

## MME 518

Summer 2016

### Course Material

#### Vectors

- basics
- dot products
- cross products
- lines, planes
- parametric curves
- arclength

#### Conic Sections

- derivations
- reflective properties
- 2D and 3D views
- in Sketchpad

#### Surfaces

- contours
- hyperboloids, ellipsoids
- cones – ordinary, general
- cylinders
- parametrization      torus

#### Hour Exam #1

#### Multivariable Integrals

- Cartesian, Cylindrical, Spherical coordinates

#### Spherical Geometry

- Great Circles
- Non Euclidean Issues

#### Geometry of Complex Numbers

- nth roots
- mappings
- Stereographic Projection

#### Fractals

- recursion      dimension
- Julia Sets      dynamical systems

#### Hour Exam #2

### Projects (2 needed)

1. Eratosthenes experiment estimating the radius of the Earth

and your choice of

Platonic Solids      Fractals and the coastline of Maine      Geometer's Sketchpad

Hyperbolic Geometry      The Geometry of the Human Eye      or a project of your own choice.

### Plagiarism

*is the act of representing someone else's work as your own.* Examples of this include, but are not limited to,

- copying someone else's homework or exam
- copying from a solutions manual
- representing online materials as your own
- communicating with someone during an exam – verbally or looking at their paper
- using the Internet but failing to cite your source

Each student is expected to familiarize him/herself with WPI's Academic Honesty policies which can be found at

<http://www.wpi.edu/offices/policies/honesty>

**Grade** based upon:

- homework 33%
- 2 hour exams 33%
- 2 projects 33%