CM 230: ARTIFICIAL INTELLIGENCE AND AUTOMATION IN CONSTRUCTION

In Workflow

1. CM Committee Chair (figgess@csus.edu)
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Approval Path

1. 2026-10-01T20:40:22Z
   Gareth Figgess (figgess): Rollback to Initiator
2. 2026-10-02T18:08:28Z
   Gareth Figgess (figgess): Approved for CM Committee Chair
3. 2026-10-02T20:03:46Z
   Gareth Figgess (figgess): Approved for CM Chair
4. 2026-10-16T17:05:24Z
   Tongren Zhu (tongren.zhu): Approved for ECS College Committee Chair
5. 2026-10-16T17:07:22Z
   Behnam Arad (arad): Approved for ECS Dean

History

1. Sep 30, 2026 by Atefeh Mohammadpour (a.mohammadpour)

New Course Proposal

Date Submitted: 2026-10-01T21:15:12Z

Viewing: CM 230 : Artificial Intelligence and Automation in Construction

Formerly known as: CM 296C

Last approved: 2026-09-30T14:02:43Z

Last edit: 2026-10-16T05:51:55Z

Changes proposed by: Atefeh Mohammadpour (223019524)

Contact(s):

Name (First Last)	Email	Phone 999-999-9999
Atefeh Mohammadpour	a.mohammadpour@csus.edu	9162787659

Catalog Title:
Artificial Intelligence and Automation in Construction

Class Schedule Title:
AI and Automation in Const.

Academic Group: (College)
ECS - Engineering & Computer Science

Academic Organization: (Department)
Construction Management

Will this course be offered through the College of Continuing Education (CCE)?
No

Catalog Year Effective:
Fall 2027 (2027/2028 Catalog)

Subject Area: (prefix)
CM - Construction Management

Catalog Number: (course number)
230

Course ID: (For administrative use only.)
203954

Units:
3

Is the ONLY purpose of this change to update the term typically offered or the enforcement of existing requisites at registration?
No

In what term(s) will this course typically be offered?
Fall, Spring

Does this course require a room for its final exam?
Yes, final exam requires a room

This course complies with the credit hour policy:
Yes

Justification for course proposal:
This course is transitioning from an experimental offering to a permanent part of the curriculum in support of the upcoming M.S. in Construction Management program.

Course Description: (Not to exceed 90 words and language should conform to catalog copy.)
Digital, artificial intelligence, and automation technologies transforming construction through the framework of Construction 4.0. Topics include Building Information Modeling, digital twins, cloud-based project management, digital fabrication, 3D printing, robotics, autonomous systems, sensors, Internet of Things technologies, computer vision, unmanned aerial vehicles, LiDAR, photogrammetry, and machine learning. Students evaluate applications in planning, surveying, monitoring, inspection, safety, quality control, productivity, and decision-making. The course also addresses data integration, cybersecurity, ethics, workforce impacts, and organizational challenges through case studies, exercises, discussions, presentations, and a final project emphasizing responsible implementation in industry. 3 Units.

Are one or more field trips required with this course?
Yes

Fee Course?
No

Is this course designated as Service Learning?
No

Is this course designated as Curricular Community Engaged Learning?
No

Does this course require safety training?
Yes

Does this course require personal protective equipment (PPE)?
Yes

Course Note: (Note must be a single sentence; do not include field trip or fee course notations.)
This course requires personal protective equipment (PPE).

Does this course have prerequisites?
Yes

Prerequisite:
Graduate standing in Construction Management, or instructor permission.

Prerequisites Enforced at Registration?
Yes

Does this course have corequisites?
No

Graded:
Letter

Approval required for enrollment?
No Approval Required

Course Component(s) and Classification(s):
Seminar

Seminar Classification
CS#05 - Seminar (K-factor=1 WTU per unit)
Seminar Units
3

Is this a paired course?
No

Is this course crosslisted?
No

Can this course be repeated for credit?
No

Can the course be taken for credit more than once during the same term?
No

Description of the Expected Learning Outcomes and Assessment Strategies:

List the Expected Learning Outcomes and their accompanying Assessment Strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers). Click the plus sign to add a new row.

	Expected Learning Outcome	Assessment Strategies
1	Analyze the concepts, principles, technologies, opportunities, and limitations associated with Construction 4.0.	Assignments, case studies, technical exercises, and class discussions.
2	Apply Building Information Modeling, digital twins, digital fabrication, 3D printing, and cloud-based project-management technologies to construction planning, coordination, monitoring, and project delivery.	Assignments, case studies, technical exercises, and class discussions.
3	Design data-collection and analysis workflows using sensors, Internet of Things technologies, computer vision, unmanned aerial vehicles, LiDAR, and photogrammetry for construction monitoring, surveying, inspection, and documentation.	Assignments, case studies, technical exercises, and class discussions.
4	Select and justify appropriate applications of robotics and autonomous systems to improve construction efficiency, accuracy, safety, quality, and productivity.	Assignments, case studies, technical exercises, and class discussions.
5	Critique artificial intelligence and machine-learning applications in construction, including prediction, classification, optimization, computer vision, anomaly detection, risk management, and decision support.	Assignments, case studies, technical exercises, and class discussions.
6	Synthesize technical, organizational, economic, ethical, and operational factors to identify automation opportunities and develop innovative, feasible, and responsible solutions to construction challenges.	Assignments, case studies, technical exercises, and class discussions.

7	Examine the role of blockchain, cybersecurity, data governance, and information security in supporting secure, trustworthy, and resilient digital construction practices.	Assignments, case studies, technical exercises, and class discussions.
8	Defend and communicate technology-based recommendations through professional written reports, presentations, discussions, and a final project.	Assignments, case studies, technical exercises, class discussions, final project report, and presentation.

Is this course required in a degree program (major, minor, graduate degree, certificate?)

No

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?

No

Will there be any departments affected by this proposed course?

No

I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.

I/we agree

University Learning Goals

Graduate (Masters) Learning Goals:

Disciplinary knowledge
Communication
Critical thinking/analysis
Information literacy
Professionalism
Intercultural/Global perspectives
Research (optional)

Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?

No

Is this a Graduate Writing Intensive (GWI) course?

No

Please attach any additional files not requested above:

CM 230 Artificial Intelligence and Automation in Construction.pdf

Reviewer Comments:

Gareth Figgess (figgess) (Thu, 01 Oct 2026 20:40:22 GMT): Rollback: as requested

Key: 15062