

Minnesota State College Southeast

MDAD 1236: Trigonometry & Statics

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites:

This course requires any of these seven prerequisite categories

1. All of these three

MATH 1510 - Basic Mathematics

MATH 1515 - Introductory Algebra

MATH 0509 - Fundamental Mathematics

Or

2. Both of these

MATH 0509 - Fundamental Mathematics

MATH 1516 - Basic Mathematics Through Introductory Algebra

Or

3. Both of these

MATH 1515 - Introductory Algebra

MATH 1511 - Fundamental Through Basic Mathematics

Or

4. MATH 1516 - Basic Mathematics Through Introductory Algebra

Or

5. MATH 1515 - Introductory Algebra

Or

6. A score of 76 on test Accuplacer Elementary Algebra

Or

7. A score of 0 on test Accuplacer College Level Math

Corequisites: None

MnTC Goals: None

During the first part of this course students learn trigonometry basics including right triangle trigonometry, law of sines, law of cosines, and polar coordinates. The second part of this course gives the students an understanding of static loads on structural members. (Prerequisite: MATH1515) (3 credits: 3 lecture/0 lab)

B. COURSE EFFECTIVE DATES: 01/31/2002 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

D. LEARNING OUTCOMES (General)

1. Define external and internal force
2. Define collinear forces
3. Analyze mathematical proportions
4. Apply variable manipulation
5. Identify geometric shapes
6. Solve geometric formulas
7. Use scientific notation
8. Solve quadratic equations
9. Analyze degree angles
10. Apply degree measure conversion
11. Apply radian measure
12. Apply radian-degree, degree-radian conversion
13. Calculate arc length
14. Calculate trigonometric ratios
15. Apply fundamental trigonometric identities
16. Calculate right triangle trigonometric ratios
17. Calculate trigonometric functions with calculators
18. Solve inverse trigonometric functions
19. Apply law of sines
20. Apply law of cosines
21. Apply polar coordinates
22. Convert cartesian to polar and polar to cartesian coordinates
23. Explain force
24. Explain pressure
25. Define mass
26. Define density
27. Analyze metric system
28. Explain vectors
29. Explain scalars
30. Calculate vectors and scalars
31. Demonstrate dimensional analysis
32. Define concurrent forces
33. Define coplaner forces
34. Analyze rigid bodies
35. Analyze rectangular force components
36. Calculate incline plane systems
37. Graph force vectors
38. Calculate resultant and equilibrant forces
39. Define torque and moments
40. Define parallel and uniform forces
41. Define concentrated loads
42. Solve coupling loads
43. Solve nonconcurrent coplaner forces
44. Analyze truss joints

45. Define static and kinetic friction
46. Calculate friction problems
47. Calculate journal friction problems
48. Calculate jackscrew problems

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted