MTH 140H: Applied Calculus Honors

Course catalog description
A brief survey of calculus including both differentiation and integration with applications. This honors course will also introduce topics from differential equations with applications.

Credit hours
3 hours

Prerequisites
ACT Math 25 or a grade of C or higher in MTH 127 or MTH 130

List of topics

1. Differentiation
   - Limits and continuity.
   - Rates of change.
   - Techniques of differentiation--power, sum, difference, product, quotient, and chain rules.
   - Implicit differentiation.
   - Higher derivatives.
   - Graph sketching.
   - Extrema--maxima and minima.
   - Related rates.
   - Special applications such as Poiseuille’s law, sensitivity to drugs, and population growth.

2. Integration
   - Antiderivatives and the definite integral.
The Fundamental of Integral Calculus.
Techniques of integration--substitution, integration by parts, partial fractions.
Tables of integrals.
Numerical approximation of integrals.
Applications of the integral and solutions of elementary differential equations.

3. **Differential equations**

- Ordinary differential equations; solutions
- Systems of ODEs
- Applications; modeling with systems of ODEs

**Suggested textbooks**


**Last updated**

December 2016