MOHAWK VALLEY COMMUNITY COLLEGE

UTICA & ROME, NEW YORK

SCHOOL OF SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS - CAREER

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

1. **Catalog Description**

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

This course examines the principles of statics, including the study of vectors, vector resolution and composition, forces and moments, force systems and their resultants, equilibrium, centroids, moments of inertia, and truss analysis using the methods of joints and sections.

Prerequisite: MA121 Fundamentals of College Mathematics 1

1. **Materials**

Text: *Statics, Frank Pryzbyzcien – ISBN #9-9700018-2-5 (Published by MVCC)*

Other: Scientific calculator, engineering computation paper, 3-ring binder

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**

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| **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

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| **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 |  |  |  |  |
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