

Abilene Approval Chart for Curriculum Changes

A = Approve I = Information Item R = Respond In Writing

Course Number: CMGT 344

or Degree Plan(s):

		Dept./School	College	Dean	TEC	AUAC/Grad	Provost
	Campus-Level Academic Review¹						
	Change to a Course Include signatures from all chairs/program directors for cross-listed courses. ¹						
1.	Title (description unchanged)	A	A	A	I	I	I
2.	Description (not affecting content)	A	A	A	I	I	I
3.	Course term(s)	A	I	A	I	I	I
4.	Content (change of course outcomes)	A	A	A	I	I	A
5.	Number of credit hours	A	A	A	A	A	A
6.	Course number within the hundred	A	A	I	I	I	I
7.	Course number beyond the hundred	A	A	A	A	A	A
8.	Prerequisites	A	A	A	I	I	I
9.	Course restriction (e.g., majors only, junior standing)	A	A	A	A	A	A
10.	Level change (U to G or G to U)	A	A	A	A	A	A
11.	Cross list course	A	A	A	A	A	A
12.	Department of record	A	A	A	A	A	A
13.	Open or close a course	A	A	A	A	A	A
	Change to a Degree Plan						
14.	Educational Program — Revise	A	A	A	A	A	A
15.	Educational Program — Adopt/revise admission requirements	A	A	A	A	A	A
16.	GPA — Revise program-required GPA	A	A	A	A	A	A
17.	Minor — Revise	A	A	A	A	A	A

		Dept./School	College	Dean	TEC	AUAC/Grad	Provost	Campus Faculty	Senior VPAA	President
	Full Review									
	Change to Catalog Information (for Campus)									
18.	General requirements for Bachelor's and Associate Degrees	-	-	-	-	A	A	A	A	I
19.	Policies governing academic probation and suspension	-	-	-	-	A	A	A	A	I
20.	Requirements for graduating with honors	-	-	-	-	A	A	A	A	I
	Change to a Degree Plan									
21.	Educational Program — Add or Discontinue ²³	A	A	A	A	A	A	A	A	I
22.	Educational Program — Discontinue (Provost-proposed)	R	-	R	A	A	A	A	A	I
23.	Minor — Add or Discontinue	A	A	A	A	A	A	-	A	I
24.	Minor — Discontinue (Provost-proposed)	R	-	R	A	A	A	-	A	I
25.	Degree — Add or Discontinue	A	A	A	A	A	A	A	A	I
26.	Degree — Discontinue (Provost-proposed)	R	-	R	A	A	A	A	A	I

		Dept./School	College	Dean	AUAC	Provost	UGEC	University Faculty	Senior VPAA	President
	Change to General Education Requirements for Undergraduates (System)									
27.	Change course outcomes of an included course	A	A	A	A	A	A	-	A	I
28.	Add or drop a required course from the General Education Requirements	A	-	A	-	A	A	A	A	I
29.	Add or drop a course from a menu within the General Education Requirements	A	-	A	-	A	A	-	A	I
30.	Comprehensive revision of General Education Requirements	-	-	-	-	A	A	A	A	I

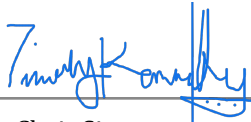
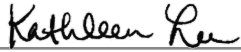
Notes

² Any change to a cross-listed course requires the signature of both department chairs or program directors overseeing the course to ensure that the courses stay in sync. This includes courses taught at other campuses (e.g. BIBL 101 and BIBO 101).

³ For undergraduate majors, a minimum of 30 hours is required. These programs must have a minimum of 6 elective hours, unless the requirements of external accrediting bodies make it impossible. Master's programs must include a minimum of 30 hours, and doctoral programs must include a minimum of 30 hours beyond the master's.

⁴ When a department/school or dean proposes closing a program, approval routing follows the typical process beginning with the department/school. An administrative proposal by the provost or senior vice president for academic affairs would follow the "provost-proposed" routing on the chart.

Updated 8/1/2023

	Department/School(s)
Chair Signature	3/7/2026 Date
Chair/Program Director Signature	Date
College Academic Council(s)	
	03/19/2026
Chair Signature	Date
Chair Signature	Date
Dean(s)	
	3/30/2026
Signature	Date
Signature	Date
Teacher Education Council	
Signature	Date
Campus Academic Council: Abilene Undergraduate or Abilene Graduate	
Signature	Date
Provost	

Signature

Date

University General Education Council

Signature

Date

University Faculty

Abilene Faculty Senate Chair signature

Date

Dallas Faculty Council Chair signature

Date

Senior Vice President for Academic Affairs

Signature

Date

President

Signature

Date

Abilene New Course Application

You may delete the preceding instructional pages before submitting application.

Course ID (<i>Subject Code and Number</i>)	CMGT 344
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1. Systems and Catalog Information Complete each item.

A	Course Developer	Timothy Kennedy
B	Course Instructor	A member of the Civil Engineering or Construction Management Faculty
C	Course Title	Virtual Design and Construction
D	Course Abbreviation for Banner if title is more than 30 characters	Virtual Design and Construction
E	College	OSE - Onstead Science and Engineering ▾
F	Department or School	PHYS - Engineering & Physics ▾
G	Number of Credit Hours	3 ▾
G1	Number of Lecture Contact Hours	1 ▾
G2	Number of Lab Contact Hours	2 ▾
H	Is the course for a fixed or variable number of credit hours?	Fixed ▾ If variable, explain rationale:
I	Is the course repeatable for additional credit?	No ▾
J	Maximum total number of credit hours a student can earn for this course	
K	Course Schedule Type	Lecture/Lab (LLB) ▾ See Schedule Type definitions in the Reference section.
L	Number of Faculty Workload Hours	3 ▾
M	Grading Mode	Standard ▾
N	Maximum Enrollment	40

O	Catalog Description (50 words or less)	This course introduces the foundational concepts and applications of virtual design and construction (VDC) (such as Building Information Modeling (BIM)) . Students will learn how VDC is used for comprehensive modeling, information management, and collaborative decision-making across all phases of construction projects.
P	List any prerequisites (course/s, test scores, class standing, major, etc.)	ENGR 217, CIVE 362
Q	List any corequisites (these <i>must</i> be taken at the same time; note that a single requirement cannot be both a prerequisite <i>and</i> a corequisite)	NA
R	If the course is cross-listed, specify the subject code and course number of the other course	NA
S	Does this course require any additional student course fees?	☐ Yes ▾ If yes, attach a completed course fee form (see form "Request to Add or Change Course Fees").
T1	Will the course be offered in fall terms?	☐ No ▾
T2	Will the course be offered in spring terms?	☐ Yes, every year ▾
T3	Will the course be offered in summer terms?	☐ No ▾
U	First semester this course will be offered under new Course ID. <i>May not be earlier than the coming fall semester.</i>	Spring 2028
V	Is this course required for a program(s)?	☐ Yes ▾ If yes, submit a separate completed curriculum proposal to change the program(s).
W	Should the addition of this course be retroactively applied to the degree plan it supports? <i>This is rare, and rationale should explain compelling extenuating circumstances.</i>	☐ No ▾ If yes, provide rationale:

X	Has this course been offered as a Special Topics course? <i>New courses are not required to be taught as Special Topics courses prior to approval.</i>	No  If yes, provide course ID, term, and enrollment:
Y	List any courses in which the content overlaps the proposed course. (Course ID and Name). <i>Attach a statement from the instructor/dept chair of the existing course justifying the new offering.</i>	

2. Curriculum

- A. Explain any effects of this course on any degree plans. If the addition of the course alters program requirements, submit a separate [Approval Chart for Curriculum Change](#) to update the program.

This course is for the new Construction management degree and will not have affect on existing programs.

- B. Justify the addition of this course to the current curriculum, explaining the gap it meets.

This course is essential for the Construction Management program to meet American Council for Construction Education standards. The addition of this course is essential for the program to achieve and maintain American Council for Construction Education (ACCE) accreditation. Specifically, this course addresses the requirements of ACCE Student Learning Outcome (SLO) #8, which mandates that students demonstrate the ability to 'apply electronic-based technology to manage the construction process.'

Currently, a curricular gap exists between introductory construction methods and high-level project management; this course bridges that gap by providing students with the digital literacy required for modern project delivery. By mastering Building Information Modeling (BIM) and VDC workflows, students will gain the technical proficiency necessary for interdisciplinary coordination and data-driven decision-making.

3. Course Design

- A. Audience and Course Goal

1. Describe the intended audience, including prerequisite skills.

This course is designed for upper-division students in the Bachelor of Science in Construction Management program who have established a baseline understanding of construction materials, methods, and basic computing. Students must possess prerequisite skills in interpreting 2D technical drawings and a fundamental grasp of project scheduling logic to successfully transition into 3D, 4D, and 5D virtual environments.

2. State the overarching course goal(s) in performance terms.

The overarching goal is for students to synthesize virtual design and construction (VDC) technologies to optimize project delivery through the creation of models. By the conclusion of the course, students will demonstrate mastery by executing automated

clash detection, generating model-based quantity take-offs, and producing 4D simulations that align digital models with construction schedules.

B. Student Learning Outcomes and Measurements

	Student Learning Outcome	Measurement
1	Evaluate VDC frameworks to determine project-specific digital requirements and lifecycle integration.	Homework, Project
2	Synthesize multi-disciplinary data to facilitate collaborative decision-making through 3D model coordination and clash resolution..	Homework, Project
3	Create 4D (Schedule) and 5D (Cost) simulations by integrating parametric models with project management data.	Homework, exam, Project
4	Analyze the ethical, legal, and professional implications of BIM data ownership and digital information exchange.	Homework, Exam, Project

C. Text and Resources

Give the full publication information of the textbook/s and other required resources and outside readings. For **combined undergraduate/graduate** courses, make two lists:

- A. full publication information; label **Undergraduate**.
- B. full publication information; label **Graduate**.

“BIM Handbook- A Guide to Building Information Modeling for Owners, Designers, Engineers, Contractors, and Facility Managers” by Rafael Sacks, Chuck Eastman, Ghang Lee, Paul Teicholz. 3rd Edition, John Wiley & Sons

4. Supporting Documentation

Required of all applications	
1	Approval Chart for Curriculum Changes
2	Syllabus — Attach the syllabus for the course based upon the anticipated first-semester offering.
4	Library — Submit new course application and syllabus to the Library dean’s office. Attach the Library’s memo.
Attach if applicable	

5	Content Overlap — Include one document for each course you listed in Section 1Y. Attach statement from instructor/dept chair of existing course justifying the new offering.
6	Departmental Resources — List the resources that support the course and are available only through the department, if applicable. Attach the list of the holdings and the location(s).
7	Resources — List resources (other than library or departmental resources) that are needed to support this course (computers, lab equipment, other technology, etc.). Attach a complete list of all items and indicate possible sources or estimated cost of each. List the sources of any needed funds.
8	Expenses — List additional expenses needed to implement this course (full-time or part-time faculty, graduate or lab assistants, student employees, travel, special student costs, room renovation, storage facility, etc.). Attach a complete list of all items, the estimated cost of each and the source of the funds.
9	Justification — Attach any documents to which you refer in Section 2B.

Updated 8/19/2024

CMGT 344 Virtual Design and Construction

About the Course

Course number and title: CMGT 344 Virtual Design and Construction

Credit hours: 3

Semester and year: Spring 2028

Meeting time and place: OSC B35 2-4:50 pm

Prerequisites/corequisites: ENGR 217, CIVE 362

Catalog description: This course introduces the foundational concepts and applications of virtual design and construction (VDC) (such as Building Information Modeling (BIM)). Students will learn how VDC is used for comprehensive modeling, information management, and collaborative decision-making across all phases of construction projects.

Intended audience: This course is designed for upper-division students in the Bachelor of Science in Construction Management program who have established a baseline understanding of construction materials, methods, and basic computing. Students must possess prerequisite skills in interpreting 2D technical drawings and a fundamental grasp of project scheduling logic to successfully transition into 3D, 4D, and 5D virtual environments.

About the Instructor

Professor's name, title, or rank: Timothy Kennedy, PhD, PE, Professor of Engineering and Physics

Office location (if available): OSC 113A

Phone number(s): 325.674.2854

Email address: tjk14a@acu.edu

Office hours/Contact expectations: MW 1:00-3:00 pm, TR 8:00-9:30 am, by email or Zoom

Mission Statements

ACU Mission: The mission of Abilene Christian University is to educate students for Christian service and leadership throughout the world.

College Mission: The mission of the Onstead College of Science and Engineering is to explore and understand God's creation in the natural world and apply the acquired knowledge and principles to address its issues and challenges.

Department Mission: To educate engineers and physicists for Christian service and leadership throughout the world

Unique Christian Perspective: ACU's Construction Management (CM) program strives to transform the job site into a mission field by viewing graduates as builders of communities. We go beyond plans to cultivate the physical spaces where people live, work, and worship. Our curriculum integrates faith and learning through three core pillars:

1. Human Dignity: Prioritizing job site safety and fair labor practices reflects our commitment to the Imago Dei (Image of God) in every worker.
2. Servant Leadership: By leading with integrity, graduates act as "salt and light" in a demanding industry.
3. Ethical Stewardship: We teach the responsible management of financial and environmental resources as a form of worship and global responsibility.

This program aligns with ACU's mission to launch career-focused professionals who meet market needs without compromising their Christian identity. It is our desire to empower students to make a tangible, positive impact on society, building structures that serve a higher purpose.

Course Content

Outline of topics:

The course curriculum transitions students from foundational digital literacy to advanced interdisciplinary leadership by integrating BIM-based safety protocols, real-time field documentation, and virtual project controls. Students will synthesize 4D scheduling and 5D estimating data while leading automated clash detection workflows and evaluating the ethical implications of data integrity in collaborative construction environments.

Format of Class Course Format

The course utilizes a lecture/lab format to deliver one hour of theoretical instruction and two hours of hands-on technical application per week. This structure ensures students master VDC software workflows through the synthesis of classroom concepts and practical laboratory execution.

Instructional Materials

Textbook:

BIM Handbook- A Guide to Building Information Modeling for Owners, Designers, Engineers, Contractors, and Facility Managers” by Rafael Sacks, Chuck Eastman, Ghang Lee, Paul Teicholz. 3rd Edition, John Wiley & Sons

Course Outcomes

	Student Learning Outcome	Measurement
1	Evaluate VDC frameworks to determine project-specific digital requirements and lifecycle integration.	Homework, Project
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4	Analyze the ethical, legal, and professional implications of BIM data ownership and digital information exchange.	Homework, Quiz, Project

Class Activities and Grading

Activities	Weighting
Assignments	25%
Procore Certification	15%
Project	20%
Exams	30%
Participation	10%
Total	100%

Final grade calculation:

Range of Points	Final Letter Grade
90%-100%	A
80%- 89%	B
70%-79%	C
60%-69%	D
Below 59%	F

University Resources

I care about your class experience. The university also has a number of resources in place to support the ACU community both in this class and all aspects of university life.

Reporting Violations / Concerns / Complaints

Incident reports alleging violations of Student Conduct or concerns/complaints can be submitted [here](#). Please use the form to submit information about an incident to Student Life / Office of the Dean of Students.

SOAR (Student Opportunities, Advocacy, and Resources):

SOAR partners with faculty, staff, parents and students to assist ACU students and connect them to resources available to support their path to success. For more information about SOAR or to make a SOAR recommendation, see <https://acu.edu/soar-program/>.

Mental Health Resources

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. Abilene Christian University is committed to supporting students addressing any of these concerns.

You can contact the [Medical and Counseling Care Center](#) at counseling@acu.edu, or by calling 325-674-2626. In addition, you can access free confidential counseling services through the Timely Care app by downloading their app on any device.

In a crisis situation contact the National Suicide Prevention Hotline open 24/7 by dialing 988, or call the Police at 911.

Another wonderful resource to help you learn how to manage your stress as a student can be found in your Compass app. The Wellness Badge is designed to help you understand how to manage your stress and how to do so on our campus. Completing each of the pathways earns you a chance at incentives, and completing the entire badge will earn you 200 chapel points. You can find the badge in your Compass app.

University and Course Policies

ADA Compliance Policy:

Abilene Christian University is dedicated to removing barriers and opening access for students with disabilities in compliance with ADA and Section 504 of the Rehabilitation Act. The ACU

website provides more information at <https://acu.edu/about/uap/overview-2/about-2/>.

Please contact me to discuss any approved accommodations that you require for this class.

Title IX Policy:

At ACU, we strive to comply with all applicable legal requirements prohibiting, preventing, and responding to sexual misconduct against any member of the ACU community. The full Title IX policy and process can be found at <https://acu.edu/human-resources/title-ix-and-sexual-misconduct-information/>.

Academic Integrity Policy:

Academic integrity is demonstrated by behavior that honors the learning environment, regardless of setting, context, location or modality. ACU's Academic Integrity Policy can be found at <https://acu.edu/office-of-the-provost/academic-policies/>.

Attendance: Attendance will be taken at the beginning of each class. If for some reason you cannot attend a class, you are required to make the necessary arrangements with the instructor. Each unexcused absence will negatively affect your participation grade by a full 10% off your final participation grade.

Tardiness : In the construction industry, "on time" is considered late; being "early" is the standard for professional conduct. For this course "tardiness" is defined as any instance of a student entering the physical or virtual classroom after the scheduled start time or failing to be prepared with required materials (laptop, software loaded, scales ready) when instruction begins.

Impact on Participation Grade: Attendance is recorded at the start of each session. Two (2) instances of tardiness will be recorded as one (1) unexcused absence.

Participation : Active participation is vital. You are expected to engage not as a passive observer. Students are expected to be actively engaged in the software.

Late assignment/exams:

Students will be accountable for any work or assignments missed in their absence. Students must assume responsibility for viewing all lecture notes/videos, other class information, and for meeting established deadlines.

If an assignment or project is not uploaded or is saved incorrectly in Canvas 50% of the assignment points will automatically be deducted. Technical difficulties should be addressed with the Help Desk, your classmates, then the instructor, in a reasonable time to resolve the problem before an assignment is due.

Late work is not accepted in construction; bids are due at a specific time and place. Industry practice is that bids submitted after the stated time are not accepted. We will abide by the same approach with all homework and assignments. Any homework or assignment turned in after the stated time will not be accepted.

Technology use :

- Cell phones need to be turned off during class. Cell phone calls, texting, or any other cell phone use will not be tolerated.
- Web surfing during class or during class exercise is not permitted unless specifically required as part of an assigned work project.

Calendar

Week	Topic/Module	Reading & Materials
Week 1	Course Orientation	Syllabus; Software Access Guide
Week 2	Module 1: BIM Foundations	Industry Standards Brief
Week 3	Module 2: Project Delivery	Book Chapter 1
Week 4	Module 3: Information Standards	ACCE/AIA LOD Framework
Week 5	Module 4: Virtual Coordination	Navisworks User Guide
Week 6	Module 4: 4D Scheduling	CPM Scheduling Logic
Week 7	Module 5: BIM for Operations	Book Chapter 4
Week 8	Module 6: Design Integration	Book Chapter 5
Week 9	Module 6: Design Integration	Book Chapter 5
Week 10	Module 7: BIM for Contractors I	Book Chapter 6
Week 11	Module 7: BIM for Contractors II	Book Chapter 6
Week 12	Module 8: Applied Technology I	Industry Whitepapers
Week 13	Module 8: Applied Technology II	Procore Certification
Week 14	Module 8: Applied Technology III	AR/VR/MR Case Studies
Week 15	Final Assessment	Comprehensive Review

****This schedule subject to change in order to facilitate class learning outcomes and objectives.**

ABILENE CHRISTIAN UNIVERSITY

LIBRARY

M E M O R A N D U M

DATE: February 27, 2026
TO: Dr. Tim Kennedy
FROM: Mark McCallon, Associate Dean for Library Services
RE: New Course Proposal, CMGT 344 – Virtual Design and Construction

The library has examined the course application and syllabus and is able to support the proposed course. Thank you for letting us review the course proposal.



February 25, 2026

Dr. Tim Kennedy
Department Chairperson, Engineering
Onstead Science Center, Rm. 113A
timothy.kennedy@acu.edu

Re: Virtual Design and Construction (CMGT 344)

Dear Dr. Kennedy,

Thank you for submitting Virtual Design and Construction (CMGT 344) to us for review. I have reviewed it based on the ACU Syllabus Guidelines. I found that the syllabus meets all aspects of the checklist.

Please note that this letter is intended as a reference, which will be read by the department chair and council members, who may also have questions or comments of their own. If you have any questions, please feel free to let me know.

Please also let me know if we can help in the design and facilitation of this course.

Sincerely,

A handwritten signature in black ink that reads 'Amy Boone'.

Amy Boone
Teaching and Learning Specialist, Adams Center