CUYAHOGA COMMUNITY COLLEGE
OFFICIAL COURSE OUTLINE
Mapped

SUBJECT AREA TITLE
Mechanical Engineering Technology/Manufacturing Industrial Engineering Technology
COURSE TITLE
Technology Orientation
SUBJECT AREA CODE-COURSE NUMBER
MET - 1100
COURSE CREDIT HOURS
2.00

I. DESCRIPTION OF COURSE:

A. CATALOG DESCRIPTION: Orientation and exploration of technician's role as part of industrial team including technical careers, opportunities and job hunting skills. Topics include use of the computer, basic measurement and calculation skills and engineering drawing concepts. Introduction to oral, technical writing and graphic methods of communication. Introduction to professional organizations, journals and tools for professional enhancement to provide a path for lifelong learning.

B. LECTURE HOURS: 1.0

C. LAB HOURS: 2.00

D. OTHER REQUIRED HOURS: 00

E. PREREQUISITE(S):
Eligibility for MATH-1280 Intermediate Algebra or departmental approval.

II.   GENERAL EDUCATION OUTCOMES:

Upon satisfactory completion of MET 1100 - Technology Orientation, the student should be able to perform the following outcomes and supporting objectives:

A. Outcome: Civic Responsibility: Demonstrate civic responsibility that balances the personal consequences of students' actions and inactions with the likely effects on the larger community.

Supporting Outcomes:

1. Apply verbal communication, technical writing, and graphical representation skills to develop appropriate oral and written reports for a specified audience.

B. Outcome: Critical Thinking: Analyze and synthesize ideas to make evidence-based decisions and find rational solutions to problems.

Supporting Outcomes:

1. Perform technical measurements and calculations.
2. Draw and interpret orthographic and pictorial sketches.
3. Apply knowledge of computer hardware/software relationships, peripherals, terminology, procedures and processes.
4. Explore future implications of technology

C. Outcome: Cultural Sensitivity: Demonstrate sensitivity to the unique views and values of cultures both within and beyond the United States.

Supporting Outcomes:

1. Apply verbal communication, technical writing, and graphical representation skills to develop appropriate oral and written reports for a specified audience.

D. Outcome: Global Awareness: Describe the interconnected global systems—economic, social, cultural, environmental, technological, political—that affect students' everyday lives, and articulate the importance of adapting to and participating in a rapidly-changing global society.

Supporting Outcomes:

1. Apply verbal communication, technical writing, and graphical representation skills to develop appropriate oral and written reports for a specified audience.

E. Outcome: Information Literacy: Determine where and how to acquire, evaluate, and ethically use information from multiple sources for academic success and lifelong learning.

Supporting Outcomes:

1. Determine his/her interest and aptitudes for technical education and employment.
2. Apply verbal communication, technical writing, and graphical representation skills to develop appropriate oral and written reports for a specified audience.
3. Apply knowledge of computer hardware/software relationships, peripherals, terminology, procedures and processes.
4. Understand the terms involved in wind turbine terminology.

F. Outcome: Oral Communication: Produce verbal and non-verbal communication for an intended audience that is clear and concise, uses standard rules for spoken language, and effectively organizes language, images and other symbols.

Supporting Outcomes:

1. Draw and interpret orthographic and pictorial sketches.
2. Apply verbal communication, technical writing, and graphical representation skills to develop appropriate oral and written reports for a specified audience.

G. Outcome: Written Communication: Produce writing for an intended audience that is clear and concise, uses standard rules for written language, and effectively organizes language, images and other symbols.

Supporting Outcomes:

1. Apply verbal communication, technical writing, and graphical representation skills to develop appropriate oral and written reports for a specified audience.
2. Explore the history of wind turbine technology.

III.   OUTCOMES/OBJECTIVES:

Upon satisfactory completion of MET 1100 - Technology Orientation, the student should be able to perform the following outcomes and supporting objectives:

A. Outcome: Determine his/her interest and aptitudes for technical education and employment.

Supporting Objectives:

1. Describe the different areas of study in the Engineering Technology field
2. Determine his/her interests and aptitudes for technical education and employment.
3. Assess the basic skills needed for successful completion of a technical degree.
4. Define engineering and technical terminology.
5. Define the members of the industrial team.
6. Describe the design process
7. Use the Internet to access, communicate, and retrieve information.

B. Outcome: Perform technical measurements and calculations.

Supporting Objectives:

1. Use common and precise measuring tools.
2. Use basic geometry and trigonometry concepts.
3. Apply scientific and engineering notation.
4. Relate basic math used in engineering to real life problems.
5. Use the Internet to access, communicate, and retrieve information.

C. Outcome: Draw and interpret orthographic and pictorial sketches.

Supporting Objectives:

1. Develop visualization skills
2. Identify orthographic and pictorial drawings
3. Use the Internet to access, communicate, and retrieve information.

D. Outcome: Apply verbal communication, technical writing, and graphical representation skills to develop appropriate oral and written reports for a specified audience.

Supporting Objectives:

1. Define audience and purpose in both oral and written technical reports.
2. Explain oral and written communication procedures used in engineering and technology.
3. Graph or chart lab/test results clearly for a technical audience
4. Use the proper communication skills to the right audience.

5. Discuss communication issues that arise in a technical community.
6. Use the Internet to access, communicate, and retrieve information.

E. Outcome: Apply knowledge of computer hardware/software relationships, peripherals, terminology, procedures and processes.

Supporting Objectives:

1. Discuss the impact of computers on society, now and in the future.
2. Make the computer work through judicious development or use of software.
3. Interact with the computer, generate input to the computer, and interpret output from the computer.
4. Explain common system software concepts.
5. Demonstrate an understanding of the basic terminology and concepts associated with programming languages and software.
6. Discuss the function, applications, and concepts of word processing software.
7. Use the Internet to access, communicate, and retrieve information.

F. Outcome: Explore future implications of technology

Supporting Objectives:

1. Interact with the computer, generate input to the computer, and interpret output from the computer.
2. Use the Internet to access, communicate, and retrieve information.
3. Describe developing technological systems
4. Identify industries responsibity to the environment.
5. Define different types of wind turbines.

G. Outcome: Understand the terms involved in wind turbine terminology.

Supporting Objectives:

1. Define general wind terminology
2. Describe various components of wind turbines.
3. Identify major components of modern wind turbines.
4. Define different types of wind turbines.

H. Outcome: Explore the history of wind turbine technology.

Supporting Objectives:

1. Identify major components of modern wind turbines.
2. Describe the evolution of wind turbine technology
3. Define different types of wind turbines.

IV. **COURSE CONTENT:**

A. Career Exploration
   1. Introduction to Cuyahoga Community College's Programs, Degrees & Transfer
   2. History of engineering and technology
      a. Man's relation
      b. Ancient
      c. Middle ages
      d. Modern times
   3. Industrial team & The Design Process
      a. Scientist
      b. Engineer
      c. Technologist
      d. Technician
      e. Craftsperson
   4. Engineering and technical fields
      a. Opportunities
      b. Wages
      c. Job hunting skills
         i. Resume
         ii. Cover letter
         iii. Thank you letter
   5. Professional Lifelong learning
      a. Research organizations in various engineering fields.
         i. History & Roles of individuals who practice the field.
         ii. Membership requirements
      b. Journals in engineering
         i. Apply them in interpreting Lab Reports
         ii. Apply them as sources for the technical report
B. Measurement and Calculation
   1. Measuring tools
   2. Conversion of units
   3. Basic geometry concepts
   4. Basic trignometry concepts
   5. Scientific and engineering notation
C. Technical drawing and visualization

1. Catalogs, literature, and other resources
2. Orthographic
3. Isometric
4. Oblique
5. Perspective

D. Special techniques of technical writing and communication
1. Organization
2. Audience
3. Summaries
4. Page design
5. Word processing
6. Graphical representation
7. Formats
8. Lab reports
9. Technical reports
10. Presentations
11. Oral Reports
12. Critiques

E. Computer Literacy
1. Introduction to the computer
a. Uses as a creative tool
b. Uses as a technical tool
2. Operational systems
a. Software
b. Hardware
3. Information processing
a. History
b. Development
c. Need
d. Components
e. Processing cycle

F. Problem Solving, creative thinking, and presentation of data as used in technical work

G. Future of technologyand its ethical implications with regards to the global community
1. Introduction of various areas in technology with future applications
2. Robotics
3. Optical systems
4. Materials
5. Photovoltaics
6. Wind Power
7. Fiber optics

H. Wind turbine technology investigation
1. History and evolution of wind technology
2. Terminology of wind turbine technology
3. Components of wind turbines

I. Environmental concerns
1. Improving the environment through technology
2. Protecting the environment

V. **METHODS OF STUDENT EVALUATION MAY INCLUDE ANY OF THE**

FOLLOWING:

    A. Assignments and projects
    B. Quizzes and/or midterm examination
    C. Final examination

VI.   RESOURCES MAY INCLUDE ANY OF THE FOLLOWING:

    A. Hart, Hilary. *Introduction to Engineering Communication*. 2e Upper Saddle River, NJ: Pearson-Prentice Hall, 2009.
    B. Kalpakjian, Serope and Steven Schmid.. *Manufacturing, Engineering & Technology*. 7e Upper Saddle River, NJ: Prentice Hall, 2014.
    C. Oakes, Leone, Gunn. *Engineering Your Future: A Brief Introduction to Engineering*. 2e Chesterfield, MO: Greate Lakes Press, 2012.
    D. Pond, Robert J.. *Introduction to Engineering Technology*. 7th ed. Upper Saddle River, NJ: Prentice Hall, 2009.
    E. Wheeler, Anthony and Ahmad Ganji. *Introduction to Engineering Experimentation*. 3rd Ed. Upper Saddle River, NJ: Prentice Hall, 2010.

VII.   ADDITIONAL RESOURCES: