 

**Calculus For Engineers (MATH 1110)**

**Dr. O. Philips Agboola  
Assistant Professor of Mechanical Engineering   
Office: F-092**[**pagboola@ksu.edu.sa**](mailto:pagboola@ksu.edu.sa)**,** [**http://fac.ksu.edu.sa/pagboola**](http://fac.ksu.edu.sa/pagboola)

**Course Content**

Infinite series, convergence and divergence of infinite series, integral test, ratio test, root test and comparison test. Conditional convergence and absolute convergence, alternating series test. Power series, Taylor and Maclaurin series. Definite and indefinite integrals and the fundamental theorem of calculus. Double integral and its applications to area, volume, moments and center of mass. Double integrals in polar coordinates. Triple integral in rectangular, cylindrical and spherical coordinates and applications to volume moment and center of mass. Vector fields, line integrals, surface integrals, Green's theorem, the divergence theorem, Stoke' theorem.  
**Recommended books:** Calculus with analytic geometry (E. W Swokowski)

**Course Assessment Method**

**No Assessment Task Percentage**

1. Homework 10%
2. Quizzes 20%
3. Midterm 25%
4. Final Exam 40%
5. Class Participation 5%

|  |  |  |
| --- | --- | --- |
| **Schedule of Topics to be Covered** | | |
| Topics | No of Weeks | Contact hours |
| Sequences, Series and the tests for their convergence **Q1** | 3 | 9 |
| Power, Taylor and McLaurin Series **Q2** | 1 | 3 |
| Double Integrals and its applications to area, volume, Moments and Centre of Mass **ME** | 3 | 10 |
| Triple Integrals in Cartesian, Cylindrical, and Spherical Coordinates and its applications to Volume, Moments, and Centre of Mass **Q3** | 3 | 9 |
| Vector Fields, Line and Surface Integrals **Q4** | 2 | 5 |
| Green, Divergence, and Stokes Theorems **FE** | 2 | 6 |
| Total number of weeks and contact hours per semester | 14 | 42 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Assignment and Quizzes’ Policy** | |  |  |  |  | | --- | --- | --- | --- | | No. | Assessment task | Date due  (Academic Week) | Proportion of Final Assessment | | 1 | Assignments ( Home-works) | After every topics | 10% | | 2 | Quizzes (4) | 3rd, 5th, 9th & 11th | 20% | |