

Number of units 6	T 3	Pr -	Th 3	Number of weekly hours 3	Annual System 30 weeks	Al-Esra'a University College Department: Engineering of Refrigeration and Air Conditioning Technologies
Theoretical subject				Mathematics (1)		First stage
<u>Course Objective</u>						
Teaching the student the basic and advanced principles of calculus and its applications to develop the students mental abilities to solve problems and make use of available information in the other scientific materials.						

Week	Topic	Lab. Experiment Assignment	Notes
1	Determinants, properties		
2	Grammar's rule, application of determinant		
3	Trigonometric functions & relation		
4	Graphing of functions, Trigonometric equations		
5	Vectors, vectors in space, unit vector		
6	Scalar product, vector product		
7	Function of limits, Algebraic limit		
8	Trigonometric limit, Infinity as limit		
9	Derivative rule, Algebraic & Trigonometric derivative		
10	Chain rule, velocity & acceleration		
11	Inverse trigonometric functions & its derivative		
12	Logarithm & Exponential functions & its derivative		
13	Hyperbolic functions & its derivative		
14	Inverse hyperbolic functions & its derivative		
15	Integration, integrals of trigonometric & inverse functions, Integrals of logarithm & Exponential functions		

Half-year Break

16	Integrals of logarithm& Exponential functions		
17	Integrals of hyperbolic functions& its derivative		
18	L'Hopitals's rules		
19	Integration methods; Integration by parts		
20	Integration by partial fraction		
21	Integration by trigonometric substitution		
22	Integration of $ax^2 + bx + c$		
23	Application of Integration		
24	Area under the curve& between two curves		
25	Surface area generated		
26	Length of the curve		
27	Volume generated by rotation of curve		
28	Simple differential equations		
29	Simpson rule for area		
30	Trapezoidal rule for area, applications		