1- Course Specification of Mathematics

I. Course Identification and General Information:					
1	**Course Title:**	*Mathematics 1*			
2	**Course Code & Number:**	FR001			
3	**Credit hours:**	C.H				Credit Hours
		Th.	Tu.	Pr.	Tr.	
		2	2			3
4	**Study level/ semester at which this course is offered:**	1st level / 1st semester.			
5	**Pre –requisite (if any):**	Nil.			
6	**Co –requisite (if any):**	Nil.			
8	**Program (s) in which the course is offered:**	Civil Engineering			
9	**Language of teaching the course:**	English and Arabic.			
10	**Location of teaching the course:**	Faculty of Engineering, Sana'a University.			
11	**Prepared By:**	Dr. Adel Mohammed Al-Odhari			
12	**Date of Approval**	November 2019			

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

II. Course Description:

This course designed to support students of engineering in semester one at first Year. This course is prerequisite for Civil Engineering Department. Students are learning processes and techniques to develop mathematical models for engineering problems by applying the essential concepts in calculus, Linear Algebra and complex numbers. Calculus is a part of mathematics of real numbers, students learning calculus of one variables such as functions, types of functions, limits, continuity, derivatives and applications of derivatives. For instance, the solutions of problems concerning the motion of objects, the flow of charged particles, heat transport, etc., often involves discussion of differential equations. Complex numbers are the generalization of the real numbers system. Equation or problems that have no real solution can have complex solution. Argand's Diagram, De'Moivre's theorem and its application to find roots of algebraic equations. Hyperbolic Functions, Inverse Hyperbolic Functions, Logarithm of Complex Numbers, Separation into Real and Imaginary parts, Application to problems in Engineering. Matrix Algebra, introduction to matrix, Rank, identity and operating matrix, Solution of systems of linear equations, Eigenvalues and Eigenvectors and Application to problems in Engineering (Translation and Rotation of Matrix).
Prerequisites: None.

III. Course Intended learning outcomes (CILOs) of the course		Referenced PILOs
a.1	Demonstrate knowledge of functions, limits, continuity, Differentiations, Applications of differentiation, Complex numbers and Linear Algebra for Civil Engineering subject's areas.	A1
a.2	Define appropriate techniques to find values of derivatives, application of derivatives and computing systems linear equations.	A1, A3
b.1	Recognize the equations of lines, slope, distance circles, parabolas, velocity, acceleration, tangents, normal, Euler's Formula and system of linear equations.	B1, B2
c.2	Compute the Limits, Continuity and derivatives eigenvalues and eigenvectors, roots of complex numbers and applications of intermediate value theorem, systems of linear equations by using Gauss-Jordan elimination to solve engineering problems and to apply	C3

| Head of Department Dr. Samir Mohsen Al-Sirry | Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi | Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti | Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad | Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas |

	mathematical concepts and methods when solving practical civil engineering problems.	
c.1	Use some software programing and calculators to describe the graph of function and calculating formulas mathematics and system of linear equations.	**C3**
d.1	Work as groups in assignments, discussion to another groups to checking the correct solution and reporting	**D1**, **D3**

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1- Demonstrate knowledge of functions, limits, continuity, Differentiations, Applications of differentiation, Complex numbers and Linear Algebra for Civil Engineering subject's areas.	Lectures and Tutorials.	coursework assignments final exam.
a2- Define appropriate techniques to find values of derivatives, application of derivatives and computing systems linear equations.		

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1- Recognize the equations of lines, slope, distance circles, parabolas, velocity, acceleration, tangents, normal, Euler's Formula and system of linear equations.	Lectures and Tutorials	Examinations, coursework

© Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

C1- Use some software programing and calculators to describe the graph of function and calculating formulas mathematics and system of linear equations.	Lectures and Tutorials.	coursework assignments final exam**.**
C2- Compute the Limits, Continuity and derivatives eigenvalues and eigenvectors, roots of complex numbers and applications of intermediate value theorem, systems of linear equations by using Gauss-Jordan elimination to solve engineering problems and to apply mathematical concepts and methods when solving practical civil engineering problems.		

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1- Work as groups in assignments, discussion to another groups to checking the correct solution and reporting	Small group	report

IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours
1	Unit-1: Calculus of one variable: Functions, Special Functions and	a.1,b1	Definitions of Function, inverse fun, comp-fun and comb-fun. Domain and range fun, graph fun and solving examples. Lines, slope, and distance Circles and parabolas. Formulas of increments, line,	3	6

| Head of Department Dr. Samir Mohsen Al-Sirry | Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi | Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti | Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad | Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas |

	Types of functions		Distance, circle and parabola. properties. power fun, polynomials fun, Trigonometric fun, Exponential, logarithmic funs. In addition, Hyperbolic functions. Properties of functions.		
2	Unit-2: Calculus of one variable: Limits and Continuity	a.1,c2	Calculating Limits of some functions by using Rules. Finding Continuity of functions. Intermediate Value Theorem for Continuous functions.	2	4
3	Unit-3: Calculus of one variable: Differentiation	a.1,a.2,b1, ,c1,c2	The concept of derivatives. Differentiation of polynomials. Differentiation of product, quotient of functions. The chain rule for composite functions (functions of a function). Derivatives of Trigonometric, Exponential, Logarithmic and Hyperbolic functions. Derivatives of Inverse trigonometric functions Inverse hyperbolic functions and implicit differentiation.	2	4
4	Unit-4: Calculus of one variable: Applications of Differentiation	a.1,a.2,b1, ,c1,c2	Velocity and acceleration Tangents and normal. Mclaurin and Taylor series. Maxima and minima of a function of one variable.	2	4
5	Unit-5: Complex numbers	a.1,c2	Operations on complex Numbers. Moduli and Conjugates. Polar coordinates and Euler's Formula. Roots of Complex Numbers and Regions in the complex	2	4

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

6	Unit-6: Linear Algebra (Matrix Algebra)	a.1,b1,c1 ,c2	Operations of matrices: addition, multiplication The transpose of a matrix. Special matrices. Minors, the an adjoint of Matrix, the inverse of 2 by 2 and 3 by 3 matrices. Solution of system of linear algebraic equations, by Gauss Elimination Method and Guass Jordan Method. Eigenvalues and Eigenvectors.	3	6
Number of Weeks /and Units Per Semester				**14**	**28**

B - Tutorial Aspect:				
Order	**Tasks/ Experiments**	**Number of Weeks**	**contact hours**	**Learning Outcomes**
1	**Unit-1:** Solving problems about Domain and range. Finding inverse functions. Compute Composite functions and combining functions. Solving problems about Lines, slope, circles, distance and parabolas. Drawing the graph of functions.	3	6	a1 , b1 ,,d1
2	**Unit-2:** Evaluate limits by graph, Calculating Limits of functions by using Rules. Average rates of change. Finding Continuity of functions, Evaluate Intermediate Value Theorem for Continuous functions**.**	2	4	a1 , b1 and c2

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

3	**Unit-3:** Evaluate derivatives of functions by basic rules. Compute Derivatives of Trigonometric, Exponential, Logarithmic and Hyperbolic functions. Compute Derivatives of Inverse trigonometric functions Inverse hyperbolic functions and implicit differentiation**.**	2	4	a1 ,a2, b1 , c1,c2
4	**Unit-4:** Evaluate velocity and acceleration**.** Evaluate tangents and normal lines. Find Mclaurin and Taylor series. Find maxima and minima of a function of one variable.	2	4	a.1,a.2,b1, ,c1,c2,d1
5	**Unit-5:** Solve quadratic equation and complex equation Evaluate polar form and Euler's Formula. Find roots of Complex Numbers.	2	4	a1 , b1 and c2
6	**Unit-6:** Solving operations on matrices. Finding inverse of matrix. Solving systems of linear equations by using Gauss Jordan Method. Evaluate eigenvalues and eigenvectors**.**	3	6	a.1,b1,c1,c2
Number of Weeks /and Units Per Semester		**14**	**28**	

V. Teaching strategies of the course:

Lectures, Tutorials and Small group.

VI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Assignment-unit-1	a.1,b1	3	3

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

2	Assignment-unit-2	a.1,c2,**d1**	2	3
3	Assignment-unit-3	a.1,a.2,b1, ,c1,c2	2	3
4	Assignment-unit-4	a.1,a.2,b1, ,c1,c2,**d1**	2	2
5	Assignment-unit-5	a.1,c2	2	2
6	Assignment-unit-6	a.1,b1,c1,c2	2	2

VII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Exercises & Home works	3, 5,8,10,12	15	10%	a.1,a2,b1,c1,c2,**d1**
2	Mid-Term-Exam	7	30	20%	a.1,b1,c1,c2
3	Final Exam	End of semester	105	70 %	a.1,b1,c1,c2
	Total		**150**	**100 %**	

VIII. Learning Resources:

- Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).

1- Required Textbook(s) (maximum two).

1- Tomas calculus 12edition, Addison-Wesley pearson.2010.

2- John Bird, Engineering Mathematics. Published by Elsevier Ltd. Fifth edition 2007.

2- Essential References.

1- Mathematics for Engineers and Technologists, Elsevier (2002), 0750655445.

2- Calculus, Howard Anton, Fifth Edition, John Wiley & Sons, Inc. New York Chi Chester   Brisbane Toronto Singapore.1995.

3- Electronic Materials and Web Sites etc.

1- https://www.khanacademy.org/

2- www.**math**.com/

3- https://ocw.mit.edu/**courses/mathematics**/

4- https://uwaterloo.ca/**mathematics**-**online**-**learning**/

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

	IX. Course Policies:
	All students enrolled at Sana'a University at the various levels of study are subject to disciplinary rules and regulations outlined in the common system for Yemeni Students Affairs in Universities (governmental) for the year 2007). The normal course administration policies and rules of the Faculty of Engineering apply. For the policy, see: Resolution No.284 for the year 2008 about Unified Regulation for the Students Affairs in Governmental Universities, The University Regulations on academic misconduct will be strictly enforced. Please refer to above Resolution No.284
1	**Class Attendance:** The students should have more than 75 % of attendance according to rules and regulations of the faculty.
2	**Tardy:** The students should respect the timing of attending the lectures. They should attend within 10 minutes from starting of the lecture.
3	**Exam Attendance/Punctuality:** The student should attend the exam on time. The unctuality should be implemented according to rules and regulations of the faculty for midterm exam and final exam.
4	**Assignments & Projects:** The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time.
5	**Cheating:** If any cheating occurred during the examination, the student is not allowed to continue and he has to face the examination committee for enquires.
6	**Plagiarism:** The student will be terminated from the Faculty, if one student attends the exam on another behalf according to the policy, rules and regulations of the university.
7	**Other policies:** - All the teaching materials should be kept out the examination hall. - The mobile phone is not allowed. - There should be a respect between the student and his teacher.

Reviewed By	**Vice Dean for Academic Affairs and Post Graduate Studies** **Dr. Tarek A. Barakat** **Dr. Mohammad Algorafi**
	Deputy Rector for Academic Affairs Dr. Ibrahim AlMutaa **Dr. Ahmed mujahed** **Dr. Munaser Alsubri**

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

Template for Course Plan (Syllabus) of Mathematics 1

I. - Information about Faculty Member Responsible for the Course:

Name of Faculty Member	Dr. Adel Mohammed Al-Odhari	Office Hours					
Location& Telephone No.		SAT	SUN	MON	TUE	WED	THU
E-mail		8-10		10-12			

II. Course Identification and General Information:

1-	**Course Title:**	*Mathematics 1*				
2-	**Course Number & Code:**	FR001				
3-	**Credit hours:**	**C.H**				**Credit Hours**
		Th.	Tu.	Pr.	Tr.	
		2	2			
4-	**Study level/year at which this course is offered:**	1st level / 1st semester.				
5-	**Pre –requisite (if any):**	Nil.				
6-	**Co –requisite (if any):**	Nil.				
7-	**Program (s) in which the course is offered**	Civil Engineering				
8-	**Language of teaching the course:**	English and Arabic.				
9-	**System of Study:**	Regular				
10-	**Mode of delivery:**	Lecture				
11-	**Location of teaching the course:**	Lecture hall				

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

III.   Course Description:

This course designed to support students of engineering in semester one at first Year. This course is prerequisite for Civil Engineering Department. Students are learning processes and techniques to develop mathematical models for engineering problems by applying the essential concepts in calculus, Linear Algebra and complex numbers. Calculus is a part of mathematics of real numbers, students learning calculus of one variables such as functions, types of functions, limits, continuity, derivatives and applications of derivatives. For instance, the solutions of problems concerning the motion of objects, the flow of charged particles, heat transport, etc., often involves discussion of differential equations. Complex numbers are the generalization of the real numbers system. Equation or problems that have no real solution can have complex solution. Argand's Diagram, De'Moivre's theorem and its application to find roots of algebraic equations. Hyperbolic Functions, Inverse Hyperbolic Functions, Logarithm of Complex Numbers, Separation into Real and Imaginary parts, Application to problems in Engineering. Matrix Algebra, introduction to matrix, Rank, identity and operating matrix, Solution of systems of linear equations, Eigenvalues and Eigenvectors and Application to problems in Engineering (Translation and Rotation of Matrix). Prerequisites: None.

IV.   Intended learning outcomes (ILOs) of the course:

- Brief summary of the knowledge or skill the course is intended to develop:

a.1 Demonstrate knowledge of functions, limits, continuity, Differentiations, Applications of differentiation, Complex numbers and Linear Algebra for Civil Engineering subject's areas. A1

a.2 Define appropriate techniques to find values of derivatives, application of derivatives and computing systems linear equations.   A1, A3

b.1 Recognize the equations of lines, slope, distance circles, parabolas, velocity, acceleration, tangents, normal, Euler's Formula and system of linear equations.   B1, B2

c.2 Compute the Limits, Continuity and derivatives eigenvalues and eigenvectors, roots of complex numbers and applications of intermediate value theorem, systems of linear equations by using Gauss-Jordan elimination to solve engineering problems and to apply mathematical concepts and methods when solving practical civil engineering problems.   C3

Head of Department	Quality Assurance Unit	Dean of the Faculty	Academic Development	Rector of Sana'a University
Dr. Samir Mohsen Al-Sirry	Assoc. Prof. Dr. Mohammad Algorafi	Prof. Dr. Mohammed AL-Bukhaiti	Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Prof. Dr. Al-Qassim Mohammed Abbas

c.1	Use some software programing and calculators to describe the graph of function and calculating formulas mathematics and system of linear equations. C3
d.1	Work as groups in assignments, discussion to another groups to checking the correct solution and reporting D1, D3

V. Course Content:

- Distribution of Semester Weekly Plan of Course Topics/Items and Activities.

A – Theoretical Aspect:

Order	Topics List	Sub Topics List	Week Due	Contact Hours
1	Unit-1: Calculus of one variable: Functions, Special Functions and Types of functions	Definitions of Function, inverse fun, comp-fun and comb-fun. Domain and range fun, graph fun and solving examples. Lines, slope, and distance Circles and parabolas. Formulas of increments, line, Distance, circle and parabola. properties. power fun, polynomials fun, Trigonometric fun, Exponential, logarithmic funs. In addition, Hyperbolic functions. Properties of functions.	1,2,3	6
2	Unit-2: Calculus of one variable: Limits and Continuity	Calculating Limits of some functions by using Rules. Finding Continuity of functions. Intermediate Value Theorem for Continuous functions.	4,5	4
3	Unit-3: Calculus of one variable: Differentiation	The concept of derivatives. Differentiation of polynomials. Differentiation of product, quotient of functions. The chain rule for composite functions (functions of a function). Derivatives of Trigonometric, Exponential, Logarithmic and Hyperbolic functions.	6,7	4

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

		Derivatives of Inverse trigonometric functions Inverse hyperbolic functions and implicit differentiation.		
4	Midterm Exam		8	2
5	Unit-4: Calculus of one variable: Applications of Differentiation	Velocity and acceleration Tangents and normal. Mclaurin and Taylor series. Maxima and minima of a function of one variable.	9,10	4
6	Unit-5: Complex numbers	Operations on complex Numbers. Moduli and Conjugates. Polar coordinates and Euler's Formula. Roots of Complex Numbers and Regions in the complex	11,12	4
7	Unit-6: Linear Algebra (Matrix Algebra)	Operations of matrices: addition, multiplication The transpose of a matrix. Special matrices. Minors, the an adjoint of Matrix, the inverse of 2 by 2 and 3 by 3 matrices. Solution of system of linear algebraic equations, by Gauss Elimination Method and Guass Jordan Method. Eigenvalues and Eigenvectors.	13,14,15	6
8	Final Exam		16	2
Number of Weeks /and Units Per Semester			**16**	**32**

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

13.

Sana'a University
Faculty of Engineering
Department: Basic Engineering Sciences
Title of the Program: B.Sc. Of Architectural Engineering

Head of Department	Quality Assurance Unit	Dean of the Faculty Prof. Dr.	Academic Development	Rector of Sana'a University
Dr. Samir Mohsen Al-Sirry	Assoc. Prof. Dr. Mohammad Algorafi	Mohammed AL-Bukhaiti	Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Prof. Dr. Al-Qassim Mohammed Abbas

B - Tutorial Aspect:			
Order	**Topics List**	**Week Due**	**Contact Hours**
1	Unit-1: Solving problems about Domain and range. Finding inverse functions. Compute Composite functions and combining functions. Solving problems about Lines, slope, circles, distance an parabolas. Drawing the graph of functions.	3	**6**
2	**Unit-2:** Evaluate limits by graph, Calculating Limits of functions by using Rules. Average rates of change. Finding Continuity of functions, Evaluate Intermediate Value Theorem for Continuous functions**.**	2	**4**
3	**Unit-3:** Evaluate derivatives of functions by basic rules. Compute Derivatives of Trigonometric, Exponential, Logarithmic and Hyperbolic functions. Compute Derivatives of Inverse trigonometric functions Inverse hyperbolic functions and implicit differentiation**.**	2	**4**
4	**Unit-4:** Evaluate velocity and acceleration**.** Evaluate tangents and normal lines. Find Mclaurin and Taylor series. Find maxima and minima of a function of one variable.	2	**4**
5	**Unit-5:** Solve quadratic equation and complex equation Evaluate polar form and Euler's Formula. Find roots of Complex Numbers.	2	**4**
6	**Unit-6:** Solving operations on matrices. Finding inverse of matrix. Solving systems of linear equations by using Gauss Jordan Method.	3	**6**

| Head of Department Dr. Samir Mohsen Al-Sirry | Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi | Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti | Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad | Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas |

	Evaluate eigenvalues and eigenvectors.		
	Number of Weeks /and Units Per Semester	14	28

VI.	**Teaching strategies of the course:**
Lectures, Tutorials and **Small group**.	

VII.	**Assignments:**			
No	**Assignments**	**Aligned CILOs(symbols)**	**Week Due**	**Mark**
1	Assignment-unit-1	a.1,b1	3	3
2	Assignment-unit-2	a.1,c2,d1	2	3
3	Assignment-unit-3	a.1,a.2,b1, ,c1,c2	2	3
4	Assignment-unit-4	a.1,a.2,b1, ,c1,c2,d1	2	2
5	Assignment-unit-5	a.1,c2	2	2
6	Assignment-unit-6	a.1,b1,c1,c2	2	2

VIII.	**Schedule of Assessment Tasks for Students During the Semester:**			
No	**Type of Assessment Tasks**	**Week Due**	**Mark**	**Proportion of Final Assessment**
1	Exercises & Home works	3, 5,8,10,12	15	10%
2	Mid-Term-Exam	7	30	20%
3	Final Exam	End of semester	105	70 %
	Total		**150**	**100 %**

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

IX. Learning Resources:
• Written in the following order: (Author – Year of publication – Title – Edition – Place of publication – Publisher).
1- Required Textbook(s) (maximum two).
1- Tomas calculus 12edition, Addison-Wesley pearson.2010.   2- John Bird, Engineering Mathematics. Published by Elsevier Ltd. Fifth edition 2007.
2- Essential References.
1- Mathematics for Engineers and Technologists, Elsevier (2002), 0750655445.   2- Calculus, Howard Anton, Fifth Edition, John Wiley & Sons, Inc. New York Chi Chester   Brisbane Toronto Singapore.1995.
3- Electronic Materials and Web Sites *etc*.
1- 1-https://www.khanacademy.org/   2- www.**math**.com/   3- https://ocw.mit.edu/**courses**/**mathematics**/   https://uwaterloo.ca/**mathematics**-**online**-**learning**/

Head of Department Dr. Samir Mohsen Al-Sirry	Quality Assurance Unit Assoc. Prof. Dr. Mohammad Algorafi	Dean of the Faculty Prof. Dr. Mohammed AL-Bukhaiti	Academic Development Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Rector of Sana'a University Prof. Dr. Al-Qassim Mohammed Abbas

X. Course Policies:

Unless otherwise stated, the normal course administration policies and rules of the Faculty of ----- apply. For the policy, see: ------------------------------------

1	**Class Attendance:** The students should have more than 75 % of attendance according to rules and regulations of the faculty.
2	**Tardy:** The students should respect the timing of attending the lectures. They should attend within 10 minutes from starting of the lecture.
3	**Exam Attendance/Punctuality**: The student should attend the exam on time. The unctuality should be implemented according to rules and regulations of the faculty for mid term exam and final exam.
4	**Assignments & Projects:** The assignment is given to the students after each chapter; the student has to submit all the assignments for checking on time.
5	**Cheating:** If any cheating occurred during the examination, the student is not allowed to continue and he has to face the examination committee for enquires.
6	**Plagiarism:** The student will be terminated from the Faculty, if one student attend the exam on another behalf according to the policy, rules and regulations of the university.
7	**Other policies:** - All the teaching materials should be kept out the examination hall. - The mobile phone is not allowed. - There should be a respect between the student and his teacher.

Head of Department	Quality Assurance Unit	Dean of the Faculty	Academic Development	Rector of Sana'a University
Dr. Samir Mohsen Al-Sirry	Assoc. Prof. Dr. Mohammad Algorafi	Prof. Dr. Mohammed AL-Bukhaiti	Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Prof. Dr. Al-Qassim Mohammed Abbas

Head of Department	Quality Assurance Unit	Dean of the Faculty Prof. Dr.	Academic Development	Rector of Sana'a University
Dr. Samir Mohsen Al-Sirry	Assoc. Prof. Dr. Mohammad Algorafi	Mohammed AL-Bukhaiti	Center & Quality Assurance Assoc. Prof. Dr. Huda Al-Emad	Prof. Dr. Al-Qassim Mohammed Abbas