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## APPLIED MATHEMATICS 411 "DIFFERENTIAL EQUATIONS II"

**Calendar Description:** H(3-1T)

Existence and uniqueness theorems, comparison and oscillation theorems, Green's functions, Sturm-Liouville problems, systems of equations, phase portraits, stability.

**Prerequisite:** One of Applied Mathematics 311 or 307, and one of Mathematics 331, 353, 381, Applied Mathematics 309, or consent of the Division.

**Note:** It is recommended that students complete Pure Mathematics 435 or 455 before taking this course.

### *Syllabus*

Existence, uniqueness and continuity theorems. Singular solutions.

Comparison and Oscillation theorems.

Green's functions.

Sturm-Liouville Problems.

Systems of Differential Equations.

Linear systems. Matrix exponentiation.

Stability and Phase portraits.

Optional additional topics: Integral equations; Difference equations; Solutions of Partial Differential Equations.

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