## MATH 303   Fall 2017

| Date | Lectures | Tests | Homework due day |
|------|----------|-------|------------------|
| Sep 04 Mn | Holiday | | |
| Sep 05 Tu | 1.1 Some Basic Mathematical Models; Direction Fields | | |
| Sep 06 Wd | 1.1-1.2 Solutions of Some D.E.s | | |
| Sep 07 Th | 1.3 Classification of D.E.s | | |
| Sep 08 Fr | 2.1  Linear Equations with Variable Coefficients | | **1.1**: 3,8,12,15-20,21,23 |
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| Sep 11 Mn | 2.2 Separable Equations - Homogeneous Equations | | **1.2**: 1,3,4,7,10,11abef,18// **1.3**:  2,3,6,11,13,15,16,20,22,23,25 |
| Sep 12 Tu | 2.3(I) Modeling with First Order Equations | | |
| Sep 13 Wd | 2.3(II) Modeling with First Order Equations | | **2.1**: 6,7,15,26,28,31,33  **// 2.2**: 4,7,15ac,17ac,21,25,27,30-3 |
| Sep 14 Th | 2.4  Differences Between Linear and Nonlinear Equations | | |
| Sep 15 Fr | Review | | |
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| Sep 18 Mn | 2.5  Autonomous Equations and Population Dynamics | | **2.3(I)**:  1,4,9,10,14,15 // **2.3(II)**:  18,20ab,21,22ab,31abd |
| Sep 19 Tu | 2.6(I) Exact Equations and Integrating Factors | | |
| Sep 20 Wd | 2.6(II) Exact Equations and Integrating Factors | | **2.4**: 1,12,16,22,23,25,32  // **2.5**: 3,5,711,12,22 |
| Sep 21 Th | Presentation | | |
| Sep 22 Fr | Review | Test 1 | **2.6(I):** 7,10,13,14 |
| **Test 1: Sep 22 – Sep 26  on 1.1 – 2.6 in Testing Center** | | | |
| Sep 25 Mn | 2.9: Reduction of Order    3.1 Introduction to Second-Order Equations | Test 1 | **2.6(II)**:  19,21,24,27,31 |
| Sep 26 Tu | 3.2(I) Fundamental Solutions; Wronskian | Test 1 LF | |
| Sep 27 Wd | 3.2(II) Fundamental Solutions; Wronskian | | **2.9**:  37,44,48,51**// 3.1**: 7,14,25ac, 27 |
| Sep 28 Th | 3.3  Complex Roots of the Characteristic Equation | | |
| Sep 29 Fr | Review | | |
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| Oct 02 Mn | 3.4  Repeated Roots; Reduction of Order | | **3.2(I)**:  3,10,18,19 // **3.2(II)**:  20,26,27,28,30,35,39 **3.3**:  3,8,12,17,21,24a,28,35 |
| Oct 03 Tu | 3.5  Nonhomogeneous Equations;  M. of Undetermined Coefficients | | |
| Oct 04 Wd | 3.6  Variation of Parameters | | **3.4**:  1,8,11,16,20,26,28// **3.5**:  2,7,16,19,21a,23a |
| Oct 05 Th | 3.7(I) Mechanical and Electrical Vibrations | | |
| Oct 06 Fr | Review | | |
| **Quiz 1: Oct  6– Oct 10  on 3.1 – 3.6 in Testing Center** | | | |
| Oct 09 Mn | 3.7(II) Mechanical and Electrical Vibrations | | **3.6**:  6,7,10,15,17,28,29**// 3.7(I)**: 6,7,11,17 |
| Oct 10 Tu | 3.8(I) Forced Vibrations | | |
| Oct 11 Wd | 3.8(II) Forced Vibrations | | **3.7(II)**:  19,20,24,29a |
| Oct 12 Th | 4.1 General Theory of nth Order Linear Equation 4.2 Homogeneous Equations with Constant Coefficients | | |
| Oct 13 Fr | Review | | |
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| Oct 16 Mn | 4.3 The Method of Undetermined Coefficients | | **3.8(I)**:  2,3,6,8abd,11 // **3.8(II)**: 11,12,19a **4.1**: 3,6,8,13,17,21,26,28 |
| Oct 17 Tu | 4.4 The Method of Variation of Parameters | | |
| Oct 18 Wd | 5.1   Review of Power Series | | **4.2**: 6,8,12,17,31,37 // **4.3**:  2,6,8,11,14,17 |
| Oct 19 Th | Presentation | | |
| Oct 20 Fr | Review | Test 2 | **4.4**:  2,3,7,12,13 |
| **Test 2: Oct 20 – Oct 24  on 3.1 – 4.4 in Testing Center** | | | |
| Oct 23 Mn | 5.2 Series Solutions near an Ordinary Point, Part I | Test 2 | |
| Oct 24 Tu | 5.3 Series Solutions near an Ordinary Point, Part II | Test 2 LF | |

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| Oct 25 Wd | 5.4 Euler Equations | | **5.1:** 3,14,17,24 // **5.2:** 6,11,16a,19,21 |
| Oct 26 Th | 6.1 Definition of Laplace Transform | | |
| Oct 27 Fr | Review | | |

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| Oct 30 Mn | 6.2 Solution of Initial Value Problems | | **5.3:** 7,10,11,12 // **5.4:** 3,6,14,16,17,21 |
| Oct 31 Tu | 6.3 Step Functions | | |
| Nov 01 Wd | 6.4 Differential Equations with Discontinuous Forcing Functions | | **6.1:** 4,5ab,6,7,13,22 // **6.2:** 5,11,17,20,21,25,29,30 |
| Nov 02 Th | 6.5 Impulse Functions | | |
| Nov 03 Fr | Review | | |

**Quiz 2: Nov 3– Nov 7 on 5.1 – 5.4 and 6.1 – 6.4 in Testing Center**

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| Nov 06 Mn | 6.6 The Convolution Integral | | **6.3:** 4,13,19,24,29,32,36,37 // **6.4:** 9a,12a,18ab |
| Nov 07 Tu | 10.1 Two-Point Boundary Value Problems | | |
| Nov 08 Wd | 10.2 Fourier Series | | **6.5:** 6a,7a,12a,15,18 // **6.6:** 7,9,10,13,19 |
| Nov 09 Th | 10.3 The Fourier Convergence Theorem | | |
| Nov 10 Fr | Review | | |

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| Nov 13 Mn | 10.4 Even and Odd Function | | **10.1:** 3,6,11,14,18 // **10.2:** 5,8,15,17,19abd,22abd |
| Nov 14 Tu | 10.5 Separation of Variables; Heat Conduction in a Rod | | |
| Nov 15 Wd | 10.6 Other Heat Conduction Problems | | **10.4:** 1,5,8,15,18,27ab,35 // **10.3:** 5a,15,17 |
| Nov 16 Th | Presentation | | |
| Nov 17 Fr | Review | Test 3 | |

**Test 3: Nov 17 – Nov 21 on 5.1 – 10.4 in Testing Center**

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| Nov 20 Mn | 10.7 The Wave Equation; Vibrations of an Elastic String | Test 3 | **10.5:** 1,5,7,10,22 // **10.6:** 1,3,7,9a,12abd,15 |
| Nov 21 Tu | 10.7 The Wave Equation; Vibrations of an Elastic String | Test 3 LF | |
| Nov 22 Wd | | | |
| Nov 23 Th | | | |
| Nov 24 Fr | | | |

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| Nov 27 Mn | 10.8(I) Laplace's Equation | | **10.7:** 1a,5a,9,13,16 |
| Nov 28 Tu | 10.8(II) Laplace's Equation | | |
| Nov 29 Wd | 7.1-7.2 Review of Matrices | | **10.8(I):** 1ab,5,7 |
| Nov 30 Th | 7.3 Systems of Linear Equations; Eigenvalues, Eigenvectors | | |
| Dec 01 Fr | Review | | **10.8(II):** 8a,10,12ab,14ab |

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| Dec 04 Mn | 7.4 Basic Theory of Systems of First Order Linear Equations | | **7.1:** 2,3,7ab,13,15,17,22,23 <br> **7.2:** 9,21,24,25 // **7.3:** 13,15,16,22,29 |
| Dec 05 Tu | 7.5 Homogeneous Linear Systems with Constant Coefficients | | |
| Dec 06 Wd | 7.6 Complex Eigenvalues | | **7.4:** 3,4,6,7 |
| Dec 07 Th | 7.8 Repeated Eigenvalues | | |
| Dec 08 Fr | Review | | |

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| Dec 11 Mn | 7.7 Fundamental Matrices | | **7.5:** 3a,5a,17,26,29,31 //**7.6:** 5a,17,20,23 **// 7.8:** 2c,5,7a,11a |
| Dec 12 Tu | 7.9 Nonhomogeneous Linear Systems | | |
| Dec 13 Wd | Review | | **7.8:** 2c,5,7a,11a **// 7.7:** 3,9,11,14,17 |
| Dec 14 Th | Review | | **7.9:** 1,11,12,14 |
| Dec 15 Fr | Reading Day | | |
| Dec 16 St - Dec 21 Th | | FINAL | Comprehensive |