

Computer Aided Design

ENGV-205

CG Section 8WK 07/01/2018 to 12/31/2199 Modified 04/08/2022

Course Description

This course provides students to an introduction to computer aided graphics, drafting and design, and how it is applied in civil engineering.

Requisites

For information regarding prerequisites for this course, please refer to the [Academic Course Catalog \(https://catalog.liberty.edu/\)](https://catalog.liberty.edu/).

Rationale

Most civil engineering projects begin with a graphical rendering of what the project will look like, which assists in explaining the purpose and functionality of the project. Concepts of feasibility and “what if . . . ?” scenarios can be explored quickly through graphical means. Knowledge of computer aided design provides the beginning engineering student with basic marketable skills that can be used to obtain a summer internship or part-time employment within an engineering organization. The course introduces the student to applications in water resources and transportation engineering, and skills essential in civil engineering. The student will also work in a team and present a team design project.

Course Learning Outcomes

Upon completion of the course, the student will be able to:

1. Demonstrate the basic elements of computer aided design.
2. Apply knowledge of computer aided design to land survey data plotting, delineating a drainage basin and floodplain, road design, and earth work.
3. Use AutoCAD to delineate a drainage basin and floodplain.
4. Use AutoCAD in road design and earthwork.
5. Design solutions for a complex civil engineering problem through collaboration with peers.

Course Resources

Click on the following link to view the required resource(s) for the term in which you are registered: [Liberty University Online Bookstore \(https://bncvirtual.com/liberty\)](https://bncvirtual.com/liberty)

Additional Materials for Learning

- A. Computer with basic audio/video output equipment capable of running AutoCAD Civil3D. AutoCAD Civil3D is available for download through an educational license at Autodesk.com.
- B. Internet access (broadband recommended)
- C. Canvas [recommended browsers \(https://community.canvaslms.com/t5/Canvas-Basics-Guide/What-are-the-browser-and-computer-requirements-for-Canvas/ta-p/66\)](https://community.canvaslms.com/t5/Canvas-Basics-Guide/What-are-the-browser-and-computer-requirements-for-Canvas/ta-p/66)
- D. Microsoft Word and PowerPoint
- E. AutoCAD 2018 - Use [this link \(https://www.autodesk.com/education/edu-software/overview?sorting=featured&page=1\)](https://www.autodesk.com/education/edu-software/overview?sorting=featured&page=1) to register and download a free 1-year education license of AutoCAD.

Course Assignments

Textbook Readings

Course Requirements Checklist

After reading the Course Syllabus and Student Expectations, the student will complete the related checklist found in the Course Overview.

Quizzes (6)

There will be 6 quizzes scheduled throughout the term and assessing the student's knowledge of course content (CLOs: 1, 2, 3, 4). Each quiz will have 5 multiple choice questions and will have a time limit of 1 hour.

AutoCAD Assignments (6)

There will be 6 individual AutoCAD assignments which will demonstrate the student's ability to apply the features learned in AutoCAD (CLOs: 1, 2, 3, 4).

Final Project Assignment

There will be one final project to provide the opportunity for the students to work on a more complex problem and present their results (CLO: 5).

Course Grading

Course Requirements Checklist	10
Quizzes (6 at 25 pts ea)	150
AutoCAD Assignments (6 at 100 pts ea)	600
Final Project Assignment	250
Total	1010

Policies

Late Assignment Policy

Course Assignments, including discussions, exams, and other graded assignments, should be submitted on time.

If the student is unable to complete an assignment on time, then he or she must contact the instructor immediately by email.

Assignments that are submitted after the due date without prior approval from the instructor will receive the following deductions:

1. Late assignments submitted within one week after the due date will receive up to a 10% deduction.
2. Assignments submitted more than one week and less than 2 weeks late will receive up to a 20% deduction.
3. Assignments submitted two weeks late or after the final date of the course will not be accepted outside of special circumstances (e.g. death in the family, significant personal health issues), which will be reviewed on a case-by-case basis by the instructor.
4. Group projects, including group discussion threads and/or replies, and assignments will not be accepted after the due date outside of special circumstances (e.g. death in the family, significant personal health issues), which will be reviewed on a case-by-case basis by the instructor.

Disability Assistance

Students with a disability and those with medical conditions associated with pregnancy may contact Liberty University's Online

Office of Disability Accommodation Support (ODAS) at LUOODAS@liberty.edu for accommodations. Such accommodations require appropriate documentation of your condition. For more information about ODAS and the accommodations process, including how to request an accommodation, please visit <https://www.liberty.edu/online/online-disability-accommodation-support/> (<https://www.liberty.edu/online/online-disability-accommodation-support/>). Requests for accommodations not related to disabilities or pregnancy must be directed to the Registrar's Office, which generally handles medical needs support.

If you have a complaint related to disability discrimination or an accommodation that was not provided, you may contact ODAS or the Office of Equity and Compliance by phone at (434) 592-4999 or by email at equityandcompliance@liberty.edu. Click to see a full copy of Liberty's [Discrimination, Harassment, and Sexual Misconduct Policy](https://www.liberty.edu/media/1226/Liberty_University_Discrimination_Harassment_and_Sexual_Misconduct_Policy.pdf) (https://www.liberty.edu/media/1226/Liberty_University_Discrimination_Harassment_and_Sexual_Misconduct_Policy.pdf) or the [Student Disability Grievance Policy and Procedures](http://www.liberty.edu/media/8021/Disability_Grievance_Procedures.pdf) (http://www.liberty.edu/media/8021/Disability_Grievance_Procedures.pdf).

Course Attendance

In an effort to comply with U.S. Department of Education policies, attendance is measured by physical class attendance or any submission of a required assignment within the enrollment dates of the course (such as examinations, written papers or projects, any discussion posts, etc.) or initiating any communication with one's professor regarding an academic subject. More information regarding the [attendance policy](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FOnline%2BAttendance%2Band%2BNon-Attendance&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613719138&sdata=%2BNBTsPOoXuHAPLfISQRugK7cRSuV6UyC7qD3agf3l2k%3D&reserved=0) (<https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FOnline%2BAttendance%2Band%2BNon-Attendance&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613719138&sdata=%2BNBTsPOoXuHAPLfISQRugK7cRSuV6UyC7qD3agf3l2k%3D&reserved=0>) can be found in the [Academic Course Catalogs](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.liberty.edu%2Findex.cfm%3FPID%3D791&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=DjjhMiRBFnF%2B2ZJUC8eBd1OdNb26S9ADukODYsilXIA%3D&reserved=0) (<https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.liberty.edu%2Findex.cfm%3FPID%3D791&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=DjjhMiRBFnF%2B2ZJUC8eBd1OdNb26S9ADukODYsilXIA%3D&reserved=0>). Regular attendance in online courses is expected throughout the length of the term. Students who do not attend within the first week of a sub-term by submitting a required academic assignment (such as the Course Requirements Checklist, an examination, written paper or project, discussion post, or other academic activity) will be dropped from the course. Students who wish to re-engage in the course are encouraged to contact Academic Advising to discuss their enrollment options. Students who begin an online course, but at some point in the semester cease attending, and do not provide official notification to withdraw, will be assigned a grade of "FN" ([Failure for Non-Attendance](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FUnofficial%2BWithdrawals&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=MoMvZdPfa69InuhVHMHAVgu59ZP0Fw45xJTU9PIBrU%3D&reserved=0) (<https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FUnofficial%2BWithdrawals&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=MoMvZdPfa69InuhVHMHAVgu59ZP0Fw45xJTU9PIBrU%3D&reserved=0>)). Students wishing to withdraw from courses after the official start date should familiarize themselves with the [withdrawal policy](#).

Grading Scale

A	B	C	D	F
900-1010	800-899	700-799	600-699	0-599

For courses with a Pass/NP final grade, please refer to the Course Grading section of this syllabus for the assignment requirements and/or point value required to earn a Passing final grade.

Add/Drop Policy

The full policy statement and procedures are published in the [Policy Directory](https://wiki.os.liberty.edu/display/IE/Dropping+and+Adding+Online+Classes) (<https://wiki.os.liberty.edu/display/IE/Dropping+and+Adding+Online+Classes>).

Honor Code

Liberty University comprises a network of students, Alumni, faculty, staff and supporters that together form a Christian community based upon the truth of the Bible. This truth defines our foundational principles, from our Doctrinal Statement to the Code of Honor. These principles irrevocably align Liberty University's operational procedures with the long tradition of university culture, which remains distinctively Christian, designed to preserve and advance truth. Our desire is to create a safe, comfortable environment within our community of learning, and we extend our academic and spiritual resources to all of our students with the

goal of fostering academic maturity, spiritual growth and character development.

Communities are predicated on shared values and goals. The Code of Honor, an expression of the values from which our Doctrinal Statement was born, defines the fundamental principles by which our community exists. At the core of this code lie two essential concepts: a belief in the significance of all individuals, and a reliance on the existence of objective truth.

While we acknowledge that some may disagree with various elements of the Code of Honor, we maintain the expectation that our students will commit to respect and uphold the Code while enrolled at Liberty University.

Adherence to the principles and concepts established within facilitates the success of our students and strengthens the Liberty community.

The Code of Honor can be viewed in its entirety at <http://www.liberty.edu/index.cfm?PID=19155> (<http://www.liberty.edu/index.cfm?PID=19155>).

Schedule

When	Topic	Notes
Course Overview	Student Acknowledgements	Course Requirements Checklist
Module 1: Week 1	Learn	Read: 2 items Watch: 1 item Interact: 1 item
	Apply	AutoCAD: Introduction Assignment
Module 2: Week 2	Learn	Read: 1 item Watch: 2 items
	Apply	Quiz: Basics of 2-Dimensional Drawing
Module 3: Week 3	Learn	Read: 1 item Watch: 1 item
	Apply	AutoCAD: Hatch Assignment Quiz: Basics of 2-Dimensional Editing
Module 4: Week 4	Learn	Read: 2 items Watch: 1 item
	Apply	AutoCAD: Path Creation Assignment Quiz: Layers and Blocks
Module 5: Week 5	Learn	Read: 2 items Watch: 1 item
	Apply	AutoCAD: Layers Assignment Quiz: Layouts and Template Files; Dimensioning Techniques
Module 6: Week 6	Learn	Read: 3 items Watch: 1 item

When	Topic	Notes
	Apply	AutoCAD: Scaling Layouts Assignment Quiz: Land Survey; Contours; Drainage Basin
Module 7: Week 7	Learn	Read: 4 items Watch: 1 item
	Apply	AutoCAD: Closed Traverse Assignment Quiz: Floodplains; Road Design; Earthwork; Plotting
Module 8: Week 8	Learn	Read: 1 item Watch: 1 item
	Apply	Final Project Assignment