Philadelphia University		Approval date:
Faculty of Science	PHILADELPHIA UNIVERSITY THE WAY TO THE FUTURE	Issue:
Department of Math		Credit hours: 3
Academic year 2022/2023	Course Syllabus	Bachelor

Course information

Course#	Course title	Prerequisite
0216111	**Calculus 1**	**None**

Course type		Class time	Room #
☐ University Requirement ☒ Faculty Requirement		Mon. & Wed. 12:45 -2:00	21004
☐ Major Requirement ☐ Elective ☒ Compulsory			

Instructor Information

Name	Office No.	Phone No.	Office Hours	E-mail
Ghada Alafifi	2906	+96264799000 Ext. 2405	**Sun. to Wed. 11:15-12:15**	**gafifi@philadelphia.edu.jo**

Course Delivery Method

Course Delivery Method		
☒ **Physical** ☐ **Online** ☐ **Blended**		
Learning Model		
Precentage	**Synchronous**	**Asynchronous**	**Physical**
	0%	**0%**	**100%**

Course Description

This is a first-year course which covers the following main concepts and topics: Functions: domain, operations, graphs, trigonometric functions, transcendental, functions, inverse functions, logarithms and exponentials, inverse trigonometric functions. Limits: definition, rules, infinite limits and limits at infinity, continuity, continuity of trigonometric functions, Derivative: rules, derivative of trigonometric functions, chain rule, implicit differentiation, Roll's theorem, mean-value-theorem, L'Hospital's rule, increasing and decreasing, extreme values, asymptotes. Integration: anti-derivative, definite and indefinite integrals, fundamental theorem of calculus, area under the curve, area between tow curves.

Course Learning Outcomes

Number	Outcomes	Corresponding Program outcomes *
Knowledge		
K1	Understand the basic properties of algebraic and transcendental functions, and their operations.	**K$_p$1**
K2	Know the concepts of limits and continuity.	**K$_p$1**
K3	Understand the definition of derivative and integral, and how to differentiation and integration elementary functions.	**K$_p$1**

	Skills	
S1	Students should be able to use derivatives and integrals to solve real-life problems.	**S$_p$2**
	Competencies	
C1	Thinking reasonably and the ability to make decisions.	**C$_p$1**
C2	Work in a team to implement one of the tasks of the course.	**C$_p$2**

* According to learning outcomes of the faculty of pharmacy.

Learning Resources

Course textbook	• Anton H., Bivens I., Davis S. (2011) Calculus: Early Transcendentals (10th ed.). Wiley.
Supporting References	• Stewart J. (2015) Calculus: Early Transcendentals (8th ed.). Brooks Cole.
Supporting websites	
Teaching Environment	☒**Classroom** ☐ **laboratory** ☐**Learning platform** ☐**Other**

Meetings and Subjects Timetable

Week	Topic	Learning Methods	Tasks	Learning Material
1	Explanation of the study plan for the course, and what is expected to be accomplished by the students. **Technology Preliminaries:** Moodle. Microsoft Teams. **BEFORE CALCULUS (Ch. 0):** 0.1 Functions	Lecture		Course Syllabus **Sec 0.1:** 7,8,9,10
2	0.2 New Functions from Old	Lecture		**Sec 0.2:** 5,7,9,11,13,15,27,29,30,31,33
3	0.4 Inverse Functions; Inverse Trigonometric Functions	Lecture		**Sec 0.4:** 1,3,9,10,11,17,27,28
4	0.5 Exponential and Logarithmic Functions	Lecture	Quiz (10 points) 20/11/2022	**Sec 0.5:** 1,3,5,9,11,16,28, 20,22,23,24,26,28
5	**LIMITS AND CONTINUITY (Ch. 1):** 1.1 Limits (An Intuitive Approach) 1.2 Computing Limits 1.3 Limits at Infinity; End Behavior of a Function	Lecture		**Sec 1.2:** 1,3,6,7,11,13,25,28,30,31,37,40 **Sec 1.3:** 9,13,15,19,23,25,27,29,31,35,37

6	1.5 Continuity 1.6 Continuity of Trig., Exp., Inverse functions.	Lecture		**Sec 1.5:** 5,11,13,15,19,21 **Sec 1.6:** 1,3,5917,19,21,23,27,31,33,40
7	**THE DERIVATIVE (Ch. 2):** 2.1 Tangent Lines and Rates of Change 2.2 The Derivative Function 2.3 Introduction to Techniques of Differentiation 2.4 The Product and Quotient Rules	Lecture		**Sec 2.1:** 5,11,13,15,19,21 **Sec 2.3:** 1,3,5,7,9,11,13,17,41,43 **Sec 2.4:** 5,7,9,11,13,15,19
8	2.5 Derivatives of Trigonometric Functions 2.6 The Chain Rule.	Lecture	Quiz (10 points) 10/12/2022	**Sec 2.5:** 1,3,5,7,9,11,13,19,21,23,25,27 **Sec 2.6:** 7,9,11,13,15,17,19,27,2943,44,45,51
9	**TOPICS IN DIFFERENTIATION (Ch. 3):** 3.1 Implicit Differentiation 3.2 Derivatives of Logarithmic Functions	Lecture		**Sec 3.1:** 3,5,7,9,11,13,15,17 **Sec 3.2:** 1,3,5,7,9,11,13,15,17,19,21,35,37,39
10	3.3 Derivatives of Exp. and Inverse Trig. Functions 3.6 L'Hospital's Rule; Indeterminate Forms	Lecture		**Sec 3.3:** 7,9,10,15,17,21,27,37,39,34,45,47 **Sec 3.6:** 7,9,11,13,15,23,29,31,33,37,39,41

11	**THE DERIVATIVE IN GRAPHING AND APPLICATIONS (Ch. 4):** 4.1 Increase, Decrease, and Concavity 4.2 Relative Extrema; Graphing Polynomials 4.4 Absolute Maxima and Minima 4.8 Rolle's Theorem; Mean-Value Theorem	Lecture		**Sec 4.1:** 15,17,19,21,23, 25,33,35,39 **Sec 4.2:** 25,27,29,31,37, 4164 **Sec 4.4:** 21,23,25,27 **Sec 4.8:** 1,3,5,9
12	**INTEGRATION (Ch. 5):** 5.2 The Indefinite Integral 5.3 Integration by Substitution	Lecture		**Sec 5.2:** 5,9,11,13,15,43 **Sec 5.3:** 1,3,7,15,19,23,2 7,29,33,35,39,5 7
13	5.5 The Definite Integral 5.6 The Fundamental Theorem of Calculus 5.9 Evaluating Definite Integrals by Substitution	Lecture		**Sec 5.5:** 13,15,17,21 **Sec 5.6:** 13, 15,19,21,23,25, 2731,59,61,63 **Sec 5.9:** 5,7,9,11,1319,2 1
14	5.10 Logarithmic and Other Functions Defined by Integrals	Lecture	Assignment 15/01/2023	**Sec 5.10:** 3,11,13,15
15	Review and Final Exam			

* Includes: Lecture, flipped Class, project- based learning, problem solving based learning, collaborative learning

Course Contributing to Learner Skill Development

Using Technology
Communication Skills
Improve the communication skills of the student by giving oral quizzes and discuss the assignments at the class
Application of Concepts Learnt

Assessment Methods and Grade Distribution

Assessment Methods	Grade Weight	Assessment Time (Week No.)	Link to Course Outcomes
Mid Term Exam	**30%**	**8**	**K1, K2, C1**
Various Assessments *	**30%**	**Continuous**	**S1, S2, C1, C2**
Final Exam	**40%**	**15**	**K1, K2, K3, C1**
Total	**100%**		

* Includes: quiz, in class and out of class assignment, presentations, reports, videotaped assignment, group or individual projects.

Alignment of Course Outcomes with Learning and Assessment Methods

Number	Learning Outcomes	Learning Method*	Assessment Method**
Knowledge			
K1	Understand the basic properties of algebraic and transcendental functions, and their operations.	Lecture	**Exam**
K2	Know the concepts of limits and continuity.	Lecture	**Quiz**
K3	Understand the definition of derivative and integral, and how to differentiation and integration elementary functions.	Lecture	**Exam**
Skills			
S1	Students should be able to use derivatives and integrals to solve real-life problems involving optimization and areas.	Problem Solving	**Assignment**
Competencies			
C1	Thinking reasonably and the ability to make decisions.	Discussion	**Assignment**

* Includes: Lecture, flipped Class, project- based learning, problem solving based learning, collaborative learning

** Includes: quiz, in class and out of class assignment, presentations, reports, videotaped assignment, group or individual projects.

Course Polices

Policy	Policy Requirements
Passing Grade	The minimum passing grade for the course is (50%) and the minimum final mark recorded on transcript is (35%).
Missing Exams	• Missing an exam without a valid excuse will result in a zero grade to be assigned to the exam or assessment. • A Student who misses an exam or scheduled assessment, for a legitimate reason, must submit an official written excuse within a week from an exam or assessment due date. • A student who has an excuse for missing a final exam should submit the excuse to the dean within three days of the missed exam date.
Attendance	The student is not allowed to be absent more than (15%) of the total hours prescribed for the course, which equates to six lectures days (M, W) and six lectures (S, T). If the student misses more than (15%) of the total hours prescribed for the course without a satisfactory excuse accepted by the dean of the faculty, s/he will be prohibited from taking the final exam and the grade in that course is considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the college, then withdrawal grade will be recorded.
Academic Honesty	Philadelphia University pays special attention to the issue of academic integrity, and the penalties stipulated in the university's instructions are applied to those who are proven to have committed an act that violates academic integrity, such as: cheating, plagiarism (academic theft), collusion, and violating intellectual property rights.

Program Learning Outcomes to be Assessed in this Course

Number	Learning Outcome	Course Title	Assessment Method	Target Performance level
Kp1	Understanding the main concepts	Calculus 1	Quizes	75% of the students have a degree above 8/10
Sp2	use derivatives and integrals to solve real-life problems.	Calculus 1	Assignment	100% of the students have a degree above 8/10

Description of Program Learning Outcome Assessment Method

Number	Detailed Description of Assessment
Kp1	Short quizzes mainly (2) with 10 points each
Sp2	Assignment with 10 points

Assessment Rubric of the Program Learning Outcome Construct during the course