ET 2140
Computer Graphics

Course Description:
The objective of this course is to obtain basic familiarity with computer aided design techniques to generate 2D, 3D objects and apply engineering graphic principles to design. Solution of graphics problems and development of graphic presentations using computer-based techniques.

Credit Hours:
3 Credit Hours.

Prerequisite(s):
None

Co-requisite(s):
CSC 1050.

Textbook(s) Required:
Practical Unigraphics NX2 Modeling for Engineers, by Stephen M. Samuel, Mark Kelley - Design Visionaries Inc.

Topics Covered:
2. Basic Drawing, editing.
4. Help & Point Entry.
5. Orthographic views using 2D.
6. Dimensioning & Tolerancing.
7. Sectional Drawings & Hatching.
8. Isometric projection.
9. Introduction to 3D.
10. Advanced 3D Blocks & Solid Modeling.
11. Applications in specialized fields.

Laboratory:
None.
**Course Learning Objectives:**

Upon successful completion of this the student will be able to:

1. Sketch objects freehand to communicate concepts. [SO a]
2. Create orthographic views of objects. [SO a]
3. Draw isometric and oblique pictorials of objects. [SO a]
4. List and recognize the six major types of sectional views. [SO a]
5. Use a modern Computer Aided Design Program to complete 2 dimensional drawings of objects. [SO a]
6. Organize drawing entities into layers, add text and basic dimensions, and prepare to plot in AutoCAD. [SO a]
7. Create 3D drawings using wire modeling and solid modeling using AutoCAD. [SO d,M1]
8. Use Unigraphics to develop parametric solid model representations of parts and assemblies, and use Unigraphics concepts like expressions, drafting. [SO d,M1]
9. Create Constraint-based modeling using sketcher, top-down and bottom-up using Unigraphics modeling and assemblies. [SO a,d,M3]

**Contributions to MCT Program Student Outcomes:**

<table>
<thead>
<tr>
<th>Level</th>
<th>BS MCT Program Student Outcomes</th>
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<tbody>
<tr>
<td>2</td>
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</table>
|       | a. an ability to select and apply the knowledge, techniques, skills, and modern tools of their disciplines to broadly-defined engineering technology activities  
|       | b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies  
|       | c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes  
| 1     | d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives  
|       | e. an ability to function effectively as a member or leader on a technical team  
|       | f. an ability to identify, analyze, and solve broadly-defined engineering technology problems  
|       | g. an ability to communicate effectively regarding broadly-defined engineering technology activities  
|       | h. an understanding of the need for and an ability to engage in self-directed continuing professional development  
|       | i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity  
|       | j. a knowledge of the impact of engineering technology solutions in a societal and global context  
|       | k. a commitment to quality, timeliness, and continuous improvement  
| M1    | MCT Design Track: Students in this track will demonstrate the ability to apply principles of materials and mechanics to the design and analysis of mechanical components and mechanisms.  
| M2    | MCT Energy Track: Students in this track will demonstrate the ability to apply principles of thermo-fluid sciences to the design and analysis of energy systems  
| M3    | MCT Manufacturing Track: Students in this track will demonstrate the ability to apply principles of materials and production techniques to the planning, implementation, and control of manufacturing processes |
Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100</td>
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<tr>
<td>A-</td>
<td>90-92</td>
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<tr>
<td>B+</td>
<td>87-89</td>
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<tr>
<td>B</td>
<td>83-86</td>
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<tr>
<td>B-</td>
<td>80-82</td>
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<td>77-79</td>
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<tr>
<td>C</td>
<td>73-76</td>
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<tr>
<td>C-</td>
<td>70-72</td>
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<td>D+</td>
<td>67-69</td>
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<tr>
<td>D</td>
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<tr>
<td>D-</td>
<td>60-62</td>
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<td>E</td>
<td>Below 60</td>
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WITHDRAWAL POLICY:
- Last day to drop with a tuition refund: First two weeks of semester.
- Last day to drop without a withdrawal notation on the transcript: Weeks 3-4.
- Final day to drop class: Last day of classes.

POLICY ON CHEATING:

Cheating is defined by the University as “intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information, or assistance in any academic exercise.” This includes any group efforts on assignments or exams unless specifically approved by the professor for that assignment/exam. Evidence of fabrication or plagiarism, as defined by the University in its brochure *Academic Integrity*, will also result in downgrading for the course. Students who cheat on any assignment or during any examination will be assigned a failing grade for the course and may be subject to additional penalties.

University / Department Policies:

- Academic Misconduct
  [http://www.et.eng.wayne.edu/et/academicmisconduct/academicmisconduct.html](http://www.et.eng.wayne.edu/et/academicmisconduct/academicmisconduct.html)
- Withdrawal from Engineering Tech classes
- Deferred Grades

Code of Ethics for Engineers:

- [http://cems.alfred.edu/courses/ces120/ethics/abet.html](http://cems.alfred.edu/courses/ces120/ethics/abet.html)
- [http://cems.alfred.edu/courses/ces120/ethics/ieee.html](http://cems.alfred.edu/courses/ces120/ethics/ieee.html)
- [http://onlineethics.org/codes/](http://onlineethics.org/codes/)
- [http://www.iit.edu/departments/csep/codes/coe/abet-a.html](http://www.iit.edu/departments/csep/codes/coe/abet-a.html)

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