# Math 211 (Calculus of Chemists)

**Credits 3(3+0)**
**Pre-requisites: Differential calculus (MATH101)**

**Note: No Proofs are required**

**Text book # 1:** Calculus for Biology and Medicine, 3rd edition, By Claudia Neuhauser
**Text book # 2:** Calculus, The Classic Edition, By Earl Swokowski

| Text Book | Topics | Section number and contents |
|---|---|---|
| book # 1 | Ch. 1: Preview and Review | **1.1.6:** Complex Numbers and Quadratic Equations: All<br>1.2.5: From Definition p.25 with p.26<br>1.2.7: From p.30 until Ex.14 |
| | Ch4: Differentiation | 4.6: Equations (4.8) & (4.9) p.179, Ex. 1,2, Equation (4.11), Ex,3<br>4.7.2: p.189 and 190 |
| | Ch. 5: Applications of Differentiations | 5.8: Definition p.267, Corollary 2,3, Ex 1,2 |
| | Ch. 6: Integration | 6.1.1 The Area Problem: Brief explanation of the concept, Theorem p.283<br>6.1.3: Properties p.286 & 287 & 289<br>6.2.2: Ex. 6, 7, 8, Table 6.1, Ex. 9,10<br>6.2.3: FTC Part II p.302, Ex 11→15<br>6.3.1 Areas (between curves): Box p.308, Ex 2,3, Box p.311<br>6.3.4 The Volume of a Solid: Disk method p.316, Ex. 8,9,10 |
| | Ch. 7: Integration Techniques | 7.1.1: Substitution Rule p.326, Ex 1→5,<br>7.1.2: Substitution Rule p.329, Ex 7→10<br>7.2.1: Integration by parts<br>7.3 Rational Functions and Partial Fractions: Ex.1→5 |

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| | **Ch. 9: Linear Algebra and Analytic Geometry** | 9.1.1 Linear System: All except Ex 5<br>9.1.2 Method of Gaussian elimination, Ex 5, Definition p.439, Ex 8<br>9.2.1 Basic Matrix Operations: All<br>9.2.2 Matrix Multiplication: All except Ex 8<br>9.2.3 Inverse Matrices (Determinants): Definition p.450, Theorem p. 454, Definition 454, Theorem p. 455, Ex 13<br>9.2.4 Computing Inverse Matrices: Ex 15, 16<br>9.4.1 Points and Vectors in Higher Dimensions: All except vector representation |
| | **Ch. 10: Multivariable Calculus** | 10.1: Definition p.504, Ex 1<br>10.3.1: Definition p.519, Ex 1, 2, 3<br>10.3.2: Ex 5<br>10.3.3: Ex 6, The Mixed Derivative Theorem |
| **book # 2** | **Ch. 13: Plane Curves and Polar Coordinates** | 13.1: Plane Curves: Definition 13.1 & 13.2, Ex 1→4<br>13.3 and 13.4: Polar Coordinates: Introduction p. 658-659, Ex 1→4, then give Theorem 13.11 & Guidelines for finding the area of an $R\theta$ region(13.12) in section 13.4, then use this to find the area in the previous examples(Ex 1→4) Relationship between rectangular and polar coordinates 13.8, Ex 6,7,8. |