

## 10B Syllabus - Calculus

Lecture Schedule based on *Hughes-Hallet, et al* – Calculus, 4<sup>th</sup> Edition

| Section | Lectures | Topic  |
|---------|----------|--|
| 5.1     | 1        | How do we measure distance traveled?                 |
| 5.2     | 1        | The Definite Integral                                |
| 5.3     | 1        | Interpretations of the Definite Integral             |
| 5.4     | 1.5      | Theorems about Definite Integrals                    |
| 6.1     | 0.5      | Antiderivatives Graphically and Numerically          |
| 6.2     | 1        | Constructing Antiderivatives Analytically            |
| 6.3     | 0.5      | Differential Equations                               |
| 6.4     | 1        | Second Fundamental Theorem of Calculus               |
| 6.5     | 0.5      | The Equations of Motion                              |
| 7.1     | 1        | Integration by Substitution                          |
| 7.2     | 1        | Integration by Parts                                 |
| 7.3     | 0.5      | Tables of Integrals                                  |
| 7.4     | 1.5      | Algebraic Identities and Trigonometric Substitutions |
| 7.5     | 1        | Approximating Definite Integrals                     |
| 7.7     | 1        | Improper Integrals                                   |
| 7.8     | 1        | Comparison of Improper Integrals                     |
| 8.1     | 1        | Areas and Volumes                                    |
| 8.2     | 1        | Applications in Geometry                             |
| 8.6     | 1        | Applications in Economics                            |
| 11.1    | 1        | What is a Differential Equation?                     |
| 11.4    | 1        | Separation of Variables                              |
| 11.5    | 1        | Growth and Decay                                     |
| 11.6    | 1        | Applications and Modeling                            |
| 11.7    | 1        | Models of Population Growth                          |

Optional Topics – time permitting.

| Section | Lectures | Topic                                   |
|---------|----------|---|
| 7.6     | 1        | Approximation Errors and Simpson's Rule |
| 8.4     | 1        | Density and Center of Mass              |
| 8.5     | 1        | Applications to Physics                 |
| 11.2    | 1        | Slope Fields                            |
| 11.3    | 1        | Euler's Method                          |

Recommended Calculator : TI-85 or TI-86. At the instructors discretion symbolic manipulation calculators such as TI-89 or TI-92 may be prohibited during exams. For some exams, calculators may not be permitted at all.