

Marshall University  
College of Science

## **MTH 416: Advanced Differential Equations**

### **Course catalog description**

Differential equations are studied qualitatively. Topics include the existence and uniqueness of solutions and the behavior of solutions including stability of nonlinear systems, periodic solutions, and approximation using perturbation methods.

### **Credit hours**

3 hours

### **Prerequisites**

A grade of C or higher in MTH300 and MTH335

### **Course objectives**

- Apply the results in classical theorems, and their proofs, in differential equation theory, including existence and uniqueness of solutions, stability, and bifurcations.
- Expand understanding of qualitative properties of first order differential equations to higher order systems of differential equations.

### **Suggested textbooks**

- The Theory of Differential Equations - Classical and Qualitative, Walter Kelley and Allan Peterson.

### **Last updated**

December 2016