

The University of Texas at Tyler
Department of Construction Management

CMGT 3104 (CMGT 4199)
Graphical Tools for Design and Modeling of Infrastructure

Course Syllabus (Fall 2022)

Date: August 19, 2022. This version supersedes all earlier versions.

Time & Venue	<p>Class Meeting Time/Dates/ Room - Mondays or Fridays</p> <p>Lecture Room: UT Tyler/ Ratliff Building North 02022 Lab: UT Tyler / Ratliff Building North 02022</p> <p>Lecture Room: HEC/ CTR 0B215 Lab: HEC / CTR 0B215</p> <p>Date: Mondays or Fridays (look at your schedule to determine your day)</p> <p>Time: Monday 10:10 – 12:55, or Fridays 10:10 – 12:55</p> <p>Classes are in person and on Zoom. All classes will be recorded and saved on the canvas module.</p> <p>Attendance is mandatory (in person or via zoom)</p>
Instructor	<p>Professor Contact info: Instructor: Dr. Gilbert Abel Office #: 903-565-5890 Office #: RBS 1036</p> <p>Office Hours: Mon 1:00 – 2:00, Wed 10:15 – 3:15 PM Email: gabel@uttyler.edu</p> <p>Please email me if you have any questions.</p>
Teaching Assistant	N/A
Course Website	See UT Tyler’s Canvas website. Canvas will be used to manage the course material for the semester. There you will find announcements, homework assignments, solutions, handouts, lesson videos, and other material pertaining to the class. Please check there regularly.

Course Objective	<p>Introduction: CMGT 3104 is an introduction to basic engineering basic Autodesk Revit BIM Modeling Software. Autodesk Revit is a building information modelling (BIM) software for architects, landscape architects, structural engineers, mechanical, electrical, and plumbing engineers, designers and contractors. BIM stands for Building Information Modeling and is a workflow process. It's based around models used for the planning, design, construction, and management of building and infrastructure projects. BIM software is used to model and optimize projects by planning, designing, building, and operating BIM models. This course will proceed from a basic of a simple house model to the application in preparing detailed working drawings.</p> <p>In addition, this course is an introduction to basic Autodesk Civil 3D 2022. This software is designed for students, Civil Engineers and Surveyors who want to take advantage of Autodesk Civil 3D's interactive, dynamic design functionality. Autodesk Civil 3D permits the rapid development of alternatives through its model-based design tools. You will learn techniques enabling you to organize project data, work with points, create and analyze surfaces, model road corridors, create parcel layouts, perform grading and volume calculations tasks, and lay out pipe networks.</p>
Course Outcomes	<p>In this course, you will learn to:</p> <ol style="list-style-type: none"> 1. Understand and show proficiency in using Autodesk Rivet Software. 2. Understand and show proficiency in using Autodesk Civil 3D software. 3. Formulate and design a structure based on parameters set in the course. 4. Communicate your design effectively by method of an in class presentation to an audience.
Prerequisite	1. ENGR 1204 – Engineering Graphics
Required Text	<p>Course Book:</p> <ol style="list-style-type: none"> 1. Design Integration Using Autodesk Revit 2019, SDC Publications, Daniel John Stine; ISBN-13: 978-1-63057-179-5 (new editions available, 20, 21, 22) 2. Autodesk Civil 3D 2022 Fundamentals. ISBN: 978-1-63057-416-1 <p>Co-Requisite: ENGR 1204: Engineering Graphics or ENGR 1304: Engineering Graphics</p>

Grading	<p>Exams and Grading:</p> <p>Course Points Minimum Grade Scale</p> <table border="0"> <tr> <td>In Class Drawings/Tutorials (35 pts each)</td> <td style="text-align: right;">420 (20.8%)</td> </tr> <tr> <td> Revit (8 tutorials)</td> <td></td> </tr> <tr> <td> Civil 3D (4 tutorials)</td> <td></td> </tr> <tr> <td>Assignments (12 total) 50 pts each</td> <td style="text-align: right;">600 (29.7%)</td> </tr> <tr> <td>Individual Presentations</td> <td style="text-align: right;">300 (14.9%)</td> </tr> <tr> <td>Semester Project: Rivet Working Drawings:</td> <td style="text-align: right;">500 (24.8%)</td> </tr> <tr> <td>Attendance/ Professional Practice Grade</td> <td style="text-align: right;">200 (10%)</td> </tr> <tr> <td><u>No Final Exam</u></td> <td style="text-align: right;"><u>0 (0%)</u></td> </tr> <tr> <td>Total</td> <td style="text-align: right;">2020 (100%)</td> </tr> </table> <p>Grade Breakdown:</p> <p>A = 90 – 100 B = 80 – 89 C = 70 – 79 D = 60 – 69 F = 59 or below</p> <p>Note: There will be no makeup work or extra credit allowed/granted at the end or during the semester unless allowed/granted to everyone by the instructor. All assignments must be turned in at the appropriate time to receive credit.</p> <p>Letter grades will be assigned based on the final course grade:</p> <ul style="list-style-type: none"> • A 90 and above • B 80 to 89.99 • C 70 to 79.99 • D 60 to 69.99 • F below 60 <p>No letter grade will be released until it is official on PeopleSoft.</p> <p>In consistency with the College of Engineering’s policy, a student who does not score 50% or more of the total points allocated to the Final Examination will automatically receive an F grade.</p>	In Class Drawings/Tutorials (35 pts each)	420 (20.8%)	Revit (8 tutorials)		Civil 3D (4 tutorials)		Assignments (12 total) 50 pts each	600 (29.7%)	Individual Presentations	300 (14.9%)	Semester Project: Rivet Working Drawings:	500 (24.8%)	Attendance/ Professional Practice Grade	200 (10%)	<u>No Final Exam</u>	<u>0 (0%)</u>	Total	2020 (100%)
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Professional Practice	<p>You must attend three professional practice meetings to receive full credit for the professional practice portion of your grade in this course. You can attend ASCE, ITE, CMSA, IEEE, ASME, SAE, etc. student chapter meetings or when these student chapters host guest speakers. When you attend a meeting, you are expected to complete the template Word file and take a picture of yourself at the meeting as proof of your attendance. The template can be found on Canvas.</p> <p>Professional Grade: 200 points</p>																		

	Attendance 100% - 200 points Attend all <u>15</u> -class meetings and you will receive 100% for this criterion
Exams	There are no EXAMS scheduled for this course.
General Exam Rules & Cheat Sheet	There are no EXAMS scheduled for this course
Calculators	Basic Calculators are required for this course.
Field Trip	There are no field trips scheduled for this course.
Design Project	A project will be given. All students are to work on them individually using class design parameters set in the course.
Topical Presentation	At the end of the 14-15 week, each student will present a slide show outlining their final Revit/Civil 3D design. The students must also submit a full set of PDF drawing, along with the presentation, outlining their final Revit/Civil 3D design
Homework	About 12 homework problems will be assigned out of the textbook. The homework problems will be assigned at the completion of a topic and will be due in class on the day stated in the course schedule. Homework will be uploaded to Canvas as a PDF, DWG, BIM, and/or RVT file.
Late Homework/ Assignment Policy	Late Submissions. It is a basic principle of professionalism that “Professionals are not late.” 1. 0-24 hours late a deduction of 10% of the earned grade 2. 24-48 hours late a deduction of 20% of the earned grade 3. 48 hours – 1 week (7 days) late a deduction of 50% of the earned grade 3. More than 1 week late No credit. Assignments must still be submitted.
Final Day to Withdraw	The final day to withdraw from the course without penalty is November 1st.
Census Dates	The university requires that instructors report the attendance to the Registrar’s Office at various points in the semester. Therefore, on September 1st. I will report the attendance for the class.

UT Tyler Honor Code	Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.
Students' Rights and Responsibilities	To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: http://www.uttyler.edu/wellness/rightsresponsibilities.php
Campus Carry	We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at http://www.uttyler.edu/about/campus-carry/index.php
UT Tyler: A Tobacco-Free University	<p>All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.</p> <p>Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.</p> <p>There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.</p>
Grade Replacement / Forgiveness and Census Date Policies	<p>Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at http://www.uttyler.edu/registrar. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.</p> <p>Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.</p> <p>The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:</p> <ul style="list-style-type: none"> • Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.

	<ul style="list-style-type: none"> • Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date) • Schedule adjustments (section changes, adding a new class, dropping without a “W” grade) • Being reinstated or re-enrolled in classes after being dropped for non-payment • Completing the process for tuition exemptions or waivers through Financial Aid State-Mandated Course Drop Policy
State-Mandated Course Drop Policy	<p>Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.</p>
Disability / Accessibility Services	<p>In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit https://hood.accessiblelearning.com/UTTyler and fill out the <u>New Student</u> application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at http://www.uttyler.edu/disabilityservices, the SAR office located in the University Center, # 3150 or call 903.566.7079.</p>
Student Absence due to Religious Observance	<p>Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.</p>
Student Absence for University-Sponsored Events and Activities	<p>If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time, the instructor will set a date and time when make-up assignments will be completed.</p>

<p>Social Security and FERPA Statement</p>	<p>It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.</p>
<p>Emergency Exits and Evacuation</p>	<p>Everyone is required to exit the building when a fire alarm goes off. Follow your instructor’s directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.</p>
<p>Student Standards of Academic Conduct</p>	<p>Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.</p> <p>i. “Cheating” includes, but is not limited to:</p> <ul style="list-style-type: none"> • copying from another student’s test paper; • using, during a test, materials not authorized by the person giving the test; • failure to comply with instructions given by the person administering the test; • possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed “crib notes”. The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test; • using, buying, stealing, transporting, or soliciting in whole or part the contents of a non-administered test, test key, homework solution, or computer program; • collaborating with or seeking aid from another student during a test or other assignment without authority; • discussing the contents of an examination with another student who will take the examination; • divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student; • substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;

	<ul style="list-style-type: none"> • paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program; • falsifying research data, laboratory reports, and/or other academic work offered for credit; • taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and • misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially. <p>ii. “Plagiarism” includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another’s work and the submission of it as one’s own academic work offered for credit.</p> <p>iii. “Collusion” includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.</p> <p>iv. All written work that is submitted will be subject to review by plagiarism software.</p>
<p>UT Tyler Resources for Students</p>	<ul style="list-style-type: none"> • UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu • UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu • The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses. • UT Tyler Counseling Center (903.566.7254)
<p>Information for Classrooms and Laboratories</p>	<p>Students are <i>strongly encouraged</i> to wear face masks covering their nose and mouth in public settings (including classrooms and laboratories). The UT Tyler community of Patriots views adoption of these practices consistent with its Honor Code and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.</p> <p>Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher than normal temperature should stay at home and notify their faculty. Students needing additional accommodations may</p>

	contact the Office of Student Accessibility and Resources at University Center 3150, or call (903) 566-7079 or email saroffice@uttyler.edu .
Recording of Class Sessions	Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

Tentative Schedule

CMGT 3104 – INITIAL COURSE SCHEDULE (subject to change as needed throughout the semester)

Date Mon or Wed	Lesson	Material Covered	Reading	Assignment	LAB component
REVIT TRAINING BEGINS					
MODULE 1 8/22 or 8/26	1	Review Syllabus Intro to Revit Basic layout fundamentals Draw: Walls, Roof, Ceiling, Studs, Framing Discussion: Detail types or wall types	Video Tutorial 1 Chapter 1/3,5,6 SDC Publications “Using Revit 2019”	Assign 1: Draw a basic building walls and roof design	
MODULE 2 8/29 or 9/2	2	Walls – Design an assembly Design using Beams, Columns Draw: Walls, Roof, Ceiling, Studs, Framing Discussion: Detail types or wall types	Video Tutorial 1 Chapter 1/3,5,6 SDC Publications “Using Revit 2019”	Assign 2: Draw a basic commercial/residential building design. Without the use of an assembly method.	
MODULE 3 9/5 or 9/9	3	Add components: Adding Doors, Windows, MEP Fixtures, & Furniture	Video Tutorial 2 Chapter 2,11,13,14 SDC Publications “Using Revit 2019”	Assign 3: Add doors, windows, Fixtures and furniture to a sample design	
MODULE 4 9/12 or 9/16	4	Site Drawing Tax Assessors Map/Boundary Lines Drawing: curb, parking lots, striping, placing drain inlets, water drainage, elevations, landscaping What is a set back?	Video Tutorial 3 Chapter 15 SDC Publications “Using Revit 2019” Google Earth elevations Tax Assessors Map for boundaries	Assign 4: Draw a site plan complete with all of the required details How to save a Revit file	
MODULE 5 9/19 or 9/23	5	Draw Landscaping.	Video Tutorial 3	Assign 5: Draw a landscape plan	

			Chapter 15 SDC Publications “Using Revit 2019” Google Earth elevations Tax Assessors Map for boundaries	How to save a Revit file	
MODULE 6 9/26 or 9/30	6	Foundation Drawings Rebar, Slabs, Footings What are cut sections? What are elevations?	Video Tutorial 4 Chapter 10 SDC Publications “Using Revit 2019”	Assign 6: Design a Footing and slab with reinforcing	
MODULE 7 10/3 or 10/7	7	Printing Scaling Printing a set of Drawings Setting up a sheet Schedules	Video Tutorial 5 Chapter 12/16 SDC Publications “Using Revit 2019”	Assign 7: Deliver a set of printed drawings with a schedule	
MODULE 8 10/10 or 10/14	8	How to provide material Takeoffs. Adjusting columns. Accuracy of takeoff	Video Tutorial 6 Chapter 1-10, 2- 36, 5-2, 12-12 SDC Publications “Using Revit 2019”	Assign 8: Deliver a material takeoff your example project.	Millstones: Brainstorming Begins / Sketch
AUTODESK CIVIL 3D BEGINS					
MODULE 9 10/17 or 10/21	9	Review the basic tabs. Panels and buttons General knowledge Contours, Elevations, Cut Fill	Video Tutorial 6 Chapter XX	Assign 9: Cut / Fill and Basic Elevations exercise	Millstones: Design your walls, roof, doors, windows
MODULE 10 10/24 or 10/28	10	Using the Point Creation Tool. Existing Elevations, Boundaries.	Video Tutorial 7 Chapter XX	Assign 10: Create an existing elevation plan. Show Topography.	Millstones: Design your interior components

		<p>Creating a point group.</p> <p>Surface properties.</p> <p>Saving a file.</p>			
MODULE 11 10/31 or 11/4	11	<p>How to use Centerline Alignment.</p> <p>Vertical Profiles.</p> <p>Profile creation tools.</p> <p>Surface properties.</p> <p>Saving a file.</p>	<p>Video Tutorial 8</p> <p>Chapter XX</p>	<p>Assign 11: Add a centerline profile to your existing drawing. Roadway, sidewalk, curb, drainage</p>	<p>Millstones: Design site components and landscaping</p>
MODULE 12 11/7 or 11/11	12	<p>How to create a cross section Assembly.</p> <p>Using Assemblies and Parameters; urban curve, urban sidewalk, daylighting, basic shoulder.</p> <p>How to mirror an object</p> <p>Viewing in Object viewer.</p>	<p>Video Tutorial 9</p> <p>Chapter XX</p>	<p>Assign 12: Add a cross section view to your existing drawing.</p>	<p>Millstones: Prepare your presentation slides. Show Design only on Powerpoint</p>
MODULE 13 11/14 or 11/18	13	<p>Work on your Final Projects</p> <p>Lab Time</p>			<p>Millstones: Lab time: Put the final touch ups on your design</p>
11/24 – 11/28	Thanksgiving Break				
MODULE 14 11/28 or 12/2	14	<p>Project Turn In and In Class</p> <p>Lab Time</p>	PRESENTATION	Course Eval. Forms	<p>Deliver Set of Revit drawing for your commercial building design</p> <p>“Individual Assignment”</p>
		No Final Exam		No Final Exam	