MOHAWK VALLEY COMMUNITY COLLEGE

UTICA & ROME, NEW YORK

**Course Outline:** **CT 121 – Statics**

1. **Catalog Description**

CT 121 Statics [C-2, P-2, CR-3]

This course is a study of force systems and their actions on bodies at rest. Topics include force systems, equilibrium, distributed forces, centroid, moment of inertia, and friction. Prerequisite: MA121 Fundamentals of College Mathematics 1. (Spring, Summer semester

Prerequisite: MA121 Fundamentals of College Mathematics 1

1. **Course Objectives**

The objective of this course is to introduce students to concepts and principles pertaining to statics. Students will develop an understanding of forces acting on rigid bodies at rest and demonstrate proficiency at finding resultant forces for a variety of force systems. Students will develop critical thinking skills necessary to formulate appropriate approaches to problem solutions.

1. **Student Learning Outcomes** *(ETAC-ABET Assessment Criteria)*
2. Students will be able to perform unit conversions. (1)
3. Students will be able to identify the concepts of forces and moments. (3)
4. Students will be able to break forces up into their components. (1, 2)
5. Students will be able to simplify a force system into a resultant. (1, 2)
6. Students will be able to draw free-body diagrams of various force systems. (1, 2)
7. Students will be able to solve for forces using equilibrium equations in frames and trusses. (1, 2)
8. Students will be able to calculate centroids (1st moment of area). (1)
9. Students will be able to calculate the center of pressure. (1)
10. Students will be able to calculate the moment of inertia (2nd moment of area). (1)
11. Students will be able to solve for reactions of a beam using equilibrium equations. (1, 2)
12. **Major Topics**

|  |  |
| --- | --- |
| **Week** | **Topic** |
| 1 | Units, unit conversions, and trigonometry review |
| 2 | Basic concepts in statics – force vectors and moment of a force |
| 3 | Couples |
| 4 | Resultants of force systems – concurrent, coplanar |
| 5 | Resultants of force systems – nonconcurrent, coplanar & **Exam 1** |
| 6 | Resultants of force systems – concurrent, noncoplanar (3-D) |
| 7 | Resultants of force systems – noncoplanar, parallel (3-D) |
| 8 | Review & **Exam 2** |
| 9 | Equilibrium of force systems |
| 10 | Equilibrium of force systems |
| 11 | Trusses – method of joints |
| 12 | Trusses- method of sections & **Exam 3** |
| 13 | Centroids of areas, center of pressure, moment of inertia, friction |
| 14 | Radius of gyration & **Exam 4** |

Course Name: CT 121 Statics

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Date** | **Faculty Name** | **Change** | **Input** | **Measurement** | **Assessment** | **Action** |
| 7 Jan 2011 | Maggie Reilly | Reviewed for content |  |  |  |  |
| 7 Dec 2014 | Maggie Reilly | Reviewed for content |  |  |  |  |
| 9 Dec 2014 | Maggie Reilly | Reviewed for format |  |  |  |  |
| 5 Jan 2018 | Mike Sisti | Reviewed for content and format |  |  |  |  |
| 7 Jan 2019 | Mike Sisti | Updated ABET assessment criteria |  |  |  |  |
| 14 Jan 2020 | M Sisti | Updated course description |  |  |  |  |
| 25 Jan 2021 | M Sisti | Reviewed |  |  |  |  |
| 18 Jan 2022 | M Sisti | Reviewed |  |  |  |  |
| 10 Jan 2023 | M Sisti | Reviewed/Updated policies & statements |  |  |  |  |
| 10 Jan 2024 | M Sisti | Reviewed/Updated policies & statements |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |