

MARION TECHNICAL COLLEGE

COURSE SYLLABUS STANDARD TEMPLATE

COURSE NUMBER & NAME: MET1020 Engineering Drawings and Diagrams
TERM/YEAR: Spring 2025
DAY/TIME: M/W 11:28 – 12:28 pm
DEPARTMENT NAME: Engineering Technologies
TAG/OTM/OT36/CT2/CTAG¹
COURSE #:
(if applicable)
DELIVERY METHOD: Traditional
CREDIT HOURS: 2
COURSE REQUIREMENT(s):

INSTRUCTOR INFORMATION

INSTRUCTOR(s): Seth Duvall
EMAIL/OTHER CONTACT INFO: duvallss@mtc.edu
TELEPHONE: 740-386-4120
BLDG/OFFICE NO: Bryson Hall 136C

OFFICE HOURS: *(for student support)*
Mondays and Wednesdays:
 3:30pm - 4:30 pm
Tuesdays and Thursdays:
 11:30am -12:30 pm

IN CASE OF EMERGENCY: Dial 9-911 from any office or courtesy phone on-campus.

COURSE DESCRIPTION

Students will gain experience creating, using and interpreting engineering drawings of mechanical and electrical systems. Visualization of 3D objects as well as the development of multiview, isometric and section view hand sketched drawings as they relate to mechanical components and systems will be covered. The course will also focus on technical print layout, imperial and metric unit systems, correct dimensioning protocols based on current ANSI standards as well as symbols and abbreviations used in various engineering applications. Piping and instrumentation diagrams as well as key features of electronic diagrams will also be covered. Through this course, students will acquire the skills needed to create, interpret and understand the use of various types of engineering drawings commonly used in a manufacturing facility.

COURSE MATERIALS

TEXTBOOK: No textbook required. All course material will be posted on Canvas
AUTHOR(s):
PUBLISHER:

¹ Approved TAG and OT36 courses carry the guarantee that the courses and their credits will transfer and apply toward the major at any of Ohio's public institutions of higher education, provided they were taken when the courses were equivalent. Additional Ohio transfer information may be obtained at <https://www.ohiohighered.org/>

COURSE MATERIALS**YEAR/EDITION:****OTHER RESOURCES/ TEXTBOOK:****MAJOR COURSE LEARNING OBJECTIVES**

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

1. Mechanical Schematics and Diagrams:

- a. Identify common line types used in engineering drawings
- b. Describe the use of common line types in engineering drawings.
- c. Distinguish between third and first angle projection.
- d. Apply an engineering scale to qualify a measurement.
- e. Apply a metric scale to qualify a measurement.
- f. Apply an architect scale to qualify a measurement.
- g. Create a multiview drawing of a component.
- h. Create an isometric drawing of a component.
- i. Define the shape and features of three-dimensional components and objects from common two-dimensional representations such as multiviews.
- j. Describe the features associated with section drawings
- k. Describe the uses of section drawings.
- l. Describe the features associated with auxiliary drawings.
- m. Describe the uses of auxiliary drawings.
- n. List the information commonly found in the title block of a drawing.
- o. Fully dimension a technical drawing using both size and location dimensions.
- p. Appropriately apply baseline dimensioning to dimension features of an object.
- q. Appropriately apply polar dimensioning to dimension features of an object.
- r. Appropriately apply ordinate dimensioning to dimension features of an object.
- s. Apply thread specification notations of drawings.

2. Electronic Schematics and Diagrams:

- a. Apply the correct symbology to represent circuit components.
- b. Troubleshoot circuits using the electronic diagrams for the system.
- c. Explain requirements related to components detailed in a diagram.
- d. Explain ratings related to components detailed in a diagram.
- e. Explain tolerances related to components detailed in a diagram.

3. Piping and Instrumentation Diagrams (P&ID)

- a. Apply the correct symbology to represent controls such as valves, pumps, sensors (level, flow, temperature and pressure) piping and equipment such as reactors and vessels.
- b. Correctly use P&ID diagrams for installation of plant systems.
- c. Correctly use P&ID diagrams for maintenance/troubleshooting of plant systems.

COURSE OUTLINE

<u>INSTRUCTIONAL WEEKS</u>	<u>CHAPTER</u>	<u>TOPIC/ASSIGNMENT</u>
Week 1		Introduction to course Application of engineering drawings and diagrams in a manufacturing facility Alphabet of lines technical sketching

<u>INSTRUCTIONAL WEEKS</u>	<u>CHAPTER</u>	<u>TOPIC/ASSIGNMENT</u>	
Week 2		Introduction to course Application of engineering drawings and diagrams in a manufacturing facility Alphabet of lines technical sketching	
Week 3		Visualization of 3D objects in 2D multiview projections	
Week 4		Visualization of 3D objects in 2D multiview projections	
Week 5		Continuation of multiview projections	
Week 6		Continuation of multiview projections	
Week 7		Axonometric and oblique projections	
Week 8		Axonometric and oblique projections	
Week 9		Dimensioning	
Week 10		Dimensioning	
Week 11		Dimensioning Section views	
Week 12		Dimensioning Section views	
Week 13		Overview of hydraulic, electronic schematics and diagrams	
Week 14		Overview of hydraulic, electronic schematics and diagrams	
Week 15		Review	
<u>EXAM WEEK*</u>	<u>DAY</u>	<u>TIME</u>	<u>LOCATION/ROOM</u>
Week 16*	Mon. May 5, 2025	11:28 AM	
<i>*Exams <u>must</u> be held during exam week (the 16th week of the term), except for 8-week half session courses or the summer terms where exams are held on the last day the class meets for that term.</i>			

NOTE: This is a tentative schedule and subject to change at the discretion of the instructor.

ADDITIONAL INFORMATION:

Eating and drinking are not permitted in any computer classroom or lab. All copyright laws will be observed. It is illegal to copy software.

EVALUATION & GRADING PROCEDURES

ATTENDANCE AND PARTICIPATION:

Consistent with College Policy #520 – Class Attendance and as stated on Page 339 of the **MTC Policy Book**, <https://www.mtc.edu/about/pdfs/MTCPolicyBook.pdf>, the student is responsible for attending every class and for the material presented. If a student will not be attending a class, he or she is responsible to contact the instructor and to make sure all assignments are completed, prior to the scheduled class. Some departments have special provisions regarding missed work and absences. Please contact your instructor for additional information.

ONLINE CLASS ATTENDANCE:

N/A

GRADING PROCEDURES:

EXAMPLE: Three exams will be given. Each exam will consist of an objective section and a practical section. Each exam will be graded on the basis of 100 points and a total of 30 points for homework.

GRADING SCALE:

90 -100 = A
 80 - 89 = B
 70 - 79 = C
 60 - 69 = D
 0 - 59 = F

FINAL GRADE CRITERIA:

Assignments – 70%
 Midterm – 15%
 Final Exam – 15%

MAKE-UP AND LATE POLICY:

Late assignments will be penalized by one letter grade per day they are late and will no longer be accepted upon reaching F.

Make-up exams and quizzes will be given only for excused absences as determined by the instructor. The instructor must be notified of the prospective absence prior to the time scheduled for the examination. The make-up exam may be a different exam than the exam given during the scheduled exam time.

CREDIT HOUR DEFINITION

Credit Hour: Marion Technical College subscribes to the federal definition of the “credit hour” endorsed by the Higher Learning Commission that typically requires students to work on out-of-class assignments a *minimum of twice the amount of time* as the amount of formalized instruction.

Examples:

Minimum Homework Hours Per Week for 3 Credit Course (16-Week Term)	
Delivery Format	Homework Per Week
Traditional	6 hours
Blended	6.75 – 8.25 hours
Online	9 hours

Minimum Homework Hours Per Week for 3 Credit Course (8-Week Term)	
Delivery Format	Homework Per Week
Traditional	12 hours
Blended	13.5 – 16.5 hours
Online	18 hours

COLLEGE GRADUATE COMPETENCIES

Assessment begins with a clear understanding of what students are expected to learn. College Graduate Competencies (CGC's) are common to all areas of study and apply to all students. The individual sub-skills defined in each CGC are taught, reinforced, and/or periodically measured in various courses throughout the curriculum. The six CGC areas and statements are:

1. **Communications:** Communicate effectively both written and orally.
2. **Mathematics:** Solve problems using mathematics.
3. **Problem-Solving:** Solve problems through analysis, creativity, and synthesis to make informed decisions.
4. **Professionalism:** Demonstrate good work habits, effective interpersonal and teamwork skills, and a high level of professionalism.
5. **Technology:** Use technology tools efficiently and effectively to perform personal and professional tasks.
6. **Diversity:** Exhibit respect and sensitivity for individual and institutional differences.

COMMUNICATIONS DEVICE USAGE

All personal communication devices, including cell phones, must be set to vibrate or off while in classrooms, labs and participating in other class-related activities, unless the use of such a device is specified in the official course syllabus. Infractions will result in warnings and, eventually, grade-related penalties. Exceptions must be approved in writing by the instructor.

Additionally, all personal communication devices, including cell phones, must be deactivated (turned completely off) during exams, quizzes or other evaluations. Any student found to be using a communication device during an exam will be given a grade of zero for the exam.

EQUIPMENT REQUIREMENTS

Marion Technical College requires all students to obtain a computer with the following minimum specifications per program of study. Laptops are used in the classroom, outside of class using our learning management system, and Microsoft Office 365. Marion Technical College does not provide support of student-owned laptops.

Engineering Programs

Processor: i7 or better (note: Intel processor required)

RAM: 16 GB

SSD: 256 GB

Minimum Screen Size: 15.6"

Video Card for SolidWorks

Windows Operating System

Internet Connection

Webcam

Information Technology Programs

Processor: i7 or better (note: Intel processor required)

RAM: 16 GB

SSD: 256 GB

Minimum Screen Size: 15.6"

Windows Operating System

Internet Connection

Webcam

All Other Programs

Processor: i5/Ryzen 5

RAM: 8 GB (4 GB would also work – 8 GB gives flexibility if requirements change)

SSD: 256 GB

Minimum Screen Size: 15.6"

Windows Operating System

Internet Connection

Webcam

Frequently Used Software

Marion Technical College utilizes Microsoft Office 365. As such students get free access to Microsoft Office 365.

Note: Tablets, iPads, MacBooks, and Chromebooks will not meet the laptop requirements as they are unable to run Microsoft 365 ProPlus.

ACADEMIC MISCONDUCT

Examples of dishonest or unacceptable scholarly practice at Marion Technical College include but are not limited to:

- A. Work copied verbatim from an original author; work copied practically verbatim with some words altered from the original without proper credit, i.e., reference citations, being given; a copyright explanation and more information is available at www.copyright.com.
- B. Copying answers [and/or electronic data] from another's test paper, quizzes, notes, book, etc.
- C. Evidence of a deliberate and calculated plan to engage in a dishonest academic practice, such as gaining access to examinations prior to the time the exam was to be given or the extraction of information regarding an examination from other students.
- D. Falsification of clinical, practicum, or laboratory records.
- E. Plagiarism – using someone else's ideas or words as your own. In an educational setting you can avoid plagiarism by providing appropriate source documentation. For more information on plagiarism, visit www.plagiarism.org.
- F. Unauthorized collaboration with others or use of prior work (e.g., submitted for another assignment in a different course) without permission or citation (if previously published).

It is important to note that if AI tools like ChatGPT are permitted to be used for an assignment, then they should be used with caution and proper citation. AI is not a replacement for your own thinking and research.

Turnitin Disclaimer

Marion Technical College has partnered with the third-party application Turnitin to help maintain our standards of excellence in academic integrity. Turnitin is a suite of tools that provide instructors with information about the authenticity of submitted work and facilitates the process of grading for instructors. Submitted files are compared against an extensive database of content. Turnitin produces a similarity report and a similarity score, which is the percentage of a document that is similar to content held within the database. A similarity report gives the instructor more information about any potential matches and their sources. Turnitin does not determine if an instance of plagiarism has occurred. Instead, it gives instructors the information they need to determine the authenticity of work as a part of a larger process. All submissions to this course may be checked using Turnitin.

Note: Please also see the Academic Misconduct section in the ***Student Handbook*** on the college website at <https://mtc.smartcatalogiq.com/en/name/student-handbook/student-handbook/>.

Use of Artificial Intelligence (AI) in Assignments

Purpose: The purpose of this policy is to outline guidelines for the appropriate use of artificial intelligence tools by students in completing assignments at Marion Technical College:

Scope: This policy applies to all students enrolled in courses at Marion Technical College.

Guidelines:

- 1. Transparency and Disclosure:** Students must disclose the use of any AI tools or software in their assignment. This includes mentioning the specific tools used and the extent of their involvement in completing the assignment.
- 2. Ethical Use:** Students are expected to use AI tools ethically and in accordance with the standards of academic integrity. This includes avoiding plagiarism, ensuring that the AI tools are used to enhance their learning and understanding, and not to substitute for their own critical thinking and analysis.
- 3. Understanding and Learning:** While AI tools can assist in certain aspects of assignment, students are responsible for understanding the underlying concepts and content of their coursework. AI should be used as a supplement to learning, not a replacement for it.
- 4. Citation and Attribution:** When using AI generated content or insights in their assignments, students must properly cite the sources. This includes acknowledging the AI tools used and providing references where applicable.

5. **Accountability:** Students are accountable for the accuracy and quality of work produced with the assistance of AI tools. They must verify and validate the output generated by these tools to ensure accuracy and relevance to the assignment requirements.

6. **Faculty Supervision:** Faculty members may provide guidance on the use of AI tools and may specify any additional requirements or restrictions regarding their use in assignments. Students should consult with faculty members if they have questions or need clarification on the use of AI tools.

Consequences of Violation: Violations of this policy, such as failure to disclose the use of AI tools, unethical use of AI, or plagiarism, may result in academic penalties as per the institutions academic integrity policies. Students are encouraged to seek clarification and guidance from faculty members to avoid unintentional violations.

Review and Updates: This policy will be reviewed periodically to ensure the effectiveness and may be updated as needed based on the changes in technology, academic, standards, or institutional policies.

FINANCIAL AID ATTENDANCE REPORTING

Marion Technical College is required by federal law to verify the enrollment of students who participate in Federal Title IV student aid programs (Federal grants and student loans) and/or who receive educational benefits through the Department of Veterans Affairs. It is the responsibility of the College to identify students who do not commence attendance or who stop attendance in any course for which they are registered and paid. Non-attendance is reported by each instructor, and can result in a student being administratively withdrawn from the class section. Please contact the Financial Aid Office for information regarding the impact of course withdrawals on financial aid eligibility. The Financial Aid Office is located in the L1NK One Stop (Bryson Hall 183) at can be reached at 740-386-4113 or financial-aid@mtc.edu.

BELONGING AND EQUITY

Marion Technical College is committed to providing equal opportunities for all students, and does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity and expression, genetic information, medical status, military status, national origin, nursing parent status, pregnancy, race, religion, sex, sexual orientation, parent and foster parent status, protected veteran status, or any other bases under the law. As a community, we celebrate difference and value the worth of every individual. To report any form of discrimination or harassment, follow the link to the online [Student Complaint Form](#).

ACCOMMODATIONS FOR DISABILITIES

If a student has any kind of visible or non-visible disability -- learning, emotional, physical, health, or cognitive -- and needs possible accommodations to fully participate in all aspects of this course, they should contact the Disability Services Office as early as possible to discuss reasonable accommodations for their access needs. If students already have a diagnosis, Disability Services can help them document their needs and create an accommodation plan. By making a plan through Disability Services, students can facilitate appropriate accommodations without disclosing their condition or diagnosis to their course instructor(s). If students don't have a diagnosis, please contact Disability Services to see what would be needed from the student to support the request for accommodations.

The Disability Services Office is located in BR176. Chelsea Glezen, Interim Director of Student Disability Services, can be reached by calling 740.386.4222 or emailing DS@mtc.edu.

RELIGIOUS AND SPIRITUAL ACCOMMODATIONS

Students may request up to three absences per academic term to observe holidays or organized activities that align with their religion, faith, or spiritual belief system (“sincerely held religious belief”). In accordance with state law (Ohio Revised Code 3345.026), students must submit written notice to their instructor(s) of the expected dates of absence within the first 14 calendar days of the course(s). Instructors will provide appropriate academic accommodations if an absence for a sincerely held religious belief coincides with coursework, quizzes, exams, etc. The College’s complete policy can be found on the College website and in the student handbook. Questions about this accommodation process can be directed to woughterl@mtc.edu.

TITLE IX NON-DISCRIMINATION FOR STUDENTS

No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any educational program or activity receiving Federal financial assistance.

- Sexual harassment and acts of sexual violence such as rape, sexual assault, sexual exploitation, dating violence, domestic violence, are forms of sex discrimination prohibited.
- Discrimination against a student based on pregnancy, pregnancy-related conditions, childbirth, or parenting status is prohibited..

Report any discrimination or ask questions of the Title IX Coordinator.

- Title IX Coordinator: Cretia Johnson (johnsonc@mtc.edu or (740) 386-4195)
- Pregnancy/Childbirth/Parenting adjustments or concerns – contact Chelsea Glezen, Interim Director of Student Disability Services at ds@mtc.edu or (740) 386-4222

ADDITIONAL RESOURCES

The following information is provided to help make students more aware of resources which may aid in their academic success such as tutoring, disability services, academic advising, financial aid, emergency procedures, etc.

Academic Advising:

All students at MTC are assigned to an academic advisor. Your advisor is available to guide you in course selection and registration, assist you with career and academic planning, discuss your academic difficulties and personal goals, and refer you to campus and community resources to support your success. If you are not sure of your advisor’s name or contact information, log-in to My Plan through My MTC or contact the Advising Office (BR 176) at 740-386-4200 or advising@mtc.edu.

Tutoring:

MTC offers free one-on-one, small group, and online tutoring services for many of the classes you take at MTC. If you are having difficulties in a course, it is very important to seek out assistance as soon as possible so you do not fall behind. For more information about tutoring, please contact tutoring@mtc.edu or 740-389-4636 ext 1193 or stop by BR 193.

Your instructors want to see you succeed and are also available to answer questions before, during, and after class as well as during weekly office hours (office hours are designated times set aside to meet with students each week).

Drug/Alcohol & Mental Health Concerns:

MTC has licensed mental health staff to help you with personal matters that may impact your studies and academic performance. Contact Mike Stuckey at stuckeym@mtc.edu or 740-386-4171 or Cassidy McAvoy at mcavoyc@mtc.edu or 740-725-6181 if you believe a counselor or case manager can be of assistance regarding topics such as depression, anxiety, feeling overwhelmed, managing stress, difficulties making decisions, or substance abuse.

Student Assistance Program (SAP):

This resource provides you and members of your household with confidential mental health support, resources, and information for personal and school-life balance issues. This includes short-term clinical counseling (up to 5 sessions free), legal support, financial information, and online resources through GuidanceResources 24/7/365. To access your benefits, call 833-955-3384 or visit www.guidanceresources.com and enter School ID: MTC Student.

MTC Connections Center:

MTC recognizes that students often face challenges outside of the classroom which impact their academic success. Any student who is experiencing food insecurity (limited/lack of food), housing insecurity or homelessness, transportation issues, limited access to childcare, or any other concern is encouraged to reach out to the MTC Student Resource Navigator (SRN) in the Connections Center (Bryson Hall 143). The SRN can be reached at ern3.marionmatters@gmail.com or call/text 567-908-7564.

The Marion Campus Food Pantry and Fresh Express Market (free fresh produce) are available to all students, regardless of income, to address food insecurity and hunger. There are two locations – one in the Alber Student Center and one in the Connections Center. You must present your student ID. Hours vary by term. Please check your MTC email, campus signage, or visit the Connections Center for more information.

For more information on the food pantry or information about other services, contact the Connections Center at connectionscenter@mtc.edu or 740-725-4014.

Financial Aid:

Regularly attending class is critical in achieving academic success. If you receive some form of financial aid, such as the Pell Grant and/or the Federal Direct Student Loan, federal regulations require you to attend classes. In part, this is why your instructor records attendance. Maintaining satisfactory academic progress (SAP) is important in preserving your future eligibility for financial resources. If you ever have questions or concerns, please contact the Office of Financial Aid.

Laptop Loaner Program:

MTC provides loaner laptops on a short-term basis to students, up to 60 days at a time. The intent of this program is to ensure students have a computer to complete their coursework until they can purchase or repair their personal computer if it breaks down. New students may also borrow a computer if they need to wait for their financial aid refund check in order to purchase a personal device. Quantities are limited and available on a first-come, first-serve basis. To request a laptop, complete this request form: <https://bit.ly/MTCLoanerLaptops>. If there are no devices available, you will be placed on a waitlist. The Computer Lab located in Bryson Hall (BR 197) is another resource available for student use.

Emergency Procedures

MTC is committed to providing a safe and secure environment for students. We want you to have the resources and knowledge that aid your response to emergency situations in an appropriate and confident manner. MTC shares Public Safety Services with the Ohio State University at Marion (OSUM) and employs police officers. Additionally, MTC and OSUM contracts with the Marion County Sheriff's Office to cover campus security when needed.

"Buckeye Alert" Emergency Notification System:

MTC students are automatically signed up to receive campus wide emergency notifications when they provide their cell phone number during the admission process. Buckeye Alert will be used to notify the campus community of campus wide emergencies, closings, and crime alerts. Emergency notifications for the campus may be generated by the OSU Public Safety Services. Phone numbers are not related to other parties and are strictly used for emergency notifications only.

911 Emergencies:

In the event of a medical, fire, or safety/security incident requiring an emergency response, please call 911. Phones are located in most MTC classrooms.

Emergency Personnel	Phone Number
Marion Campus Public Safety (Non-Emergency)	740-725-6300
Marion County Sheriff's Office (Non-Emergency)	740-382-8244
Marion Township Fire Department (Non-Emergency)	740-387-5404

Public Safety Escort:

A safety escort is available during campus hours. The service is free and requires your MTC identification card. To arrange a safety escort, contact the Marion Campus Public Safety Office at 740-725-6300.

Active Shooter:

Be familiar with your options in the event of an active shooter. If you can escape, do so immediately! Run away from the campus. If you cannot escape, lock and barricade the door. Remain quiet and silence all electronic devices and phones. Do NOT huddle together or stay close. Spread out in the room and develop a way to attack the shooter if they enter the room. An informative six-minute video "Surviving an Active Shooter" is available for viewing at <https://youtu.be/9Z9zkU--FLQ>. We encourage you to watch this video to better prepare should an active shooter incident take place on campus.

Building Evacuation Maps:

There are building evacuation maps located in each campus building. Maps in the single floor buildings are located near the doors. Maps are located in multiple floor buildings at the top of each staircase. The maps include the following information: exit and exit routes (for evacuation), assembly points (to meet in the event of an evacuation), severe weather shelter areas (in the event of a tornado or inclement weather), and AEDS (Automated External Defibrillator – for use in the case of a heart attack).

Be prepared in the event of an emergency. Familiarize yourself with the maps in each building you utilize. Note where the fire extinguishers are located in each building along with fire alarm pull stations.

Emergency Procedures Flip Charts:

Familiarize yourself with the quick reference flip charts, conveniently hung on hooks in all classrooms and department areas close to the doors. They provide information on various emergency procedures and contain safety information that is beneficial for you to know.

MTC Website:

Additional safety and security information can be found online at <https://www.mtc.edu/health-and-safety/>. Note: Some links will route you to the OSU Safety and Security website.