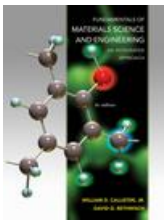
Three Rivers
COMMUNITY COLLEGE

Spring 2015 Syllabus
Materials Science Lecture – MEC*K262, Room B108, Monday/Wednesday, 3:30 – 4:45 PM

Instructor:	Wanda Short
Office:	C128
Contact Methods:	**Blackboard Learn Messaging (preferred)** *or* wshort@trcc.commnet.edu (emergency only) for private (one-to-one) communications
Telephone:	(860) 215-9473 office
Office Hours:	Wednesdays 5:00 – 6:00 pm and Thursdays 3:00 – 5:00 pm Other Dates/Times by Appointment
Online Discussions:	Available via Blackboard Learn and WebEx

Required Textbook:



Fundamentals of Materials of Science and Engineering, An Integrated Approach, 4th edition, Callister Jr., William D. and Rethwisch, David G. ,
John Wiley and Sons Publishers, 2012
ISBN-10: 1118061608 | ISBN-13: 978-1118061602

Course Description:

Lecture (MEC K262): A study of the structure and properties of engineering materials in which materials selection, processing, and heat treatment are presented. The changes in structure and properties during forming, machining, and heat treating operations will be discussed.

Lecture Outcomes:

- Students will demonstrate the ability to use appropriate mathematical and computational skills needed for engineering technology applications.
- Students will illustrate an ability to think critically and identify, evaluate and solve complex technical and non-technical problems; demonstrate creativity in designing problem solutions; and conduct and interpret experimental data and outcomes.
- Students will recognize the need to be lifelong learners.

Lecture Performance Criteria:

The above outcomes will be assessed using these performance criteria:

- Mathematical and computational skills-
  - ✓ Ascertain problem conditions by identifying known and unknown quantities in formulating a problem for solution
  - ✓ Demonstrates the correct selection and application of pertinent formulae, principles and concepts.
  - ✓ Pursue solutions in a methodical, logical manner with results correctly explained with sufficient detail and properly documented
  - ✓ Submit problem solutions with a minimum of computational errors, identifying and selecting the correct dimensional units

- Critical thinking-
  - ✓ Show the ability to evaluate the credibility of sources of information
  - ✓ Demonstrate the ability to refine generalizations, establish rational & pertinent assumptions, and avoid oversimplifications
  - ✓ Exhibit the ability to generate, analyze / evaluate, and assess multiple engineering problem solution options
  - ✓ Produce documentation that reflects organization and application of engineering principles in specifying solution to an engineering problem
- Lifelong learning-
  - ✓ Demonstrate an awareness of what needs to be learned; formulate questions based on research need
  - ✓ Develop a research plan appropriate to the investigative method
  - ✓ Identify, retrieve and organize information
  - ✓ Use a variety of methods and emerging technologies to keep current in the field

Procedure:

The course will consist of open discussion, which the student is encouraged to ask questions and relate their own experiences. The discussions will be conducted around the reading assignments and the homework problems.

Lecture Course Evaluation:

Course evaluation will be based on Exams, Homework and Online Quizzes. The final grade for this course will be determined by the following percentages:

- 60% Exams
- 40% Homework

100% Total

Exams: Exams will be administered during the semester. Each exam will cover material from the text, lectures, homework, in-class problems, and example problems. Exams that are missed for any reason cannot be made up unless prior arrangements are made with the instructor. Exams are Closed-Book; one (1) Page of Notes permitted (8½ x 11, double-sided).

Homework: Homework is due at the beginning of class on the date indicated. Two percent (2%) will be deducted from grade per assignment for each day submitted late. Late homework will only if prior arrangements have been made with the instructor and homework is submitted prior to subsequent class. If you are unable to attend class, please arrange with instructor the submittal of homework on or before the due date. Assignments will be graded on professionalism, accuracy, style and completeness. The details for each assignment will be posted in Blackboard Learn and distributed in class.

Grading Policy: Grades will be assigned according to the following scale:

94 -100	A
90 - 93	A -
87 - 89	B +
83 - 86	B
80 - 82	B -
77 - 79	C +
73 - 76	C
70 - 72	C -
67 - 69	D +
63 - 66	D

60 - 62	D -
Below 60	F

Class Participation and Discussion: Each student is expected to attend every class. This course is designed in such a way that a student should get more from the in-class activities than from the textbook alone. If you miss a class, you are responsible for obtaining notes, handouts and assignments. Course material including syllabus, course content, lectures, notes and is located in Blackboard Learn. Attendance will be taken at each class meeting. If you cannot attend a lecture due to extraordinary events, notify the instructor in advance of the class you will miss. Unless special arrangements have been made with the instructor in advance, the due date for assignments and quizzes will not change.

Online Communication: The primary method of online communication (between all students and the instructor) for this class will be **forums** in **discussion boards**. Any private communications (between one student and the instructor) should use the **Blackboard messaging** capability called **"Messages".** The Blackboard email tool will not be used in this class. Email outside of Blackboard should only be used for emergencies. You may use my email address of: wshort@trcc.commnet.edu for any such emergencies

Classroom Policies: Use of **cell phones**, pagers, texting, surfing the Internet or playing computer games **are Not Permitted** during class! Language and behavior that is disrespectful, or disruptive, to others is unacceptable. Students should refer to their Student Handbook for examples of such behavior as well as additional school policies.

Instructor Assistance: Seeking help from the instructor outside of class is encouraged if you are having difficulty understanding course material. You are encouraged to seek assistance during class as well as during office hours and other times by appointment.

Course Withdrawal: A student who simply stops submitting work will receive the grade earned on that work, usually a failing grade. To receive a "W" grade instead, apply for a withdrawal through the registrar's office by May 11. A "W" will be entered on the student transcript but will not be included in the calculation of the GPA. An "N" (implicit withdrawal) may be entered for a student that stops submitting work before 60% of the class is completed.

Academic Integrity: Academic integrity is essential to a useful education. Failure to act with academic integrity severely limits a person's ability to success in the classroom and beyond. Furthermore, academic dishonesty erodes the legitimacy of every degree awarded by the College. In this class and in the course of your academic career, present only your own best work; clearly document the sources of the material you use from others; and act at all times with honor.

Students are expected to do their own work in this class. Working together to better understand the material is acceptable. Submitting duplicate work will adversely affect the assignment grade. Actively participating in class discussions and discussion boards both to ask and answer questions is expected of all students. Posting of detailed instructions for "how to" responses to questions is encouraged but posting of a complete solution is not.

Students with Disabilities: If you are a student with a disability and believe you will need support services and/or accommodations for this class, please contact the Disabilities Support Services at TRCC. Please note that the instructor cannot provide accommodations based upon disability until the instructor has received an accommodation letter from the Disabilities Counselor.

Spring 2015 – MEC*K262 – Course Outline				
Week #	**Date**	**Event**	**Assignment Topic**	**Reading**
1	Mon 1/26 Wed 1/28 Mon 2/2		Class Not Held Inclement Weather	
2	Wed 2/4		Introduction	Chapter 1
3	Mon 2/9	HW #1 due	Atomic Structure and Interatomic Bonding	Chapter 2
	Wed 2/11	HW #2 due	Structures of Metals	Chapter 3
	Mon 2/16	Presidents' Day (No Class)		
4	Wed 2/18	HW #3 due	Imperfections in Solids	Chapter 5
	Mon 2/23	HW #4 due	Diffusion	Chapter 6
5	Wed 2/25	HW #5 due	Mechanical Properties Thermal Properties	Chapter 7 Chapter 17
	Mon 3/2	HW #6 due		
6	Wed 3/4	HW #7 due	Deformation and Strengthening Mechanisms	Chapter 8
	Mon 3/9	**Exam #1: Chapters 1-3, 5-7 & 17**		
7a	Wed 3/11	HW #8 due	Deformation and Strengthening Mechanisms	Chapter 8
	Mon 3/16 Wed 3/18	Spring Break (No Class)		
7b	Mon 3/23	HW #9 due	Failure: Fatigue and Creep	Chapter 9
8	Wed 3/25	HW #10 due		
	Mon 3/30	HW #11 due	Phase Diagrams: Basic Concepts, Binary Phase Diagrams Phase Diagrams: The Iron-Carbon System	Chapter 10
9	Wed 4/1	HW #12 due		
	Mon 4/6	**Exam #2: Chapters 8 & 9**		
10	Wed 4/8	HW #13 due	Phase Diagrams: The Iron-Carbon System	Chapter 10
	Mon 4/13	HW #14 due		
11	Wed 4/15	HW #15 due	Phase Transformation	Chapter 11
	Mon 4/20	HW #16 due		
12	Wed 4/22	HW #17 due		
	Mon 4/27	**Exam #3: Chapters 10 & 11**		
13	Wed 4/29	HW #18 due	Types and Applications of Materials	Chapter 13
	Mon 5/4	HW #19 due	Synthesis, Fabrication and Processing of Materials	Chapter 14
14	Wed 5/6	HW #20 due	Welding	Handout
	Mon 5/11	HW #21 due	Corrosion and Degradation of Materials	Chapter 16
15	Wed 5/13	HW #22 due	Economic , Environmental and Social Issues in Materials Science and Engineering	Chapter 20
	Mon 5/18	**Exam #4: Chapters 13, 14, 16 & Welding**		
	Wed 5/20	**Make-Up/Supplemental Class: Final Grade Review**		

NOTE: This course schedule is subject to change as conditions warrant