

**INSTRUCTOR:** Chulho Yang, Ph.D.

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**OFFICE HOURS:** TBA

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**PREREQUISITES:** MET1223 Industrial CAD or equivalent.

**COURSE OBJECTIVE:** The primary objective of this course is to provide students with knowledge and hands-on experience in advanced mechanical design process and methodologies. The course content will contain the most advanced techniques applied to product development process in the real engineering field. The goal is to prepare students for an engineering career in leading industries like aerospace and automotive industries. The course will be taught by using CATIA V5 which is one of the main software in those industries. The main topics being discussed in this course are as follows:

1. Basic/advanced solid modeling methodology
2. Wireframe and surface modeling
3. Structural design
4. Assembly design
5. Generative drafting
6. Design automation/Design in context
7. Kinematics
8. Finite element analysis for design engineers
9. Digital Mock-up (Digital pre-assembly)

A secondary objective of the course is to encourage and promote good work practices. You'll be required to practice and develop design/modeling methodologies independently and/or with your team members. You'll continue developing an ability to present your work in a professional and well-organized manner.

**STYLE/MODE OF TEACHING:** Generally there will be a lecture on product design processes and modeling methodologies on the first day of each week. Detailed step-by-step demonstrations on how to do modeling using CATIA V5 will be given after the lecture. The student is expected to study the text material before coming to lecture and be prepared for discussion. Because of the large content of text material encountered in this course, only a portion can be covered in lectures. Information from the reading assignments will be included in the quiz and should be used in your modeling assignment.

A primary function of the University is to develop graduates with the ability to solve problems through inductive and deductive reasoning to meet the high expectations of employers in today's job market. Classroom discipline of listening attentively and taking notes that are appropriate for solving problems is the foundation for functioning in a professional environment. Time management is required to succeed at a comprehensive university. Allowing 9 to 12 hours weekly to study and complete assignments for each 3-hour course is expected. Graduates should be able to work independently or in assigned groups to conceptualize and articulate several alternative solutions to assigned design problems. Employers expect that a graduate of a comprehensive university will be self-disciplined and a self-starter requiring minimal supervision in solving these problems.

**ASSIGNMENTS & PROJECTS:** Some modeling or drawing assignments will be given after the theory lecture at the beginning of a week and each one is valued at 50 points. Each student must complete each lab assignment and upload it to D2L by the due date. The student's name along with the other information must be included in the proper order as shown on the *TITLE BLOCK/BORDER* format sheet or file naming convention in the instruction. You should work on your lab assignments during normal scheduled lab periods. If extra time is needed, you may work on your assignments in the classroom at the time of no class in that room (You need to ask me in advance to be able to enter the room). The assignment is due **PROMPTLY** at the beginning of the class on the due date indicated on the instruction sheet. If you are tardy, I will accept your work until the end of the class on the same day with 10% deduction from the grade. If a family or personal emergency causes you to miss a deadline, contact me as soon as possible (preferably before class) to work out alternatives. If your assignment is incomplete, submit the partially completed assignment for partial credit. Your work will be graded on modeling methodologies, completeness, neatness, drafting errors and proper interpretation of instructions. It must be done on an independent basis, so **DO NOT COPY in any way**.

Two modeling projects will be given as a team project and is valued at 250 points each.

Your assignments & projects will constitute CAD application using CATIA V5 in the CAD lab. Computer application courses can become frustrating and tedious. Students are expected to take this in stride without abusing equipment or expressing verbal hostility.

From time-to-time you may lose your work due to a system failure and be required to start over again. You can avoid a lot of frustration by saving your work frequently to your own memory device, your path on network drive, or in D2L dropbox.

**QUIZZES:** There are review quizzes after every lecture to make sure you listened to it and understood the course contents. You will have a certain period of time to finish the quiz and can take it many times until you pass it. You cannot move on to the next topics until you pass it (approximately 70% of correct answers depending on the number of questions) and the highest score on that quiz will be the one you get when you pass it. Each question is valued at 3 points and there would be around 10 questions in each quiz. If you must miss a quiz, you will need an excused absence from me prior to the expiration of quiz period. I will give you a separate quiz.

**POLICY ON ACADEMIC INTEGRITY:** Copying is simple to accomplish in a computer course but can be easily caught by the instructor. Since you are partially competing for grades, if someone cheats then that person is stealing someone else's grade. If you suspect someone of copying, please anonymously leave me word of your suspicions. There are a number of methods that can be used to monitor for cheating. Copying or cheating in any way is prohibited and will result in a failing grade for the assignment or the course depending on the severity. This course also follows OSU's policy. Refer to "OKLAHOMA STATE UNIVERSITY SYLLABUS ATTACHMENT" for more detail information.

**CLASS ATTENDANCE:** It is important for you to attend all class periods to maximize your benefit from this course and earn a high grade. Roll call may be taken once or twice daily. Five points per absence, in excess of three absences per semester, will be deducted from your final point tally. Two tardinesses will count one absence. In case of an expected extended personal or family emergency, contact me for alternatives.

**TEXT & MATERIALS:** TEXTS: *CATIA V5 Workbook*, Richard Cozzens, SDC.  
Memory Stick: 1-2 GB minimum (Must have a method of remembering to remove memory stick from computer)  
Headphone set to listen to the online lecture, instructions, and demo.

CATIA V5 should be installed on your computer (Distance learning students) and can be purchased at student discount price (\$75.00) from the website <http://campus.3ds.com/students/download-software/catia/>  
You need OSU email address and Proof of enrollment (SIS/Student records/Self enrollment verification).

On-campus students can use the software installed in Cordell 025.

**GRADES:** Grades for lab assignments, quiz and projects will be posted on-line (D2L). If a grade has been posted incorrectly or missing please inform me as soon as possible.

In establishing final grades, I generally follow the grading criteria shown below. The grade will depend upon your individual performance, group performance, and relative standing in your class. I cannot predict the possible curve during the semester. You may get a rough idea of your grade status from finding your location in the class ranking and your credit. Final grades will be subjectively improved in borderline cases by observed CLASS PARTICIPATION and ATTITUDE.

<u>GRADE</u>	<u>PERCENT</u>	<u>ASSIGNMENTS</u>	<u>POINTS</u>
A	90-100	Quiz (Approximately)	300
B	80-89	Assignment	150
C	70-79	Project (250 & 250 pts)	500
D	60-69	Attendance	50
F	0-59	Total (Approx.)	1000