Steels
Lecture 16	Copper Alloys
Lecture 17	Magnesium Alloys
Lecture 18	Ti Alloys
Lecture 19	Zr Alloys, Precious, Rare Earth Metals
Lecture 20	W Alloys + Ballistic W Deformation
Lecture 21	Refractory Metals - Mo, Nb, Ta