| Monday | Wednesday | Thursday | Friday |
|---|---|---|---|
| | 22-Jan<br>Syllabus Overview + 3D Coordinate Geometry + 13.1 (Vectors in 3D) | 23-Jan<br>**Lab 0 (Intro to Mathematica + Vectors)** | 24-Jan<br>13.3 (Dot Product, Angle, Projection) |
| 27-Jan<br>13.4 (Cross Product, Area, Volume) | 29-Jan<br>Lines and Planes | 30-Jan<br>**Lab 1 (Lines and Planes) + Distances** | 31-Jan<br>**Practice Problems** |
| 3-Feb<br>12.1-12.2(Functions of several variables) | 5-Feb<br>12.3, 12.5 (Contour Plots) + **Conic Sections and Quadric Surfaces** | 6-Feb<br>**Quiz 1** | 7-Feb<br>**Lab 2 (3D Graphing and Contour Plots, Linear Functions)** |
| 10-Feb<br>17.1 (Parametrized Curves - Straight line, Circle, Helixes) | 12-Feb<br>17.2 (Motion, Velocity, Speed and Distance, Cycloid) | 13-Feb<br>**Lab 3 (Parametric Plotting)** | 14-Feb<br>**Epicycloid and the Rotary Engine** |
| 17-Feb<br>**Practice Problems** | 19-Feb<br>**Review** | 20-Feb<br>**Midterm 1** | 21-Feb<br>Polar Coordinate System and Some Interesting Parametric Curves |
| 24-Feb<br>14.1-14.2 (Partial Derivatives) | 26-Feb<br>14.3 (Tangent Plane and Local Linearity) | 27-Feb<br>**Practice Problems** | 28-Feb<br>14.4 (Gradients and Directional Derivatives) |
| 2-Mar<br>14.5 (Three dimensional Gradient and Tangent Plane) | 4-Mar<br>**Practice Problems** | 5-Mar<br>**Lab 4 (Gradient Vector, Tangent Plane, and Directional Derivative)** | 6-Mar<br>14.6 (Chain Rule) |
| Mar 7 - Mar 22 | | | |
| **Spring Break** | | | |
| 23-Mar<br>**Practice Problems** | 25-Mar<br>**Quiz 2** | 26-Mar<br>15.1 (Local Optimization) | 27-Mar<br>**Taylor Approximation and Second Derivative Test** |
| 30-Mar<br>15.3 (Constrained Optimization) + **Rocket Science** | 1-Apr<br>15.2 (Global Optimization) | 2-Apr<br>**Lab 5 (Linear Regression - Ordinary Least Square vs Gradient Descent)** | 3-Apr<br>16.1-16.2 (Definite Integral of Functions of Two Variables) |
| 6-Apr<br>16.2-16.3 (Type I/II regions, Triple Integrals) | 8-Apr<br>16.4 (Double Integral in Polar Coordinates) + **Normal Probability Distribution** | 9-Apr<br>**Lab 6 (Volume Integration)** | 10-Apr<br>Polar Volume Integration (Cylindrical Coordinates) |
| 13-Apr<br>**Practice Problems** | 15-Apr<br>**Review** | 16-Apr<br>**Midterm 2** | 17-Apr<br>17.3 (Vector Fields) |
| 20-Apr<br>17.4 (Flow of a Vector Field) | 22-Apr<br>18.1-18.2 (Line Intergrals on Parameterized Curves) | 23-Apr<br>**Practice Problems** | 24-Apr<br>18.3 (Gradient Fields - Path-Independent) |
| 1-Apr<br>18.4 (Path-dependent fields, Circulation, Curl) | 29-Apr<br>18.4 (Path-Dependent Fields and Green's Theorem) | 30-Apr<br>**Practice Problems** | 1-May<br>Applications and Generalizations of Green's Theorem |
| 4-May<br>**Practice Problems** | 6-May<br>**Review** | **Reading Period** | **Reading Period** |