مواصفات مقرر: رياضيات عامة.
Course Specification of: General Mathematics.

	General information about the course المعلومات العامة عن المقرر		
.1	اسم المقرر Course Title	General Mathematics	رياضيات عامة
.2	رمز المقرر ورقمه Course Code and Number	PNR 103	

		الساعات المعتمدة Credit Hours				الإجمالي Total
.3	الساعات المعتمدة للمقرر Credit Hours	محاضرات Lecture	عملي Practical	سمنار/تمارين Seminar/Tutorial	تدريب Training	
		2	--	1	--	3

.4	المستوى والفصل الدراسي Study Level and Semester	First Year – First Semester.	المستوى الأول – الفصل الأول.
.5	المتطلبات السابقة المقرر (إن وجدت) Pre-requisites (if any)	None	لايوجد.
.6	المتطلبات المصاحبة (إن وجدت) Co-requisites (if any)	None	لايوجد.
.7	البرنامج الذي يدرس له المقرر Program (s) in which the course is offered	متطلب كلية	
.8	لغة تدريس المقرر Language of teaching the course	ARABIC	عربي.
.9	نظام الدراسة Study System	Semester	فصلي.
.10	مكان تدريس المقرر Location of teaching the course	Faculty Building	مبنى الكلية.
.11	اسم معد(و) مواصفات المقرر Prepared by	Dr. Omar Abdulaziz Alabsi	د. عمر عبدالعزيز العبسي.
.12	تاريخ اعتماد مجلس الجامعة Date of Approval		2020

وصف المقرر Course Description

وصف المقرر بالإنجليزية	وصف المقرر بالعربية
The main goal of the course is introducing the students to the principles and basic applications of differential and integral calculus and the first – order differential equations and their applications in the field of Petroleum and Natural Gas Engineering.	الهدف الرئيسي من المقرر هو تعريف الطلاب على المبادئ والتطبيقات الأساسية لحساب التفاضل والتكامل والمعادلات التفاضلية من الرتبة الأولى وتطبيقاتها في مجال هندسة البترول والغاز الطبيعي.

Course Intended Learning Outcomes (CILOs) مخرجات تعلم المقرر

After completing the course, the student will be able to:	بعد الانتهاء من دراسة المقرر سوف يكون الطالب قادرا على أن:

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Assoc.Prof. Adel Al-Matary | Quality Assurance Unit
Assoc.Prof. Adel Al-Matary | Dean of the Faculty
Assoc.Prof. Bassim AlKhirbash | Dean of the Development
& Quality Assurance Center
Assoc.Prof. Huda Al-Emad |

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الجمهوريــة اليمنــية
وزارة التعليم العالـي والبحث العلمي
جـــــامعة صـــــنعاء
كلية البترول والموارد الطبيعية

a1.	Define the basic concepts of the differential calculus and list all differentiation rules of functions.		- a1
a2.	Understand the difference between the definite and indefinite integral and explain the integration methods.		–a2
a3.	Define the differential equations of first – order and list the different methods for solving differential equations and their applications to real life problems.		–a3
b1.	Find and interpret the derivatives of functions using the differentiation rules.		–b1
b2.	Apply the best method to solve problems of integration.		- b2
b3.	Use the best procedure to solve differential equations of first – order.		b3.
c1.	Apply mathematical methods to solve problems in the field of Petroleum and Natural Gas Engineering, involving differential and integral calculus and differential equations.		- c1
d1.	Work effectively within team to solve the assignments.		- d1

مواءمة مخرجات تعلم المقرر مع مخرجات التعلم للبرنامج:		
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)		
مخرجات التعلم المقصودة من المقرر (Course Intended Learning Outcomes)		مخرجات التعلم المقصودة من البرنامج (Program Intended Learning Outcomes) (تكتب جميع مخرجات البرنامج كما هي رمزا ونصا)
a1	Define the basic concepts of the differential calculus and list all differentiation rules of functions.	A1	Demonstrate the concepts of basic science and mathematics related to field of petroleum engineering.
a2	Understand the difference between the definite and indefinite integral and explain the integration methods.		
a3	Define the differential equations of first – order and list the different methods for solving differential equations and their applications to real life problems.		
b1	Find and interpret the derivatives of functions using the differentiation rules.	B2	Use the principles of engineering in developing solutions to practical petroleum engineering and select appropriate computer software for modeling.
b2	Apply the best method to solve problems of integration.		
b3	Use the best procedure to solve differential equations of first – order.		
c1	Apply mathematical methods to solve problems in the field of Petroleum and Natural Gas Engineering, involving differential and integral calculus and differential equations.	C3	
d1	Work effectively within team to solve the assignments.	D1	Collaborate effectively within multidisciplinary teams under stressful environment and within constraints.

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مواءمة مخرجات التعلم باستراتيجيات التعليم والتعلم والتقويم
Alignment of CILOs to Teaching and Assessment Strategies

أولا: مواءمة مخرجات تعلم المقرر (المعارف والفهم) باستراتيجية التعليم والتعلم والتقويم:
First: Alignment of Knowledge and Understanding CILOs

	مخرجات المقرر/ المعرفة والفهم Knowledge and Understanding CILOs	إستراتيجية التعليم والتعلم Teaching Strategies	إستراتيجية التقويم Assessment Strategies
a1	Define the concepts of the function and the derivative and list all differentiation rules of functions.	Lecture Cooperative learning Problem solving Open Discussion	Written Assignments Quizzes Examination (Final-Midterm)
a2	Understand the difference between the definite and indefinite integral and explain the integration methods.		
a3	Define the differential equations of first – order and list the different methods for solving differential equations and their applications to real life problems.		

ثانيا: مواءمة مخرجات تعلم المقرر(المهارات الذهنية) باستراتيجية التدريس والتقويم:
Second: Alignment of Intellectual Skills CILOs

	مخرجات المقرر/ المهارات الذهنية Intellectual Skills CILOs	إستراتيجية التعليم والتعلم Teaching Strategies	إستراتيجية التقويم Assessment Strategies
b1	Find and interpret the derivatives of functions using the differentiation rules.	Lecture Cooperative learning Problem solving Open Discussion Self-Learning	Written Assignments Quizzes Examination (Final-Midterm)
b2	Apply the best method to solve problems of integration.		
b3	Use the best procedure to solve differential equations of first – order.		

ثالثا: مواءمة مخرجات تعلم المقرر(المهارات المهنية والعملية) باستراتيجية التدريس والتقويم:
Third: Alignment of Professional and Practical Skills CILOs

	مخرجات المقرر/ المهارات المهنية والعملية Professional and Practical Skills CILOs	إستراتيجية التعليم والتعلم Teaching Strategies	إستراتيجية التقويم Assessment Strategies
c1	Apply mathematical methods to solve problems in the field of Petroleum and Natural Gas Engineering, involving differential and integral calculus and differential equations.	Lecture Cooperative learning Problem solving Open Discussion Self-Learning	Written Assignments Quizzes Examination (Final-Midterm)

رابعا: مواءمة مخرجات تعلم المقرر(المهارات العامة) باستراتيجية التدريس والتقويم:
Fourth: Alignment of Transferable (General) Skills CILOs

مخرجات المقرر	إستراتيجية التعليم والتعلم	إستراتيجية التقويم

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	Transferable (General) Skills CILOs	Teaching Strategies	Assessment Strategies
d1	Work effectively within team to solve the assignments.	Web searching Using Library Self-Learning Group Projects	Oral Exam Project evaluation

Course Content محتوى المقرر

موضوعات الجانب النظري Theoretical Aspect

الرقم Order	الموضوعات الرئيسة/ الوحدات Topic List / Units	الموضوعات الفرعية Sub Topics List	عدد الأسابيع Number of Weeks	الساعات الفعلية Contact Hours	رموز مخرجات التعلم للمقرر (CILOs)
1	**Pre-calculus Review**	Sets – Real numbers line – Inequalities – Intervals	1	2	a1, c1, d1
2	**Functions**	Polynomial, rational, irrational, exponential, logarithmic, trigonometric and Inverse trigonometric functions. Applications of real functions in geological sciences	2	4	a1, c1, d1
3	**Differentiation**	Rules of differentiation – Implicit differentiation.	1	2	a1, b1, c1
4	**Applications of differentiation**	Decreasing and increasing functions –Related rates – differential and linear approximation – Extreme of functions.	2	4	a1,b1,c1,d1
5	**Indefinite and definite integrals**	Antiderivatives, Properties of integrals , integration by Substitution.	2	4	a2,b2,c1,d1
6	**Midterm Exam**	Midterm Exam	1	2	a1,a2, b1,b2,c1
7	**Methods of integration**	Integration by parts, Integration by partial fractions. Numerical method to evaluate integrations (Trapezoidal Method).	2	4	a2,b2,c1,d1
8	**Differential Equations**	Methods of solving First – order differential equations and their applications	3	6	a3, b3, c1, d1
	عدد الأسابيع والساعات الفعلية **Number of Weeks /and Contact Hours Per Semester**		**14**	**28**	

الموضوعات العملية (إن وجدت) Practical Aspect (if any)

رموز مخرجات	الساعات	عدد الأسابيع	التجارب العملية/ التمارين / تدريبات	الرقم

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Order	Practical / Exercises/Tutorials topics	Number of Weeks	الفعلية Contact Hours	التعلم Course ILOs
1	Sets – Real numbers line – Inequalities – Intervals	1	2	a1, c1, d1
2	Polynomial, rational, irrational, exponential, logarithmic, trigonometric and Inverse trigonometric functions. Applications of real functions in geological sciences	2	4	a1, c1, d1
3	Rules of differentiation – Implicit differentiation.	1	2	a1, b1, c1
4	Decreasing and increasing functions–Related rates – differential and linear approximation – Extreme of functions.	2	4	a1, b1, c1, d1
5	Antiderivatives, Properties of integrals ,	2	4	a2, b2, c1, d1
6	Integration by Substitution, Integration by parts.	1	2	a1,a2,b1,b2,c1
7	Integration by partial fractions. Numerical method to evaluate integrations (Trapezoidal Method).	2	4	a2, b2, c1, d1
8	Methods of solving First – order differential equations and their applications	3	6	a3, b3, c1, d1
	إجمالي الأسابيع والساعات الفعلية **Number of Weeks /and Contact Hours Per Semester**	**14**	**28**	

استراتيجيات التعليم والتعلم Teaching Strategies

- **Lectures**
- **Cooperative learning**
- **Problem solving**
- **Self-Learning**
- **Open Discussion**
- **Web searching**
- **Using Library**
- **Group Projects**

Tasks and Assignments الأنشطة والتكليفات

م No	التكليف/ الواجب Assignments/ Tasks	نوع التكليف (فردي/ تعاوني)	الدرجة المستحقة Mark	أسبوع التنفيذ Week Due	مخرجات التعلم CILOs (symbols)
1					
	Total Score إجمالي الدرجة				

Learning Assessment تقييم التعلم

الرقم No.	أنشطة التقييم Assessment Tasks	أسبوع التقييم Week due	الدرجة Mark	نسبة الدرجة إلى الدرجة النهائية Proportion of Final Assessment	مخرجات التعلم CILOs (symbols)

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1	Tasks and Assignments	During classes	20	13.4%	a1, a2, a3, b1, b2, b3, c1, d1
2	Quiz (1) كوز	W6	5	3.3%	a1, b1, c1
3	Midterm Exam	W9	30	20%	a1, a2, b1, b2,
4	Quiz (2) كوز	W12	5	3.3%	a2,a3,b2,b3, c1
5	Tutorial	During classes	20	13.4%	a1, a2, a3, b1, b2, b3, c1, d1
6	Final Exam (theoretical)	W16	70	46.6%	a1, a2, a3, b1, b2, b3, c1, d1
	الإجمالي Total		150	100.00%	

Learning Resources   مصادر التعلم
توثق المراجع حسب نظام APA (اسم المؤلف، سنة النشر، اسم الكتاب، دار النشر، بلد النشر).
المراجع الرئيسة(لا تزيد عن مرجعين) Required Textbook(s)
1- J. Stewart, 2003, Calculus, Early Transcendentals, 5th Edition, Brooks/Cole Pub. Comp., USA. 2- Thomas. G; Finney, R., 1998, Calculus and analytical geometry, 5th Edition, Addison-Wesely USA.
Essential References المراجع المساندة
NONE
المصادر الإلكترونية ومواقع الإنترنت etc.Electronic Materials and Web Sites
NONE

Course Policies الضوابط والسياسات المتبعة في المقرر
1.	Class Attendance: حضور الفعاليات التعليمية - Students are expected to attend classes regularly and promptly. - The attendance should not be less than 80%. - If the student has been absent, he is responsible for finding out any missed material by consulting other students or going to the professor's office hours.
2.	Tardy: الحضور المتأخر - Attendance and arriving on time for the class are necessary. If the student is late, he will be prevented from class.
3.	Exam Attendance/Punctuality: ضوابط الامتحان - According to the rules the student gets absent in the exam of the course.
4.	Assignments & Projects: التعيينات والمشاريع - Papers survey or projects should be submitted by the time detriment by the professor.
5.	Cheating: الغش - According to the rules, cheating is a serious offense and will always result in an imposition of a penalty. The penalties that can be started from the range of canceling the result of the course to canceling the student's admission.
6.	Plagiarism: الانتحال - Plagiarism is a serious offense and will always result in an imposition of a penalty. The penalties that can be started by making a zero mark for the work.
7.	Other policies: سياسات أخرى - The student should by a commitment by the rules inside class and university. Therefore, he is expected to show respect for his classmate, instructors &others.

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Assoc.Prof. Huda Al-Emad

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قسم/ برنامج Department: متطلب كلية

العام الجامعي: 2019- 2020م

خطة مقرر: رياضيات عامة.
Course Plan (Syllabus): General Mathematics.

Information about Faculty Member Responsible for the Course	معلومات عن أستاذ المقرر						
الاسم Name	**د. عمر عبدالعزيز العبسي Dr. Omar Abdulaziz Alabsi**	الساعات المكتبية (أسبوعيا) Office Hours					
المكان ورقم الهاتف Location & Telephone No.	**772 815 749**	السبت SAT	الأحد SUN	الاثنين MON	الثلاثاء TUE	الأربعاء WED	الخميس THU
البريد الإلكتروني E-mail	**Omaralabsi14@gmai.com**						

General information about the course	معلومات عامة عن المقرر				
.1	اسم المقرر Course Title	**General Mathematics**		رياضيات عامة	
.2	رمز المقرر ورقمه Course Code and Number	**PNR 103**			
.3	الساعات المعتمدة للمقرر CreditHours	الساعات المعتمدة CreditHours				الإجمالي Total
		محاضرات Lecture	عملي Practical	سمنار/تمارين Seminar/Tutorial	تدريب Training	
		2	**--**	**1**	**--**	**3**
.4	المستوى والفصل الدراسي Study Level and Semester	**First Year – First Semester.**		المستوى الأول – الفصل الأول.	
.5	المتطلبات السابقة للمقرر Pre-requisites	**None**		لايوجد.	
.6	المتطلبات المصاحبة (إن وجدت) Co –requisite	**None**		لايوجد.	
.7	البرنامج الذي يدرس له المقرر Program (s) in which the course is offered			متطلب كلية	
.8	لغة تدريس المقرر Language of teaching the course	**ARABIC**		عربي.	
.9	مكان تدريس المقرر Location of teaching the course	**Faculty Building**		مبنى الكلية.	

Course Description	وصف المقرر
The main goal of the course is introducing the students to the principles and basic applications of differential and integral calculus and the first – order differential equations and their applications in the field of Petroleum and Natural Gas Engineering.	الهدف الرئيسي من المقرر هو تعريف الطلاب على المبادئ والتطبيقات الأساسية لحساب التفاضل والتكامل والمعادلات التفاضلية من الرتبة الأولى وتطبيقاتها في مجال هندسة البترول والغاز الطبيعي.

Course Intended Learning Outcomes (CILOs)	مخرجات تعلم المقرر
After completing the course, the student will be able to:	بعد الانتهاء من دراسة المقرر سوف يكون الطالب قادرا على أن:

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a1.	Define the basic concepts of the differential calculus and list all differentiation rules of functions.		- a1
a2.	Understand the difference between the definite and indefinite integral and explain the integration methods.		–a2
a3.	Define the differential equations of first – order and list the different methods for solving differential equations and their applications to real life problems.		–a3
b1.	Find and interpret the derivatives of functions using the differentiation rules.		–b1
b2.	Apply the best method to solve problems of integration.		- b2
b3.	Use the best procedure to solve differential equations of first – order.		b3.
c1.	Apply mathematical methods to solve problems in the field of Petroleum and Natural Gas Engineering, involving differential and integral calculus and differential equations.		- c1
d1.	Work effectively within team to solve the assignments.		- d1

Course Content محتوى المقرر

Theoretical Aspect خطة تنفيذ الموضوعات النظرية

الرقم Order	الوحدات (الموضوعات الرئيسة) Units	الموضوعات التفصيلية Sub Topics	الأسبوع Week Due	الساعات الفعلية Con. H
1	**Pre-calculus Review**	▪ Sets – Real numbers line – Inequalities – Intervals	1	2
2	**Functions**	Polynomial, rational, irrational, exponential, logarithmic, trigonometric and Inverse trigonometric functions. Applications of real functions in geological sciences	2	4
3	**Differentiation**	Rules of differentiation – Implicit differentiation.	1	2
4	**Applications of differentiation**	Decreasing and increasing functions – Related rates – differential and linear approximation – Extreme of functions.	2	4
5	**Indefinite and definite integrals**	Antiderivatives, Properties of integrals , integration by Substitution.	2	4
6	**Midterm Exam**	Midterm Exam	1	2
7	**Methods of integration**	Integration by parts, Integration by partial fractions. Numerical method to evaluate integrations (Trapezoidal Method).	2	4
8	**Differential**	Methods of solving First – order differential equations	3	6

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	Equations	and their applications		
9	**Final Exam**		1	2
	عدد الأسابيع والساعات الفعلية **Number of Weeks /and Contact Hours Per Semester**		**15**	**30**

خطة تنفيذ موضوعات الجانب العملي Practical / Training/ Tutorials/ Exercises Aspects			

الرقم Order	موضوعات العملي/ المهام / التمارين **Practical/Tutorials/ Exercises Aspects**	الأسبوع **Week Due**	الساعات الفعلية **Cont. H**
1	Sets – Real numbers line – Inequalities – Intervals	1	2
2	Polynomial, rational, irrational, exponential, logarithmic, trigonometric and Inverse trigonometric functions. Applications of real functions in geological sciences	2	4
3	Rules of differentiation – Implicit differentiation.	1	2
4	Decreasing and increasing functions–Related rates – differential and linear approximation – Extreme of functions.	2	4
5	Antiderivatives, Properties of integrals ,	2	4
6	Integration by Substitution, Integration by parts.	1	2
7	Integration by partial fractions. Numerical method to evaluate integrations (Trapezoidal Method).	2	4
8	Methods of solving First – order differential equations and their applications	3	6
	إجمالي الأسابيع والساعات الفعلية Number of Weeks /and Contact Hours Per Semester	**14**	**28**

استراتيجيات التعليم والتعلم Teaching Strategies

- Lectures
- Cooperative learning
- Problem solving
- Self-Learning
- Open Discussion
- Web searching
- Using Library
- Group Projects

الأنشطة والتكليفات Tasks and Assignments

م No	التكليف/ الواجب **Assignments**	نوع التكليف (فردي/ تعاوني)	الدرجة المستحقة **Mark**	أسبوع التنفيذ **Week Due**
	إجمالي الدرجة **Total Score**		15/150 10/ 100	

تقويم التعلم Learning Assessment

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الجمهوريـــة اليمنيـــة
وزارة التعليم العـالي والبحث العلمي
جـــــــامعة صـــــــنعاء
كلية البترول والموارد الطبيعية

م No	أساليب التقويم Assessment Method	موعد(أسبوع) التقويم Week Due	الدرجة Mark	الوزن النسبي% Proportion of Final Assessment
1	Tasks and Assignments	During classes	20	13.4%
2	Quiz (1) كوز	W6	5	3.3%
3	Midterm Exam	W9	30	20%
4	Quiz (2) كوز	W12	5	3.3%
5	Tutorial	During classes	20	13.4%
6	Final Exam (theoretical)	W16	70	46.6%
	المجموعTotal		150	100 %

Learning Resources   مصادر التعلم

توثق المراجع حسب نظام APA (اسم المؤلف، سنة النشر، اسم الكتاب، دار النشر، بلد النشر).

المراجع الرئيسة(لا تزيد عن مرجعين) Required Textbook(s)

1- J. Stewart, 2003, Calculus, Early Transcendentals, 5th Edition, Brooks/Cole Pub. Comp., USA.
2- Thomas. G; Finney, R., 1998, Calculus and analytical geometry, 5th Edition, Addison-Wesely USA.

المراجع المساندةEssential References

NONE

Electronic Materials and Web Sites *etc.*المصادر الإلكترونية ومواقع الإنترنت

NONE

Course Policies   الضوابط والسياسات المتبعة في المقرر

8.	Class Attendance: حضور الفعاليات التعليمية - Students are expected to attend classes regularly and promptly. - The attendance should not be less than 80%. - If the student has been absent, he is responsible for finding out any missed material by consulting other students or going to the professor's office hours.
9.	Tardy: الحضور المتأخر - Attendance and arriving on time for the class are necessary. If the student is late, he will be prevented from class.
10.	Exam Attendance/Punctuality: ضوابط الامتحان - According to the rules the student gets absent in the exam of the course.
11.	Assignments & Projects: التعيينات والمشاريع - Papers survey or projects should be submitted by the time detriment by the professor.
12.	Cheating: الغش - According to the rules, cheating is a serious offense and will always result in an imposition of a penalty. The penalties that can be started from the range of canceling the result of the course to canceling the student's admission.
13.	Plagiarism: الانتحال - Plagiarism is a serious offense and will always result in an imposition of a penalty. The penalties that can be started by making a zero mark for the work.
14.	Other policies: سياسات أخرى - The student should by a commitment by the rules inside class and university. Therefore, he is expected to show respect for his classmate, instructors &others.

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