

# North Hennepin Community College

## MATH 2400: Differential Equations

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: \*.\*

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites:

This course requires the following prerequisite

MATH 1222 - Calculus II (Minimum grade: 1.67 GPA Equivalent)

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

The content of this course covers first and second ordinary differential equations with applications, higher order linear equations, constant coefficients, differential operators, variation of parameters, power series methods and Laplace transforms.

Prerequisites: Successful completion of Math 1222 with grade of "C" or better

**B. COURSE EFFECTIVE DATES:** 08/27/1997 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. See Course Description and Course Outcomes

### D. LEARNING OUTCOMES (General)

1. Identify and solve separable, exact, and linear first-order differential equations (MnTC Goal 4: a, b, d; Goal 2: a, c);
2. Use first-order differential equations to solve application problems (G4: a, b, d; G2: a, b, c);
3. Identify and solve homogeneous and non-homogeneous second-order differential equations with constant and variable coefficients (G4: a, b, d; G2: a, c);
4. Use second-order differential equations to solve application problems (G4: a, b, d; G2: a, b, c);
5. Use power series to solve second-order differential equations (G4: a, b, d; G2: a, c);
6. Solve differential equations using Laplace Transforms (G4: a, b, d; G2: a, c); and
7. Use Numerical Methods to approximate solutions of initial-value problems (G4: a,b,d; G2: a, c).

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

Goal 04 - Mathematical/Logical Reasoning

1. Illustrate historical and contemporary applications of mathematical/logical systems.
2. Clearly express mathematical/logical ideas in writing.
3. Explain what constitutes a valid mathematical/logical argument(proof).
4. Apply higher-order problem-solving and/or modeling strategies.

### F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

### G. SPECIAL INFORMATION

None noted