

Patterns in Nature II - Spring 2012 Calendar with Assignments
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	<p>January 18 Syllabus, Course Overview Functions (Foundations handout) Regression on TI-83/84 (Finding the equation of best fit) Mathematical Modeling (NLM 1.3)</p> <p>Reading: NLM 1.1-1.3; Foundations handout 1.1-1.3, 3.1, 3.3, 3.4; <i>Stretching a Rubber Band</i> lab handout; and <i>Simple Pendulum</i> lab handout Rdg. Prb.: Foundations 1.2 #1a, 2a, 4</p>
<p>January 23 <i>Stretching a Rubber Band</i> lab and <i>Simple Pendulum</i> lab</p> <p>HW: Foundations 3.1 #1, 2; Foundations 3.3 #1, 2 Reading: CM 1.1 Rdg. Prb.: CM 1.1 #1</p>	<p>January 25 Quiz 1 (Group) Quadratics; Parameterization (CM 1.1)</p> <p>HW: CM 1.1 #2 Reading: IC 1.1-1.2; NLM 2.1-2.5 Rdg. Prb.: IC 1.1 #4, 5</p>
<p>January 30 Gradients (IC 1.1-1.2) Kinematics – distance, time, speed (NLM 2.1-2.5); <i>CBR</i> lab</p> <p>HW: IC 1.1 #1; IC 1.2 #1, 5, 7 NLM 2.2 #3; NLM 2.4 #2, 3; NLM 2.5 #2 Reading: <i>Acceleration Due to Gravity</i> lab handout</p>	<p>February 1 Quiz 2 (Individual) <i>Acceleration Due to Gravity</i> lab</p> <p>Reading: IC 2.1-2.7 Rdg. Prb.: IC 2.6 #2, IC 2 Tasksheet 1 #1 (end of chapter)</p>
<p>February 6 Gradients of Curves (IC 2.1-2.7) Locally Straight Curves; Gradient at a Point; Numerical dy/dx</p> <p>HW: IC 2.6 #1, 3 Reading: CM 6.1-6.3 Rdg. Prb.: CM 6 Tasksheet 1 #1, 2</p>	<p>February 8 Quiz 3 (Group) Limits; Definition of Derivative; Derivative Patterns (CM 6.1-6.3)</p> <p>HW: CM 6.3 #1, 2, 3 Reading: CM 5.1-5.4 Rdg. Prb.: CM 5.1 #1a,b</p>
<p>February 13 Polynomial Approximations (CM 5.1-5.4) Taylor's Approximation; Newton-Raphson Method; Taylor Series</p> <p>HW: CM 5.1 #2; CM 5.2 #1, 2, 3 Reading: IC 3.1-3.4 Rdg. Prb.: IC 3.1 #4; IC 3.2 #3a</p>	<p>February 15 Quiz 4 (Individual) Optimization (IC 3.1-3.4)</p> <p>HW: IC 3.1 #2; IC 3.2 #3c,f; IC 3 Tasksheet 1 #1 Reading: <i>Soup Can Economics</i> lab handout</p>

<p>February 20 Optimization <i>Soup Can Economics</i> problem</p> <p>HW: IC 3.3 #2, 3; IC 3 Tasksheet 4 #1, 2 Reading: NLM 3.1-3.5 Rdg. Prb.: NLM 3.1 #1a,b, 2a,d</p>	<p>February 22 Quiz 5 (Group) Vectors; Addition of Vectors; Position and Displacement (NLM 3.1-3.5)</p> <p>Lab write-up for <i>Stretching a Rubber Band</i> lab, <i>Simple Pendulum</i> lab, or <i>Acceleration Due to Gravity</i> lab is due!</p> <p>HW: NLM 3.3 #1, 3; NLM 3.4 #1; NLM 3.5 #2 Reading: NLM 4.1-4.5 Rdg. Prb.: NLM 4.2 #1, 2; NLM 4.3 #1</p>
<p>February 27 Speed and Velocity (NLM 4.1-4.5) Rectilinear Motion</p> <p>HW: NLM 4.2 #7; NLM 4.3 #4; NLM 4.4 #5; NLM 4.5 #2 Reading: NLM 5.1-5.5 Rdg. Prb.: NLM 5.3 #1, 2</p>	<p>February 29 Quiz 6 (Individual) Momentum ($p=mv$); Conservation of Momentum (NLM 5.1-5.5)</p> <p>HW: NLM 5.4 #1, 2; NLM 5.5 #2, 3 Reading: NLM 6.1-6.4 Rdg. Prb.: NLM 6.2 #4, 5</p>
<p>March 5 Newton's Laws (6.1-6.4) $w=mg$</p> <p>HW: NLM 6.2 #1, 3; NLM 6.4 #1, 3, 4 Reading: <i>Atwood's Machine: Newton's Second Law</i> lab handout</p>	<p>March 7 Quiz 7 (Group) <i>Atwood's Machine: Newton's Second Law</i> lab</p> <p>Reading: IC 4.1-4.5 Rdg. Prb.: IC 4.1 #1; IC 4.3 #1, 3; IC 4 Tasksheet 1 #1</p>
<p>March 12 ***Spring Break***</p>	<p>March 14 ***Spring Break***</p>
<p>March 19 Numerical Integration (IC 4.1-4.5) Area under Curve; Riemann Sums</p> <p>HW: IC 4.2 #1; IC 4.3 #2; IC 4.5 #1,2 Reading: IC 5.1-5.3 Rdg. Prb.: IC 5.1 #3, 4, 5</p>	<p>March 21 (no quiz?) Area Function Patterns; Algebraic Integration (IC 5.1-5.3)</p> <p>HW: IC 5.1 #1, 2; IC 5.2 #1, 2, 3 Reading: IC 5.4-5.5 Rdg. Prb.: IC 5.4 #1, 2</p>
<p>March 26 Fundamental Theorem of Calculus Indefinite Integral (IC 5.4-5.5)</p> <p>HW: IC 5.4 #4a, 4b(i), 4b(iii), 5; IC 5.5 #1, 3 Reading: Arclength handout Rdg. Prb.: Arclength handout Reading Problems #1, 2, 3, 4</p>	<p>March 28 Quiz 8 (Individual) Arclength</p> <p>HW: Arclength handout HW Problems #1, 2, 3 Reading: CM 3.1-3.4 Rdg. Prb.: CM 3 Tasksheet 2 #1, 2</p>

<p>April 2 Volumes of Revolution (CM 3.1-3.4) <i>Volumes of Revolution</i> lab</p> <p>HW: CM 3.4 #4; CM 3.3 #5 Reading: MFM 1.1-1.4 Rdg. Prb.: MFM 1.3 #1, 2; MFM 1.4 #1</p>	<p>April 4 Quiz 9 (Group) Projectile Motion; Using Derivatives to find r,v,a (MFM 1.1-1.4)</p> <p>HW: MFM 1.3 #3, 4, 5; MFM 1.4 #2, 3, 5 Reading: MFM 1.5-1.7 Rdg. Prb.: MFM 1.5 #1; MFM 1.6 #2</p>
<p>April 9 Projectile Motion; Using Integration to find r,v,a (MFM 1.5-1.7)</p> <p>HW: MFM 1.5 #2, 3; MFM 1.6 #3, 4, 5 Reading: <i>Projectile Motion</i> lab handout</p>	<p>April 11 Quiz 10 (Individual) <i>Projectile Motion</i> lab</p> <p>Reading: MFM 2.1-2.4 Rdg. Prb.: MFM 2.1 #1, 4; MFM 2.2 #1, 5; MFM 2.3 #2; MFM 2.4 #2</p>
<p>April 16 Forces as Vectors Resultant Vectors; Components of Forces (MFM 2.1-2.4)</p> <p>HW: MFM 2.2 #6, 7; MFM 2.3 #4, 5, 6; MFM 2.4 #1, 3 Reading: MCM 2.1-2.3 Rdg. Prb.: MCM 2.1 #3; MCM 2.2 #1</p>	<p>April 18 Quiz 11 (Group) Work; Kinetic Energy; Conservation of Energy (MCM 2.1-2.3)</p> <p>HW: MCM 2.1 #4; MCM 2.2 #2, 3; MCM 2.3 #1, 4 Reading: MCM 3.1-3.4 Rdg. Prb.: MCM 3.2 #2; MCM 3.3 #1</p>
<p>April 23 Work ($w = Fd$); Work done by Several Forces (MCM 3.1-3.4) Dot Products, Scalar Products, Vectors</p> <p>HW: MCM 3.1 #3; MCM 3.2 #4; MCM 3.3 #4; MCM 3.4 #2 Reading: MCM 4.1-4.4 Rdg. Prb.: MCM 4.1 #4; MCM 4.4 #2</p>	<p>April 25 Quiz 12 (Individual) Gravitational Potential Energy; Elastic Potential Energy (MCM 4.1-4.4)</p> <p>HW: MCM 4.1 #5; MCM 4.2 #2; MCM 4.3 #3; MCM 4.4 #4, 5 Reading: <i>Conservation of Energy in a Spring</i> lab handout</p>
<p>April 30 <i>Conservation of Energy in a Spring</i> lab</p>	<p>May 1 – 5 (Rowan University Final Exams Week) Note: The Final Exam in this course is scheduled as a two-hour time block by Rowan University and may very well meet at a different time and day than our regularly scheduled class meeting time.</p> <p>Lab write-up for Atwood's Machine lab, Projectile Motion lab, or Conservation of Energy in a Spring lab is due!</p>