Kingdom of Saudi Arabia
Ministry of Education Jazan University
Faculty of Science
Mathematics Department

المملكة العربية السعودية
وزارة التعليم
جامعة جازان
كلية العلوم
قسم الرياضيات

COURSE DESCRIPTION
Calculus - Math 105

SEMESTER:	**First Semester 1442/1443 (2021/2022)**
COLLEGE:	**Computer College**
COORDINATOR:	*Dr.* Tahar Bouali
OFFICE:	**204**
OFFICE HOURS:	
E-MAIL:	**botahar@gmail.com** **tbouali @jazanu.edu.sa**
Credit:	**4 hures**
TEXTBOOK:	**Precalculus, Custom Edition Barne, Ziegler and Bylenn. Compiled by Samir H. Saker, McGraw Hill 2009.** **Calculus, J. Stewart, Early Transcendental Sixth Edition.** **Calculus, H. Anton, 8th Edition, John Wiley and Sons, 2005.**

Course Teaching Plan in details:

Chapter: Title	Topic/Activity	Assessment task	Weeks
Chapter-1 Algebraic Operations	**Basic Algebraic operations on real numbers**	**Exercise-Page 5**	**1st Week** August 29- Sep 02 ,2021
	Basic Algebraic operations on Complex numbers	**Exercise-Page 10**	
	Exponents and Radicals, Polynomial (algebraic operations)	**Exercise-Page 10 & 19**	**2nd Week** Sept 05- Sep 9
	Polynomial (factors analysis), Fractional expressions and their operations)	**Exercise-Page 22**	**3rd Week** Sep 12 Sep16,2021
Chapter 2: Equations and Inequalities	**Linear equations, Linear inequalities, Absolute value**	**Exercise- Page 24, 28 & 34**	**4th Week** Sep 19, Sep 21
	First Assignment		
Chapter 3: Quadratic Equations And Cartesian Plane	**Quadratic equations, Cartesian coordinate system, Distances**	**Exercise-Page 38**	**5th Week** Sep 26, Sep 30
	Equations of Line	**Exercise-Page 51**	**6th Week** Oct 03 Oct 07, 2021
	circle		
	Definition and types of functions	**Exercise-Page 53**	
	First Mid- Term Examination 10/10/2021 From 09-10PM		
Chapter 4: Functions	**Domain of the functions**	**Exercise-Page 57**	**7th Week** Oct 10 Oct 14, 2021
	graphical representation of functions Properties of functions	**Exercise-Page 62, 67 & 71**	
Chapter 5: Limits and Continuity	**Basic rules of Limit , Limits of trigonometric functions**		**8th Week** Oct 19 - Oct 21
	Basic rules of continuity		**9th Week** Oct 24 Oct 28, 2021
	continuity of trigonometric functions		
Chapter 6: Differentiations	**Differentiation Rules, Differentiation of different types of functions, Chain Rules**		**10th Week Oct 31**-Nov 3
	Second Assignment		
Chapter 7: Integrations	**Indefinite Integrations**		**11th Week** Nov 7- Nov 11, **2021**
	Definite Integrations		
	Method of their calculations		**12th Week** Nov 14–Nov 18, **2021**

	Review and Discussion **Second Mid- term Examination 2/12/2021** **From 12-1 PM**	**13th Week** Nov 21- Nov 25
	Review and Discussion	**14th Week** Dec 05- Dec 9
	Review and Discussion	**15th Week** Dec 12- Dec 16
	الاختبارات العامة النهائية **Final Exams for General Courses**	**16th Week** Dec 20- Dec 23
	الاختبارات التخصصيه النهائيه **Final Exams for Department Courses**	**17th Week** **Dec 26–2021** **Jan 05–2022**

Important Note:

Mid– Term Exams: The first mid-term exam will be given during the 7th week.

- 10/10/2021, THURSDAY, FROM 09-10 AM .
- (CHAPTER 1, CHA 2 AND CHA 3. WEEK 1TO WEEK 6)

The second mid-term exam will be given during the 12th week.

- (CH 4 TO CH 7 , WEEK 7 TO 12)

Course Description:

1. **Algebraic Operations:** Set of real numbers, Set of complex numbers, Exponents and rad, Polynomials, Algebraic operation on polynomials, Factor analysis, Common factors, Factoring by grouping, Fractional expressions and their operations.
2. **Equations and Inequalities:** Linear equations, Intervals, Graphical representation of intervals, Linear inequalities, Distance between two points, Absolute value, Solving the Quadratic equations by factorizing and by formulas.
3. **Cartesian Planes:** Cartesian coordinate system, Reflection, Mid-point of two point,, Circle, Equations of lines, Slope of line, Slope intercept form of line, point-slope of line, Parallel and perpendicular lines.
4. **Functions:** Definition of functions, types of functions, Domain and range of function, Even and odd functions, Operations of functions, Composition of functions.
5. **Limits and continuity:** Definition of limit and continuity, existence of limits, limits of Trigonometric functions.
6. **Differentiation:** Definition of derivative, Rules of derivatives, Differentiation of different types of function, Chain Rules.
7. **Integration:** Indefinite and Definite integration, Method of their calculations.

Learning Outcome:

- Upon successful completion of the course, the student is expected to be familiar with the following.
- Understand and grasp the deep knowledge of Calculus analysis.
- Application of Differentiation and Integration methods for solving a variety of problems.
- Develop logical thinking and ability to apply them in solving mathematical problems involved in technical specialty courses.

Course Assessments:

Assessment task	Week Due	Proportion of Total Assessment
1- **Assignments & Quizzes**	5^{th} and 10^{th}	10%
2- **First Mid-Term Exam**	7^{th} week	20%
3- **Second Mid-Term Exam**	12^{th} week	20%
4- **Final Exam**	As scheduled	50%

Methods of teaching the course:

- Academic lectures
- Blackboard (BB)
- Homework
- Assign students to prepare scientific projects
- Scientific discussions
- The use of mini-model of education
- Tutorials
- Review

Dr. Tahar Bouali