

الجامعة : الكوفة  
الكلية : الهندسة  
القسم : هندسة المواد  
المرحلة : الأولى  
اسم المحاضر الثلاثي: اخلاص حسن كاظم  
اللقب العلمي : مدرس مساعد  
المؤهل العلمي : ماجستير  
مكان العمل : كلية الهندسة / جامعة الكوفة



جمهورية العراق  
وزارة التعليم العالي والبحث العلمي  
جهاز الاشراف والتقويم العلمي

## جدول الدروس الاسبوعي

الاسم اخلاص حسن كاظم					البريد الالكتروني eklaseh.alkhazraji@uokufa.edu.iq
رياضيات					اسم المادة
م.م.اخلاص حسن كاظم					مقرر الفصل
دراسة العمليات الرياضية المختلفة والدوال الرياضية المهمة وحسابات التفاضل والتكامل وتطبيقاتها وبعض النظريات المتعلقة بالمادة					اهداف المادة
Cartesian coordinates, lines, distance formula, intervals, inequalities, Functions, Special functions (composition of functions ,function defined in pieces , integer valued functions ,absolute value functions). Trigonometric functions, Sections of a cone, Limits (including L'Hopital's rule for limits, Derivatives: rules of derivatives, higher-order derivatives, chain rule, implicit differentiation, Application of derivatives :maximum, minimum & the mean value theorem, critical & inflection points, curves, Determinants & solving linear system of algebraic equations by Cramer's rule. Integration: definite & indefinite integration's, rules for definite integration, integration formulas, differential equations, Application of definite integrals Application of definite integrals: areas, volumes, surfaces area, arc length areas, volumes, surfaces area, arc length. Transcendental functions: inverse functions & their derivatives , Ln x, ex, Log x, ax, indeterminate forms & L' Hopital's rule, the inverse trigonometric functions & their derivatives, related integrals, hyperbolic functions. Techniques of Integration: integration by parts , trigonometric integrals, trigonometric substitutions, rational functions, Polar coordinates (definition & Cartesian versus polar coordinates). Complex numbers: definition, properties, standard, polar & exponential forms of a complex number, De Moivre's theorem, the root of a complex number, regions in a complex plane.					التفاصيل الاساسية للمادة
1- "Thomas'Calculus"by Finney,Weir and Giordano, 10 <sup>th</sup> ,2003.					الكتب المنهجية
1-"Thomas'Calculus"by Finney,Weir and Giordano, 11 <sup>th</sup> ,2005. 2-"ADVANCED CALCULUS" by ROBERT C. WREDE , MURRAY R. SPIEGEL, Second Edition 2002. 3-"Thomas'Calculus"by Finney,Weir and Giordano, 12 <sup>th</sup> ,2010.					المصادر الخارجية
الامتحان النهائي	المشروع	الامتحانات اليومية	المختبر	الفصل الدراسي	تقديرات الفصل
50%	-	50%	-	20%	
					معلومات اضافية

الجامعة : الكوفة  
الكلية : الهندسة  
اسم القسم : هندسة المواد  
المرحلة : الأولى  
اسم المحاضر الثلاثي : اخلاص حسن كاظم  
اللقب العلمي : مدرس مساعد  
المؤهل العلمي : ماجستير  
مكان العمل : كلية الهندسة/جامعة الكوفة



جمهورية العراق  
وزارة التعليم العالي والبحث العلمي  
جهاز الاشراف والتقويم العلمي

## جدول الدروس الاسبوعي

الأسبوع	التاريخ	المادة النظرية	الملاحظات
١		Cartesian coordinates, lines(slope & equations), distance formula, intervals ,inequalities.	
٢			
٣		Function (domain ,range, symmetry ,even & odd function ,shifts ).	
٤		Special functions (composition of functions ,function defined in pieces , signum function ,integer-valued functions ,absolute value functions).	
٥			
٦		Trigonometric functions : (types ,trigonometric relations ,identities, domain ,range ,graphs).	
٧			
٨		Sections of a cone : (circle ,parabola ,ellipse ,hyperbolic ).	
٩			
١٠		Limits (including L'Hopital's rule for limits ), continuous & discontinuous function & their theorems .	
١١		Derivatives :rules of derivatives ,higer-order derivatives ,chain rule , implicit differentiation , differentiations , derivatives of trigonometric function ,parametric equations.	
١٢			
١٣		Newton-Raphson method to find the roots of nonlinear algebraic equation	
١٤		Application of derivatives :maximum ,minimum & the mean value theorem ,critical & inflection points ,curves sketching with y& y , graphing rational function ,asymptotes .	
١٥			
١٦		Determinats &solving linear system of algebraic equations by Cramer's rule .	
١٧			
١٨		Integration: definite & indefinite integration's ,rules for definite integration, integration formulas ,differential equations.	
١٩			
٢٠		Application of definite integrals :areas ,volumes ,surfaces area , arc length .	
٢١			
٢٢		Transcendental functions : inverse functions & their derivatives Ln x , e <sup>x</sup> ,Log x ,a <sup>x</sup> , indeterminate forms & L'Hopital's rule, the inverse trigonometric functions , related integrals , hyperbolic functions.	
٢٣			
٢٤			
٢٥		Techniques of Integration :integration by parts, trigonometric integrals , trigonometric substitution , rational functions & partial fractions reduction formulas ,using integrals tables ,improper integrals .	
٢٦			
٢٧			
٢٨		Polar coordinates (definition & Cartesian versus polar coordinates).	
٢٩		Complex number : definition ,properties ,standard ,polar & exponential forms of a complex number ,DeMoivre's theorem ,the root of a complex number, regions in a complex plane (loci problems), complex exponential functions , trigonometric functions ,logarithmic functions , hyperbolic functions.	
٣٠			

توقيع العميد :

توقيع الاستاذ :



## Course Weekly Outline

Course Instructor	Ekhlas Hasan Kadhim				
E_mail	eklaseh.alkhazraji@uokufa.edu.iq				
Title	Mathematics I				
Course Coordinator	A.Lectur . Ekhlas Hasan Kadhim				
Course Objective	the study of the operations different mathematics , important mathematics functions ,calculuses differentials and application and some belongings theorems for substance.				
Course Description	Cartesian coordinates, lines, distance formula, intervals, inequalities, Functions, Special functions (composition of functions ,function defined in pieces , integer valued functions , absolute value functions). Trigonometric functions, Sections of a cone, Limits (including L'Hopital's rule for limits, Derivatives: rules of derivatives, higher-order derivatives, chain rule, implicit differentiation, Application of derivatives :maximum, minimum & the mean value theorem, critical & inflection points, curves, Determinants & solving linear system of algebraic equations by Cramer's rule. Integration: definite & indefinite integration's, rules for definite integration, integration formulas, differential equations, Application of definite integrals Application of definite integrals: areas, volumes, surfaces area, arc length areas, volumes, surfaces area, arc length. Transcendental functions: inverse functions & their derivatives , $\ln x$ , $e^x$ , $\log x$ , $a^x$ , indeterminate forms & L' Hopital's rule, the inverse trigonometric functions & their derivatives, related integrals, hyperbolic functions. Techniques of Integration: integration by parts , trigonometric integrals, trigonometric substitutions, rational functions, Polar coordinates (definition & Cartesian versus polar coordinates). Complex numbers: definition, properties, standard, polar & exponential forms of a complex number, De Moivre's theorem, the root of a complex number, regions in a complex plane.				
Textbook	1- "Thomas'Calculus"by Finney,Weir and Giordano, 10 <sup>th</sup> ,2003.				
References	1-"Thomas'Calculus"by Finney,Weir and Giordano, 11 <sup>th</sup> ,2005. 2-"ADVANCED CALCULUS" by ROBERT C. WREDE , MURRAY R. SPIEGEL, Second Edition 2002. 3-"Thomas'Calculus"by Finney,Weir and Giordano, 12 <sup>th</sup> ,2010.				
Course Assessment	Term Tests	Laboratory	Quizzes	Project	Final Exam
	20%	-----	5%	----	50%
General Note					



## Course weekly Outline

week	Date	Topics Covered	Notes
1		Cartesian coordinates, lines(slope & equations), distance formula, intervals ,inequalities.	
2			
3		Function (domain ,range, symmetry ,even & odd function ,shifts ).	
4		Special functions (composition of functions ,function defined in pieces , signum function ,integer-valued functions ,absolute value functions).	
5			
6		Trigonometric functions : (types ,trigonometric relations ,identities, domain ,range ,graphs).	
7			
8		Sections of a cone : (circle ,parabola ,ellipse ,hyperbolic ).	
9			
10		Limits (including L'Hopital's rule for limits ), continuous & discontinuous function & their theorems .	
11		Derivatives :rules of derivatives ,higer-order derivatives ,chain rule , implicit differentiation , differentiations , derivatives of trigonometric function ,parametric equations.	
12			
13		Newton-Raphson method to find the roots of nonlinear algebraic equation	
14		Application of derivatives :maximum ,minimum & the mean value theorem ,critical & inflection points ,curves sketching with $y'$ & $y$ , graphing rational function ,asymptotes .	
15			
16		Determinants & solving linear system of algebraic equations by Cramer's rule .	
17			
18		Integration: definite & indefinite integration's ,rules for definite integration, integration formulas ,differential equations.	
19			
20		Application of definite integrals :areas ,volumes ,surfaces area , arc length .	
21			
22		Transcendental functions : inverse functions & their derivatives $\ln x$ , $e^x$ , $\log x$ , $a^x$ , indeterminate forms & L'Hopital's rule, the inverse trigonometric functions , related integrals , hyperbolic functions.	
23			
24			
25		Techniques of Integration :integration by parts, trigonometric integrals , trigonometric substitution , rational functions & partial fractions reduction formulas ,using integrals tables ,improper integrals .	
26			
27			
28		Polar coordinates (definition & Cartesian versus polar coordinates).	
29		Complex number : definition ,properties ,standard ,polar & exponential forms of a complex number ,DeMoivre's theorem ,the root of a complex number, regions in a complex plane (loci problems), complex exponential functions , trigonometric functions ,logarithmic functions , hyperbolic functions.	
30			

Instructor Signature:

Dean Signature: