

## **BME 4013 CAD of Biomechanical/transport Devices**

1 Credit, Time TBD

Instructor: Paul Hattan, [hatta003@umn.edu](mailto:hatta003@umn.edu)

Prerequisites: BME upper-division

### **Course Goals and Objectives**

This course provides an introduction to CAD modeling and analysis for medical device engineers using the SOLIDWORKS CAD platform. Lecture emphasis is on practical applications of CAD for engineers using real-world examples from actual industry projects. At the end of this course, students will be prepared to:

1. Create and modify 3-D CAD parts and assemblies.
2. Read, interpret, and create 2-D part and assembly drawings, including GD&T nomenclature.
3. Design products for manufacturability (DFM) using CAD analysis tools.

### **Required Materials**

There are no required textbooks for this course. Students will utilize the tutorials and help files built into the Solidworks CAD application environment. Supplemental materials will be provided in lecture and made available through the course website.

Optional textbook: SolidWorks 2013 Bible, Matt Lombard. Wiley, 2013. ISBN: 978-1-118-50840-4

### **Assignments and Projects**

Students will complete weekly homework assignments to reinforce and demonstrate core CAD competencies.

### **Attendance Requirements/Penalties**

As a hands-on skills development course, attendance is required for all lecture sessions. Absences must be approved ahead of time with the course instructor. Unexcused absences will incur a 5% grade reduction.

### **Statement on Extra Credit**

Students will be permitted to resubmit any homework assignments that did not receive full credit on initial submission. Students will be awarded half credit for any improvements to the assignment grade.

### **Policy for makeup work**

Late or makeup work will not be accepted except as approved by the course instructor due to exceptional circumstances.

### **Final Exam**

Final Exam will be a proctored exam in the Solidworks computer lab. Students will need to demonstrate CAD skills learned throughout the course.

## **Grading Policy**

Homework	70%
Final Exam	30%

The scale below indicates the grade guaranteed by a student's score. Depending on score distribution, instructor may reduce the score requirements for each grade.

93-100: A	90-92.9: A-	
87-89.9: B+	84-86.9: B	81-83.9: B-
78-80.9: C+	75-77.9: C	72-74.9: C-
66-71.9: D+	60-65.9: D	<60: F

## **Grade Definitions**

Please see the University of Minnesota's Grading and Transcripts policy at

<http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSCRIPTS.html>

## **Student Conduct Code**

Students in this course are expected to adhere to the University of Minnesota's Student Conduct Code:

[http://regents.umn.edu/sites/default/files/policies/Student\\_Conduct\\_Code.pdf](http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf)

## **Administrative Policy for Legitimate Absences**

Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include illness of the student or his or her dependent, participation in intercollegiate athletic events. For other University of Minnesota policies regarding absences and makeup work, please see <http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html>

## **Board of Regents and Administrative Policy on Conduct, Teaching, and Learning**

Please ensure that you are familiar with both the Student Conduct Code and Administrative Policy on Teaching and Learning:

<http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>

[http://regents.umn.edu/sites/default/files/policies/Student\\_Conduct\\_Code.pdf](http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf)

## **Board of Regents Policy on Sexual Harassment**

Please see this important information on the University of Minnesota's Policy on Sexual Harassment

<http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf>

## **Board of Regents Policy on Equity, Diversity, Equal Employment Opportunity, and Affirmative Action**

Please see this important information on the University of Minnesota's Board of Regents Policy on Equity, Diversity, Equal Employment Opportunity, and Affirmative Action

[http://regents.umn.edu/sites/default/files/policies/Equity\\_Diversity\\_EO\\_AA.pdf](http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf)

## **Mental Health and Stress Management Services**

Please know that as part of your experience here at the University of Minnesota, there are resources for you in time of stress. Please visit <http://mentalhealth.umn.edu/> for several resources for students, their parents, faculty, and staff.

**Board of Regents Policy on Academic Freedom**

Please see this important information on the University of Minnesota's Board of Regents Policy on Academic Freedom and Responsibility

[http://regents.umn.edu/sites/default/files/policies/Academic\\_Freedom.pdf](http://regents.umn.edu/sites/default/files/policies/Academic_Freedom.pdf)