Construction Management Department
California State University, Chico

CMGT 110 – Construction Graphics

Course Syllabus – Fall 2020

A. Prerequisites

Basic high school level math skills. (see section F) Diagnostic assessment of fundamental knowledge for MS Operating System, Office, and Adobe software.

B. Meeting Time & Location

CMGT 110 - 1,2	Tue/Thu	9:00AM – 10:50AM	O'Connell 127
CMGT 110 - 3,4	Tue/Thu	11:00AM – 12:50PM	O'Connell 127

C. Instructor

Willem Kymmell

Office: O'Connell 325
Hours: Wed 1-4pm or by appointment
Contact: wkymmell@csuchico.edu - 530-898-6221

D. Catalog Description:

Introduces the use of lines, symbols, and annotations in construction drawings. It also includes 3D modeling software to visualize and build a model of a commercial building from a set of construction documents. This model is used to produce 2D construction documents. 2 hours discussion, 2 hours activity. This course requires the use of a laptop computer and appropriate software.

A bit about this course.

Many of you may have had some exposure to construction in the past, we certainly all have had experiences with finished buildings, but how these finished projects actually come about is most likely still a mystery. It is in fact quite a complicated process, but this course will help to clarify the construction process, its dependence on drawn, verbal and written communications, and begin to help you understand the connectedness between many of those parts. The main challenge this semester will be the concept of 'visualization', the ability to see the connections between two and three dimensions. We live in three dimensions but communicate mostly through the use of two dimensions – on screens and paper – thus it is important to learn to translate between these different forms of representation. This is the most fundamental skill for any person wishing to become a builder; throughout history most buildings have primarily been built using large stacks of drawings and instructions with lines, numbers and words on paper indicating what the finished product is supposed to look like and how it is to be assembled from its various parts. Learning this is a challenging and fun process and we will spend the whole semester doing just that.

CMGT 110 includes techniques using pencil and paper as well as 3D modeling/drafting software to address basic sketching and visualization, and the fundamentals of reading construction drawings. Sketch-Up and Navisworks (3D modeling and viewing software tools) are used.

E. Course Learning Outcomes (CLO):

Upon successful completion of this course, you will be able to:

CLO #1 - Apply key Construction Graphics and Modeling Terminology.

CLO#2 - Apply the Principles and Concepts of 2D Construction Graphics and 3D Modeling.

CLO#3 - Analyze construction documents for information necessary for the planning and management of construction processes. **(Introduce: ACCE SLO #7)***

CLO#4 – Introduce basic concepts of the planning, assembly and construction of a simple project as they relate to specific construction processes; such as site prep and surveying, material use as it relates to principles of statics and structural analysis, and the potential risks involved in various acquisition, assembly and construction processes. **(Introduce: ACCE SLO #11, 13, and 19)***

CLO#5 - Understand the Application of Virtual Design and Construction (VDC) Modeling in the Design and Construction industry, i.e. where, how and why 3D modeling is used. **(Introduce: ACCE SLO #10)***

CLO#6 - Demonstrate Skills in the basic Building and Manipulation of 3D Computer Models, and understand the application of electronic-based technology to manage the construction process. **(Introduce: ACCE SLO #10)***

What this means.

*The CLO's refer to the standards by which your learning success in this course are measured; these skills are the foundations of all future learning in the CM curriculum. One hidden skill is your ability in Math, and **yes**, that is critical in order to perform most construction planning activities. We will spend quite a lot of time helping you to become proficient in basic math, beginning with the idea of units like inches, feet and yards as well as square and cubic quantities of these units.* ***Please be attentive to your difficulties with Math so you can ask for help as soon as that becomes necessary.*** *It is generally advisable for all students to complete the University GE requirements in Math and Physics as soon as possible to avoid delays in your degree work and be better prepared for upper division CM courses.*

*Student Learning Outcomes (SLO):

The American Council for Construction Education (ACCE) prescribes 20 Student Learning Outcomes (SLO) as Educational Objectives for an undergraduate degree program in Construction Management. For a list of these 20 SLOs visit the Chico State Department of Construction Managements website www.csuchico.edu/cm and the SLO link under ACCE Accreditation drop down menu. The following SLOs are supported by this course in the form of an 'Introduction':

•SLO 7 - Analyze construction documents for planning and management of construction processes.

• SLO 10 - Apply electronic-based technology to manage the construction process.

There are NO direct assessments for ACCE SLO's performed in this course.

• SLO 11 - Apply basic surveying techniques for construction layout and control.

• SLO 13 - Understand construction risk management.

• SLO 19 - Understand the basic principles of structural behavior.

F. Course Resource Materials and Requirements:

Required Tools:

Laptop Computer: **A personal computer is required for most assignments and in class activities. THE COMPUTERS IN CHICO STATE LABS DO NOT HAVE THE NECESSARY SOFTWARE INSTALLED**.

Software:

Required-The Microsoft Office Suite, Adobe Acrobat, SketchUp Pro, Google Earth. ***Optional***-Autodesk Navisworks.

- *Each student may contact the University website or ITSS to acquire the discounted basic Microsoft products (for PC or Mac) through the University.*
- *SketchUpPro. Download from https://www.sketchup.com/plans-and-pricing#for-higher-education as a one year student license for $55. (you DO NOT need the offered upgrades)*
- *Google Earth – free download - https://support.google.com/earth/answer/21955?hl=en Do **not** try another site for download!*
- *Navisworks. Download from Autodesk – student license for free – this software does not work on Mac based computer operating systems. You will be responsible to install a windows operating system on your Mac or have a PC based laptop.*
- *Use **Lynda.com** as a free student resource for help learning software – access through the Chico State Portal.*

General: These items need to be brought to **every class** for general use.

- Simple handheld calculator that at least does square roots and trig (the more advanced functions are rarely used for construction). **Use of a smartphone is NOT PERMISSABLE during exams**.
- Architectural scale, Engineering scale, straight edge (triangle or ruler), graph paper (engineering pad), pencils and eraser. (The scales and engineering pad can be obtained from the CM office.)
- **Plans** for the 'West Street Video Store' project. (Provided on Bbl-Blackboard learn)
- A **three button mouse** (scroll wheel) – this is **essential** for operating SketchUp.
- A **headset** for listening to training videos (no speaker sounds allowed in class).

ALL the required tools need to be secured during the first week of the semester and brought to each class - all required software needs to be installed and operational on each students' personal laptop.

Math skills:

It is very important that each student has the required skills in math and geometry before attempting this course. In order to insure the necessary math skills there will be regular quizzes to assess these abilities. If the quiz scores obtained during the first 5 weeks of the semester are not satisfactory you will be advised to spend time on remedial work in math and geometry before re-enrolling in the CMGT 110 course the following semester.
Check this web page out for some general help:
https://www.constructionknowledge.net/general_technical_knowledge/general_tech_basic_math.php

Computer skills: **The university has a great learning resource for computer skills for most common types of software - the 'Lynda' link in the Chico Portal. Please use it to your advantage. There are also class specific videos posted on BbL for your use in learning the concepts and specialty software used in this course.**

Textbooks:

REQUIRED TEXT:

1. Visual Dictionary of Architecture, Francis Ching. Wiley Publishing. (any edition)

RECOMMENDED REFERENCE TEXTS:

2. Architectural Graphics, Francis Ching. Wiley Publishing. (any edition)
3. Construction Mathematics, Virdi, Baker & Virdi. Routledge Publishing, 2nd edition 2014

G. Course Requirements:

General

You really do need to come to each class; full attendance is expected and will count towards your final grade in the course. Most of the class activities are done in small groups so you can share your learning with each other, but it also makes it very important to be there for each class. The course schedule divides each week into the two classes you will attend, the first is on either Monday or Tuesday (Part A – on the schedule) and the second on either Wednesday or Thursday (Part B – on the schedule). **You are always expected to come to class prepared for the specific activity of that particular day**; it may be a quiz or an assignment that requires you to have learned some basic information or skill in order to perform it in class, these preparatory activities are also listed in the class schedule.
YOU MUST PREPARE BEFORE YOU ARRIVE TO THE CLASS, NO TIME IS SET ASIDE FOR PREPARATION FOR QUIZZES OR ASSIGNMENTS DUE ON THAT DAY OF CLASS.

Conduct

All students are adults and will be treated and respected as such. This means that you will be held accountable for your actions, decisions, and their consequences. Each of you has to conduct yourself in a professional and mature manner, showing courtesy and respect for fellow students and the instructor. **During class time NO unprofessional behavior will be tolerated, and if observed, will result in you being asked to leave and forfeit that day's participation points. The classroom needs to reflect the professional environment of the Construction Managers Office.**

Honesty in the Classroom

You are expected to know and uphold the University's policy on academic integrity (see THE UNIVERSITY CATALOG). As such, **there is no tolerance for dishonesty, sharing of work, and especially copied work**. Ethical standards as established by the university will be strictly upheld.

Tobacco Products

The use of any type of tobacco product including smokeless, chewable or otherwise is not permitted in any building at California State University, Chico.

Electronic Devices

The use of pagers, phones, MP3 players and other electronic devices (excluding laptops) is not permitted in class. If you must take a call (work or emergency), please EXIT the classroom before answering the call.

Professional Work

As a student looking towards gaining an internship within the construction industry, **it is expected that your completed work will be professional in content and presentation**. Consider this course as practice in presenting your work to your future employer.

H. Instructional Methods:

This course is designed around the following methods of presenting material to the student:

1. Much of the instructional material is contained in videos or simple exercises that are part of the before class preparations. Homework assignments are to be completed BEFORE coming to class.
2. Quizzes, class discussions and in class assignments will all be used to reinforce the prepared materials. Most in class assignments will be group activities, but quizzes are individual tasks.
3. Homework assignments (these may sometimes be started in class and finished outside of class time as necessary) are used to reinforce the students learning process of reading drawings, visualizing 3D forms and using computer software in a 2D and 3D construction environment.
4. Quizzes are regularly part of the class to inform the student of strengths and weaknesses in the course material before the exams.
5. Exams are used to check the overall progress in learning the course content.

I. Activities, Assignments:

Individual Work

This course has regular activities (homework assignments) that generally will build on each other. **All assignments are due as shown in the class schedule,**
Late submittals for assignments will be marked down 10% per day, there will be NO EXCEPTIONS to this.
All completed assignments are due at the beginning of class as per Class Schedule; please submit your work exactly as per instructions for that specific assignment.
All assignments are expected to have a professional appearance. Homework assignment requirements will be posted on Blackboard Learn and clearly defined prior to the due date to give each student the time to complete it professionally. **Be sure to provide a Transmittal form with each hardcopy assignment.**

Class Buddy

Make friends with a classmate(s), who will "cover" for you if or when you are not able to attend class. Ask your "class buddy" questions such as; "Did I miss anything today?"! Particularly since not all instructions for all assignments are available on Blackboard Learn (BbL).

Group Work

You are encouraged to study and work in groups, however all submitted work must be your own original work. SHARE YOUR **UNDERSTANDING** OF THE MATERIAL, BUT **DO NOT** SHARE YOUR **WORK** WHEN YOU WORK TOGETHER. **Copied work will not receive any credit.**

Record of your Work

Collect and/or keep printed copies of all of your work. If there is any question relating to any assignment, bring this work **(in your binder) to the instructor for review.**

Return of your Work

Generally, assignments and quizzes will be returned in the next class. It is your responsibility or that of your "class buddy" to collect and retain these. Unclaimed work will be "lost".

Submittal of your Work

Follow all instructions for submissions EXACTLY as stated in the assignment.

Take Class Notes

Since there is no textbook and not all material will be available on BbL you will need to take good notes in class. This material will need to be recalled in assignments and on quizzes and exams.

J. Assessments:

Assessments are the basis of determining your ability to create, analyze, apply, and understand the Course Learning Outcomes (CLO). Instructional target goals have been established (as noted above) and the results of the assessment in these areas will be used to determine the success of the student and instructor for this course.

Participation, Attitude, and Attendance:

A portion of your course grade will be based on participation and attendance. Attendance/Participation is documented during each class, this is a major consideration in determining your participation points.

You must attend all class meetings for the entire time (1 hour and 50 minutes). A sign-in sheet will be used to track this requirement. If you fail to sign in (for any reason) you are marked as **"missing**", and no credit can be given to you. Any error must be remedied within 7 days; thereafter, there is no going back to fix an old grade, so **please make sure to sign the roll sheet each class.**

EXCEPTION: Excused medical absences (official CSU Chico signed medical excuse required), and since no one is perfect, you will be allowed to miss two classes for any other reason. However, field trips, interviews, five star vacations will NOT be given any additional consideration. Plan accordingly. Absences are counted for the whole course.

Attendance credit:

2 Absences = no penalty
3 Absences = 5 % penalty / reduction of earned percentage
4 Absences = 10 % penalty / reduction of earned percentage
5 Absences = 15 % penalty / reduction of earned percentage
>5 Absences = 20 % penalty / reduction of earned percentage

Quizzes:

Quizzes are based on the class discussions and homework assignments. Quizzes will be given at unannounced times at the beginning of a class. Late arrival will disqualify you from taking the quiz. Please bring your required course tools to each class for use. **There will be NO make-up quizzes.**

Exams:

There will be three mid-term exams and one final exam. The final exam will cover the coursework from the whole semester. **If a student is unable to take an exam due to an emergency or illness, or is entitled to special dispensation the instructor should be notified in advance.** Non-excused absences will yield a score of zero. No makeup exams will be given, except for a serious and compelling reason as outlined by the University Catalog. **The Final Exam must be passed with a minimum grade of 50%, or a grade of "F" will result for the entire class! Further, a failure to achieve an overall grade of "C" (75%) demonstrates a general lack of readiness to move forward with other CM courses.** If you receive a grade of C-, you will not be permitted to enter the Junior level coursework until this is remediated, or unless you petition for a special exception to this department requirement.

K. Grading/Evaluation:

Points are assigned as shown in the Course Schedule on Blackboard Learn.
Overall grades are curved according to the performance of the entire class.

L. Topical Outline

See the Course Schedule on Blackboard Learn.

M. University Policies and Campus Resources

Academic integrity

Students are expected to be familiar with the University's Academic Integrity Policy. Be familiar with the University's policy on academic honesty, this is a serious issue, no form of dishonesty such as plagiarism or cheating will be tolerated. Your own commitment to learning, as evidenced by your enrollment at California State University, Chico, and the University's Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Student Judicial Affairs. The policy on academic integrity and other resources related to student conduct can be found at: http://www.csuchico.edu/sjd/sja.shtml

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Students with disabilities requesting accommodations must register with the DSS Office (Disability Support Services) to establish a record of their disability.

Special accommodations for exams require ample notice to the testing office and must be submitted to the instructor well in advance of the exam date.

Student Services

Student services are designed to assist students in the development of their full academic potential and to motivate them to become self-directed learners. Students can find support for services such as skills assessment, individual or group tutorials, subject advising, learning assistance, summer academic preparation and basic skills development. Student services information can be found at: http://www.csuchico.edu/5.-studentservices.html.

Disability Services

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please also contact the Disability Support Services office to coordinate reasonable accommodations for students with documented disabilities. Disabilities Support Services online: http://www.csuchico.edu/dss/studentServices/.

Student Learning Center

The mission of the Student Learning Center (SLC) is to provide services that will assist CSU, Chico students to become independent learners. The SLC prepares and supports students in their college course work by offering a variety of programs and resources to meet student needs. The SLC facilitates the academic transition and retention of students from high schools and community colleges by providing study strategy information, content subject tutoring, and supplemental instruction. The SLC is online at http://www.csuchico.edu/slc/. The University Writing Center has been combined with the Student Learning Center. ***This document was last updated on April 24, 2020***