CAMOSUN COLLEGE
School of Trades & Technology
Mechanical Engineering Department

MENG-171- Engineering Materials
Fall 2018

COURSE OUTLINE

The calendar description is available on the web @
https://online.camosun.ca/d2l/le/content/136885/Home

Ω *Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

1. Instructor Information

(a) Instructor	Ghasem Sam Behfarshad		
(b) Office hours	Mon- Thur- 11:30-12:30am		
(c) Location	TEC-264		
(d) Phone	250-370-4445	**Alternative:**	
(e) E-mail	behfarshadg@camosun.bc.ca		
(f) Website			

2. Intended Learning Outcomes

Upon successful completion of this course a student will be able to:

Compare the mechanical properties of a wide variety of common engineering materials such as: ferrous and non-ferrous alloys (metals), ceramics, polymeric materials (plastics), and composites.
Describe various types of heat treatments, and predict the mechanical behavior of several alloys using TTT diagrams.
Evaluate material properties by performing tensile, hardness, and impact tests on heat treated and non-heat treated metal samples.
Describe the mechanical properties of common types of ceramic materials and composite structures.
Select engineering materials that are appropriate for various simple design applications.
Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, ethical, health and safety, manufacturability, and sustainability – the design process
Have the ability to apply knowledge of Engineering Materials to solve problems related to materials selection and optimization
Integrate understanding of the scientific and engineering principles underlying the four major elements: structure, properties, processing, and performance related to material systems appropriate to the field

3. Required Materials

(a) Main Textbook:
The Science and Engineering of Materials, 7th ed., Donald R. Askeland & Wendelin J. Wright, 2016, Nelson Education.

(b) Supplementary books:
1)Engineering Materials: Properties and Selection, 9th Ed., K. G. Budinski and M. K. Budinski, Prentice Hall, 2010.
2) Materials Science and Engineering: An Introduction, W.D. Callister, Jr., 9th edition, John Wiley and Sons, Inc. 2014.

4. Course Content and Schedule

Course Content:

Introduction to Materials Science and Engineering,
Materials Structure,
Chemical and Physical Properties in Engineering Materials,
Mechanical Properties in Engineering Materials,
Strain Hardening and Annealing
Solid Solution and Phase Equilibrium
Heat treatment of Steels and Cast Irons
Nonferrous alloys
Ceramics,
Polymeric Materials,
Corrosion and wear in Engineering Materials
Construction Materials
Thermal Properties of Materials
Methodology of Material Selection,

Class and Lab hours:

X01A, X01B, X01C:
Lectures :
Mon- 8:30-9:20 am, Rm TEC-181
Wed- 8:30– 10:20 am, Rm TEC-110
Lab:
X01A- Thur- 3:30- 5:20pm,
X01B- Wed- 3:30- 5:20pm,
X01C- Fri- 12:30- 2:20pm,

X02A, X02B, X02C:
Lectures :
Mon- 1:30-2:20 pm, Rm CBA-101
Thur- 1:30– 3:20 pm, Rm TEC-173
Lab:
X02A- Fri- 10:30- 12:20pm,
X02B- Tue- 9:30- 11:20am,
X02C- Fri- 12:30- 2:20pm,

Mid-Term exam: Thursday, Oct.18 2018

5. Basis of Student Assessment (Weighting)

- (a) Lab Report 15%
- (b) Quizzes 10%
- (c) Exams:
  - Mid-Term Exam 30%
  - Final Exam 35%
- (d) Project 10%

6. Grading System

(If any changes are made to this part, then the Approved Course description must also be changed and sent through the approval process.)
(Mark with "X" in box below to show appropriate approved grading system – see last page of this template.)

[X] Standard Grading System (GPA)

[ ] Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

Lecture notes, Class presentations, Lab theory and manuals and Textbooks,

8. College Supports, Services and Policies

Immediate, Urgent, or Emergency Support
If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

College Services
Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

College Policies
Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS *http://camosun.ca/about/policies/index.html*

The following two grading systems are used at Camosun College:

1. Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at http://camosun.ca/about/policies/index.html for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	*In progress*: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	*Compulsory Withdrawal*: A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.