North Central State College

| MASTER SYLLABUS | 2025-2026 |
|---|---|

A. Academic Division: Engineering Technology, Business & Criminal Justice Division

B. Discipline: Mechanical Engineering Technology

C. Course Number and Title: MECT1150 Fundamentals of Engineering Design

D. Assistant Dean: Brooke Miller, M.B.A.

E. Credit Hours: 2
Lecture: 1 hours
Laboratory: 3 hours

F. Prerequisites: None

G. Last Course/Curriculum Revision Date: Fall 2025 Origin date: 07/28/2011

H. Textbook(s) Title:

*Autodesk Inventor 2022 with Engineering Graphics*
- Author: Randy H. Shih
- Copyright Year: 2022
- Edition: 1st
- ISBN: 9781630574352

I. Workbook(s) and/or Lab Manual: None; Class Handouts will be distributed

J. Course Description: An introductory course to acquaint the student with the tools used to convey design concepts and product information in the engineering arena. 3D visualization, using sketching, drawing, solid modeling and computer aided drafting will be used. The course will also introduce the main concepts in developing an engineering design project.

K. College-Wide Learning Outcomes:

| College-Wide Learning Outcome | Assessments - - How it is met & When it is met |
|---|---|
| Communication – Written | |
| Communication – Speech | |
| Intercultural Knowledge and Competence | |
| Critical Thinking | |
| Information Literacy | |
| Quantitative Literacy | |

North Central State College

**SYLLABUS ADDENDUM**

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|---|---|---|---|
| **Academic Division:** | Engineering Technology, Business & Criminal Justice | **Discipline:** | Engineering |
| **Course Coordinator:** | Alex West | | |
| **Course Number:** | MECT-1150-CN2 | **Course Title:** | Fundamentals of Engineering |
| **Semester / Session:** | Fall 2025 | **Start / End Date:** | 08/11/2025 thru 12/12/2025 |

**Instructor Information**

| | | | |
|---|---|---|---|
| **Name:** | Fisher Kalb | **Credentials:** | BASMET |
| **Phone Number:** | NA | **E-Mail Address:** | fkalb@ncstatecollege.edu |
| **Office Location:** | Kehoe Center – Room 012 | **Office Hours:** | Tuesdays & Thursdays: 10:00 A.M. – 10:30 A.M. & 2:10 P.M. – 5:00 P.M. |

## I. Topical Timeline / Course Calendar (Subject to Change):

| Weeks | Topics | Assignment | Due Date |
|---|---|---|---|
| 1 | Roll of Engineers, Measuring Tools, & Orthographic Drawing | Orthographic Drawing Lab | 8/21 |
| 2 | Introduction to Inventor | Chapter 2 Parts | 8/28 |
| 3 | Orthographic Drawing Details & Extrusion | Chapter 3 Parts | 9/4 |
| 4 | Geometric Constraints, Parameters, & Parametric Constraints | Chapter 4 Parts | 9/11 |
| 5 | History Tree & iProperties | Chapter 5 Parts | 9/18 |
| 6 | Profiles & Offset Command | Chapter 6 Parts | 9/25 |
| 7 | Orthographic Drawing & Midterm Review | Chapter 7 Parts | 10/2 |
| 8 | Midterm Exam | Midterm Exam | 10/2 |
| | Fall Break | | |
| 9 | Dimensioning & Notes | Chapter 8 Parts | 10/23 |
| 10 | Tolerancing, Fits, & GD&T Symbols | Chapter 9 Parts | 10/30 |
| 11 | Auxillary Views & Reference Geometry | Chapter 11 Parts | 11/6 |
| 12 | Section Views & Symmetrical Features in Designs | Chapter 12 Parts | 11/13 |
| 13 | Assemblies | Chapter 14 Parts | 11/20 |
| 14 | Final Exam | Final Exam | 11/20 |
| 15 | Introduction to Stress Analysis | Chapter 15 Parts | 11/27 |
| 16 | Threads & Fasteners | Chapter 13 Parts | 12/4 |

## II. Grading and Testing Guidelines:

Final Grade Calculation

| Activity | Qty | Points | Percentage |
|---|---|---|---|
| Quizzes | 8 | 10 | 10 |
| Assignments | 14 | 10 | 40 |

| | | | |
|---|---|---|---|
| Midterm Exam | 1 | 100 | 25 |
| Final Exam | 1 | 100 | 25 |

1. **Topic description #1**
   a. Roll of Engineers, Measuring Tools, & Orthographic Drawing
2. **Topic description #2**
   a. Introduction to Inventor
3. **Topic description #3**
   a. Orthographic Drawing Details & Extrusion
4. **Topic description #4**
   a. Geometric Constraints, Parameters, & Parametric Constraints
5. **Topic description #5**
   a. History Tree & iProperties
6. **Topic description #6**
   a. Profiles & Offset Command
7. **Topic description #7**
   a. Orthographic Drawing & Midterm Review
8. **Topic description #8**
   a. Midterm Exam
9. **Topic description #9**
   a. Dimensioning & Notes
10. **Topic description #10**
    a. Tolerancing, Fits, & GD&T Symbols
11. **Topic description #11**
    a. Auxillary Views & Reference Geometry
12. **Topic description #12**
    a. Section Views & Symmetrical Features in Designs
13. **Topic description #13**
    a. Assemblies
14. **Topic description #14**
    a. Final Exam
15. **Topic description #15**
    a. Introduction to Stress Analysis
16. **Topic description #16**
    a. Threads & Fasteners

## III. Examination Policy:

1. The reasons for which a student will be excused from taking an examination _____
   a. Hospitalization (with documented verification)
   b. Death in the immediate family (with documented verification)

c. Personal illness or illness in immediate family - (doctor's excuse required).

2. A student who misses an examination for any reason is responsible for _____
   a. Contacting the instructor prior to the exam time
   b. Working with instructor on how and when the exam will be made-up.

3. No makeup opportunity will be given for absences of unscheduled quizzes.

## IV. Class Attendance and Homework Make-Up Policy:

1. Class attendance is necessary to acquire the knowledge required to _____
   a. Complete weekly assignments

2. Students are responsible for _____
   a. Attending and participating in their classes.
   b. All assignments issued

## V. Classroom Expectations:

**As a NC State Student, be it it online or hybrid, your conduct in this course is subject to the NC State Student Code of Conduct. (Links to an external site.)**

As a future professional in your field, **you will be expected to conduct yourself as a professional in this course in ALL work and communications** - be it assignments, discussion forums, Canvas Inbox, emails etc.

This includes but is not limited to:

- **Being respectful of classmates' opinions, work and comments**
  *Good test = Is this something I would/should say to a co-worker in person?*
- **Being respectful in communications with the instructor**
  *Good test = Is this something I would/should say to my boss in the workplace?*
- **Being respectful of diversity**
  *Good test = Is this a comment/joke that is at some other groups, ethnicity, political etc. expense?*
  Note: Offensive "jokes", slurs or hate speech (Links to an external site.) will NOT be tolerated
- **Using Non-Profane, Appropriate Language**
  *Good test = Is this language you would use in the workplace or in front of your grandmother?*
- **Using proper. NON-"Text speak" Language to make Yourself Easily Understood**
  *Good test = Could my older boss understand what I have written?*

**Failure to conduct yourself as a professional and meet standards above in this course will result in the following consequences** in this course:

- **1st Instance** = Written warning from the instructor documenting issue
  *(No points deductions)*
- **2nd offense = Mandatory m**eeting with the instructor and or Department Chair or Division Dean
  *(Related assignment/Participation subject to Point Deductions)*
- **3rd offense:** College Disciplinary procedures filed with the NC State Judicial Committee as a violation of the Student Code of Conduct.
  *(Course Grade subject to F)*

**Extreme or repeated unprofessional behavior will result in initiating college disciplinary procedures** as outlined in the NC State Student Code of Conduct. (Links to an external site.) NCSC Disciplinary hearings can result in a variety of consequences, including and up to suspension or being expelled from the college.

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

| Outcomes | Assessments – How it is met & When it is met |
|---|---|
| 1. Make orthographic sketches from isometric drawings of simple machined objects. | Drawing assignments & exams<br>Week 5, midterm exam |
| 2. Create multi-view drawings of simple machined objects. | Drawing assignments & exams<br>Week 7, midterm exam |
| 3. Successfully use Architect and Engineering Scales | Drawing assignments & exams<br>Week 2, midterm exam |
| 4. Display knowledge of standard engineering symbols and lettering, numbering and dimensioning, including Bills of Materials. | Drawing assignments, Week 9<br>Final project |
| 5. Identify and apply standard engineering symbols (GDT) | Drawing assignments, Week 9 |
| 6. Use 3D modeling software to develop 3D models and assemblies of standard machined parts based on dimensions taken from standard isometric or orthographic drawings. | Drawing assignments & exams<br>Weekly, midterm and final exam |
| 7. Create properly dimensioned orthographic drawings from 3D models using 3D software. | Computer assignments & exams<br>Weekly, midterm and final exam |
| 8. Draw, dimension and print basic machined parts. | Computer assignments & exams<br>Week 4, midterm and final exam |
| 9. Describe and discuss the role of engineers in industry. | Written assignment<br>Week 10 |
| 10. Describe the general design process used in engineering projects. | Written assignment<br>Week 12 |

M. Recommended Grading Scale:

| NUMERIC | GRADE | POINTS | DEFINITION |
|---|---|---|---|
| 93–100 | A | 4.00 | Superior |
| 90–92 | A- | 3.67 | Superior |
| 87–89 | B+ | 3.33 | Above Average |
| 83–86 | B | 3.00 | Above Average |
| 80–82 | B- | 2.67 | Above Average |
| 77–79 | C+ | 2.33 | Average |
| 73–76 | C | 2.00 | Average |
| 70-72 | C- | 1.67 | Below Average |
| 67–69 | D+ | 1.33 | Below Average |
| 63-66 | D | 1.00 | Below Average |
| 60-62 | D- | 0.67 | Poor |
| 00-59 | F | 0.00 | Failure |

N. College Procedures/Policies:

North Central State College believes that every student is a valued and equal member of the community.* Every student brings different experiences to the College, and all are important in enriching academic life and developing greater understanding and appreciation of one another. Therefore, NC State College creates an inclusive culture in which students feel comfortable sharing their experiences. Discrimination and prejudice have no place on the campus, and the College takes any complaint in this regard seriously. Students encountering aspects of the instruction that result in barriers to their sense of being included and respected should contact the instructor, assistant dean, or dean without fear of reprisal.

* *Inclusive of race, color, religion, gender, gender identity or expression, national origin (ancestry), military status (past, present or future), disability, age (40 years or older), status as a parent during pregnancy and immediately after the birth of a child, status as a parent of a young child, status as a foster parent, genetic information, or sexual orientation*

**Important information regarding College Procedures and Policies can be found on the syllabus supplement located at https://ncstatecollege.edu/documents/President/PoliciesProcedures/PolicyManual/Final%20PDFs/14-081b.pdf**