



HANYANG UNIVERSITY

Hanyang International Summer School

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| Faculty Information | Name | Wei WANG | | | | | |
| | E-mail | davidwang@hanyang.ac.kr | | | | | |
| | Home University | Hanyang University | | | | | |
| | Department | Department of Mechanical Engineering | | | | | |
| | Homepage | | | | | | |
| Course Information | Class No. | TBA | Course Code | TBA | Credits | 3 | |
| | Course Name | Engineering Mathematics 1 | | | | | |
| | Lecture Schedule | Tue-Fri / 09:00~12:00 | | | | | |
| | Course Description | <p>In this course, we learn ordinary differential equation(O.D.E.), linear differential equation(L.D.E.), series, series solution in differential equations and Laplace transformation systematically based on differential and integral calculus (fundamental prerequisite), and the linear algebraic equations by use of matrix analysis.</p> <p>* The course schedule is subject to change due to unforeseen circumstances.</p> | | | | | |
| | Course Objective | General and Particular Solutions of Ordinary Differential Equation (ODE), Series Solutions of ODEs, Laplace Transform-based Solution of ODEs | | | | | |
| | Prerequisite | Basic Linear Algebra | | | | | |
| | Materials/Textbooks | Advanced Engineering Mathematics (Erwin Kreyszig) (Chapters 1-6) | | | | | |
| Evaluation | Attendance | 10% | Quiz | % | | | |
| | Assignment | 20% | Mid-term Exam | % | | | |
| | Presentation | % | Final Exam | 70% | | | |
| | Group Project | % | Participation | % | | | |
| | Etc. | Evaluation Item | | | Ratio | | |
| | | | | | % | | |
| | | | % | | | | |
| Daily Lecture Plan | Week 1 | Day 1 | Introduction to the class and syllabus | | | | |
| | | Day 2 | First-Order ODEs: Basic Concepts. Modeling. Separable ODEs | | | | |
| | | Day 3 | First-Order ODEs: Exact ODEs. Integrating Factors | | | | |
| | | Day 4 | First-Order ODEs: Linear ODEs. Bernoulli Equation. | | | | |
| | Week | Day 1 | Second-Order Linear ODEs: Homogeneous Linear ODEs of Second Order (with Constant Coefficients) | | | | |

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| | 2 | Day 2 | Second-Order Linear ODEs: Euler–Cauchy Equations. |
| | | Day 3 | Second-Order Linear ODEs: Nonhomogeneous ODEs. |
| | | Day 4 | Second-Order Linear ODEs: Solution by Variation of Parameters |
| | Week 3 | Day 1 | Higher Order Linear ODEs: Homogeneous Linear ODEs (with Constant Coefficients). |
| | | Day 2 | Higher Order Linear ODEs: Nonhomogeneous Linear ODEs. |
| | | Day 3 | Systems of ODEs: Homogeneous an Nonhomogeneous Linear Systems of ODEs. |
| | | Day 4 | Series Solutions of ODEs: Power Series Method. |
| | Week 4 | Day 1 | Series Solutions of ODEs: Extended Power Series Method: Frobenius Method. |
| | | Day 2 | Laplace Transforms: Laplace Transform and its properties. |
| | | Day 3 | Laplace Transforms: Solutions of ODEs based on Laplace Transform. |
| | | Day 4 | Final Exam |