**First Semester 2025/26**

**MATH 111: Integral Calculus**

**Course details**

**Name of the course coordinator:** Dr. (Male campus)

**Name of Instructor in Female campus:**

**Email**: ???@ksu.edu.sa **Website**:

**Office**: ??? (Building 4, Department of Mathematics, College of Science, KSU)

**Book**: JAMES STEWART, DANIEL CLEGG and SALEEM WATSON, CALCULUS, NINTH EDITION.

**Chapter 4 and 5: Applications of Differentiation and Integrals: 9 Lectures (3 weeks)**

* **The Area and Distance Problems**
* **The Definite Integral**
* **Antiderivatives**
* **The Fundamental Theorem of Calculus**
* **Indefinite Integrals and the Net Change Theorem**
* **The Substitution Rule**

**Chapter 3 and Appendix G: Differentiation Rules and the Logarithm Defined as an Integral : 6 Lectures (2 weeks)**

* **Derivatives of Polynomials and Exponential Functions**
* **Derivatives of Logarithmic and Inverse Trigonometric Functions**
* **Hyperbolic Functions**

**Chapter 7: Techniques of Integration: 9 lectures (3 weeks)**

* **Integration by Parts**
* **Trigonometric Integrals**
* **Trigonometric Substitution**
* **Integration of Rational Functions by Partial Fractions**
* **Strategy for Integration**

**Chapter 4 and 7: Applications of Differentiation and Techniques of Integration: 6 lectures (2 weeks)**

* **Indeterminate Forms and l’Hospital’s Rule**
* **Improper Integrals**

**Chapter 6 and 8: Applications of Integration Further Applications of Integration: 6 lectures (2 weeks)**

* **Areas Between Curves**
* **Volumes**
* **Volumes by Cylindrical Shells**
* **Arc Length**
* **Area of a Surface of Revolution**

**Chapter 10: Parametric Equations and Polar Coordinates: 6 lectures (2 weeks)**

* **Polar Coordinates**
* **Calculus in Polar Coordinates**

**Mark Distribution: Date of Exams: MT1:; ????? MT2: ????**

**MT1: 25**

**MT2: 25**

**Tutorial: 10**

**Final: 40**